CITY OF MOUNTAIN VIEW

April 12, 2011

California Energy Commission

Attn: Joe Loyer
1516 Ninth Street, MS-29
Sacramento, CA 95814-5512, U S A

RE: Application to CEC for Green Building Standards Code Local Amendments

Hi Joe,

Enclosed is the City of Mountain View application for the amendments to the 2010 California Green Building Standards. We have included;

1) **Copy of the Ordinance**
2) **Statement within the ordinance requiring building to meet Title 24 part 6**
3) **Copy of the Green Building Agenda item presented to City of Mountain View Council and Public Hearing on March 22, 2011**
4) **Letter to the Commission to follow. It is my understanding that you will provide that for my signature at sometime in the future.**

If you have any concerns regarding this submittal please contact me as soon as possible.

Thank You,

Anthony Ghiossi
Chief Building Official
City of Mountain View
650-903-6313

Application for Locally Adopted Energy Standard by the City of Mountain View in Accordance with Section 10-106 of the California Code of Regulations, Title 24, Part 1

April 6, 2011

From:
Randal Tsuda
Community Development Director
City of Mountain View
500 Castro Street
Mountain View, CA 94041

Report Prepared by:
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1.0 Introduction

Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards (Standards) establish a process that allows local adoption of energy standards that are more stringent than the statewide Standards. This process allows local governments to: adopt and enforce energy standards before the statewide Standards effective date; require additional energy conservation measures; and/or, set more stringent energy budgets. Because these energy standards "reach" beyond the minimum requirements of Title 24, Part 6 of the California Building Code, they are commonly referred to as Reach Codes.

The process for adopting a Reach Code requires that local governments apply to the California Energy Commission (CEC) for approval. As part of the application, the applicant jurisdiction must prepare a Cost-Effectiveness Study that provides the basis of the local government's determination that the proposed Reach Code Standards are cost-effective. Once the CEC staff has verified that the local Reach Code Standards will require buildings to use no more energy than the current statewide Standards and that the documentation requirements in Section 10-106 are met, the application is brought before the full California Energy Commission for approval.

This Cost Effectiveness Study consists of an analysis of the building types and performance thresholds listed in Table 1. The 2008 Building Energy Efficiency Standards, which became effective January 1, 2010, have been used as the baseline for calculating the energy performance of efficiency measures summarized in this study.

Table 1: Overall Scope of the Ordinance	
New ordinance or revision to previous ordinance?	New Ordinance
Projected effective date:	September 1, 2011
Green building or stand-alone energy ordinance?	Energy Ordinance in Combination with Green Building
Do minimum energy requirements increase after initial effective date?	No
Occupancies covered include:	Single-Family Residential Multifamily Residential Nonresidential Hotel/Motel Commercial Lighting
Energy requirements apply to new construction, additions, alterations?	New Construction and some Additions / Alterations
Special or unusual energy requirements?	No
Third party verification?	No
Implementation details in the ordinance or in a separate document?	No special implementation guidelines. See Implementation section

Table 2: Efficiency Thresholds Used in Cost-Effectiveness Study	
Building Type	***Percentage Better than 2008 Title 24, Part 6***
Low-Rise Residential (3 stories and below)	15%
High-Rise Residential (4 stories and greater)	15%
Hotel/Motel	5%
Non-Residential Cold Shell (no HVAC, no lighting)	5%
Non-Residential Warm Shell (HVAC, no lighting)	7%
Non-Residential Full Build Out	10%
Non-residential lighting only	10%

2.0 Impacts of the New Ordinance

Energy performance impacts of the Ordinance have been evaluated using case studies that reflect the range of building types covered by the Ordinance. Global Green USA researched the feasibility and energy cost-effectiveness of permit applications exceeding the 2008 Standards in order to meet the requirements of the proposed Ordinance.

2.1 Analysis Methodology

The case study methodology is based on how real buildings in the community are designed and evaluated in order to just meet or exceed the 2008 Standards. In collaboration with City staff, a series of prototypical of buildings for residential and non-residential construction were identified that represent buildings typical of those constructed in the past five years in the City and that are considered to be typical of those that will be constructed in future years. The prototypes are shown in Table 2.

Table 3: Prototype Buildings		
Building Type	**Square Footage**	**2008 Title 24 Standard**
Single-Family Residential	1,800	Low-Rise Res
Single-Family Residential	3,600	Low-Rise Res
Multi-Family Townhouse (8-unit)	12,000	Low-Rise Res
Multi-Family Apartment (80-unit)	100,000	High-Rise Res
Hotel (80-unit)	100,000	Hotel/Motel
Small Retail	4,000	Non-Res
Medium Retail	20,000	Non-Res
Large Retail	140,000	Non-Res
Medium Office	60,000	Non-Res
Large Office	160,000	Non-Res
Tenant Improvement Non-residential lighting only	20,000	Non-Res Lighting

For each prototype building, a mix of common efficiency measures was selected for a baseline condition (achieving 2008 Title 24 compliance), and for an efficient proposed condition consistent with the values in Table 2.

The efficiency levels were established in consideration of the following: other cities reach code thresholds; maintaining consistency with statewide energy efficiency rebate programs; maintaining consistency with the approach taken by the LEED and Green Point Rated green building certification programs; having the efficiency standards be achievable for all applicable projects permitted in the City; and, input from the energy modeling consultant on the feasibility of the thresholds based on the model outputs. The design choices to meet established performance thresholds were made in consultation with the City staff with the intent of selecting construction strategies and methods typical to Mountain View.

All buildings are modeled as square in plan, except the townhouse building, which is modeled as an elongated row of units. All low-rise residential buildings are modeled with the *prescriptive* compliance baseline of 20% glazing to floor area ratio, glazing equally distributed in each cardinal orientation, except for the townhouse building which has the 20% glazing allowance distributed 45% on each of the long walls, and 5% on each of the short walls. The high-rise residential building, hotel/motel building, and the office buildings are modeled with the *prescriptive* baseline of 40% glazing to wall ratio for each of the four cardinal oriented walls. The retail buildings are modeled with a 40% glazing to wall ratio (as retail buildings often only have glazing facing the front). To represent a worst case scenario the glazing was placed on the South-facing elevation. Skylights were only modeled for the large retail building– at 5% of the roof area.

2.2 Efficiency Strategies and Cost Effectiveness Analysis

The following tables indicate the baseline building efficiency measures included to meet the 2008 Standards (column 2, "Baseline) and the energy features that were modeled to enable the proposed design to use less energy on a Time Dependant Value (TDV) basis than is required by the 2008 Standards (column 3, "Proposed"), in accordance with the Ordinance thresholds shown in Table 2.

In addition to analyzing the impact of an array of efficiency measures that may be utilized to exceed Title 24, the building calculations include utility energy costs for baseline and efficient buildings, based on the appropriate utility rate schedule for each building prototype.

Once the energy efficiency measures were identified and the annual savings determined, estimates of the incremental cost of the various energy efficiency measures were completed for each of the prototype buildings. The savings and cost results were then used to determine the simple payback and return on investment.

City of Mountain View Reach Code - BUILDING PROTOTYPE STUDIES

4/4/11

1,800 SF Single Family House 2008 Title 24 (one-story)

Measure	Baseline	Proposed (15%)	Notes	Incremental Cost Est: min	max	avg
Fenestration Area (% of CFA) [1]	20%	20%		$0	$0	$0
Fenestration (U/SHGC) [2]	.42/.42	.41/.41	insignificant savings	$0	$0	$0
Roof Insulation	R-30	R-30		$0	$0	$0
Radiant Barrier [3]	yes	yes		$0	$0	$0
Walls	R-13	R-13		$0	$0	$0
Forced Air Unit (AFUE) [4]	80%	90%	$0.10-0.15 /sf increase [5]	$180	$270	$225
Duct Insulation	6	6		$0	$0	$0
HERS Duct Leakage Test [6]	yes	yes		$0	$0	$0
Air Conditioner (SEER) [7]	13	13		$0	$0	$0
HERS AC Test	no	no		$0	$0	$0
Domestic Hot Water Heater	standard	tankless	1 unit: ($1000 or $1100)-(500) [8,16]	$500	$600	$550
Quality Insulation Installation	no	no		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$680	$870	$775
Estimated Labor Costs (40%)				$272	$348	$310
Estimated Incremental Cost of Energy Efficient Measures (total)				$952	$1,218	$1,085
Incremental Cost of Efficiency Measures (per SF)				$0.53	$0.48	$0.43

Annual Energy Cost	$ 610	$ 509
Energy Savings (annual)		$ 101
Simple Payback (years)		10.7
Net Savings/Cost (15 year)		$430
Return on Investment		40%
Annual ROI		3%
Percent of Estimated Construction Cost		0.22%

3,600 SF Single Family House 2008 Title 24 (two-story)

Measure	Baseline	Proposed (15%)	Notes	Incremental Cost Est. min	max	avg
Fenestration Area (% of CFA)	20%	20%		$0	$0	$0
Fenestration (U/SHGC)	.41/.42	.40/.40	insignificant savings	$0	$0	$0
Roof Insulation	R-30	R-30		$0	$0	$0
Radiant Barrier	yes	yes		$0	$0	$0
Walls	R-13	R-13		$0	$0	$0
Forced Air Unit (AFUE)	80%	90%	$0.10-0.15 /sf cost [5]	$360	$540	$450
Duct Insulation	6	6		$0	$0	$0
HERS Duct Leakage Test	yes	yes		$0	$0	$0
Air Conditioner (SEER)	13	14	$0.10-0.12 /sf cost [5]	$360	$432	$396
HERS AC Test	no	no		$0	$0	$0
Domestic Hot Water Heater	standard	tankless	1 unit: ($1000 or $1100)-(500) [8,16]	$500	$600	$550
Quality Insulation Installation	no	no		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$1,220	$1,572	$1,396
Estimated Labor Costs (40%)				$488	$629	$558
Estimated Incremental Cost of Energy Efficient Measures (total)				$1,708	$2,201	$1,954
Incremental Cost of Efficiency Measures (per SF)				$0.47	$0.44	$0.39

Annual Energy Cost	$ 804	$ 673
Energy Savings (annual)		$ 131
Simple Payback (years)		14.9
Net Savings (15 year)		$ 11
Return on Investment		1%
Annual ROI		0%
Percent of Estimated Construction Cost		0.27%

12,000 SF 8-Unit Townhouse (two-story)

Measure	Baseline	Proposed (15%)	Notes	Incremental Cost Est. min	max	avg
Fenestration Area (% of CFA)	20%	20%		$0	$0	$0
Fenestration (U/SHGC)	.40/.40	.39/.40	insignificant savings	$0	$0	$0
Roof Insulation	R-30	R-30		$0	$0	$0
Radiant Barrier	yes	yes		$0	$0	$0
Walls	R-13	R-13		$0	$0	$0
Forced Air Unit (AFUE)	95%	90%	$0.05-0.075 /sf savings [5]	-$600	-$900	-$750
Duct Insulation	6	6		$0	$0	$0
HERS Duct Leakage Test	yes	yes		$0	$0	$0
Air Conditioner (SEER)	16	14	$0.20-0.24 /sf savings [5]	-$2,400	-$2,880	-$2,640
HERS AC Test	no	no		$0	$0	$0
Domestic Hot Water Heater	standard	tankless	8 units: ($1000 or $1100)-(600)[8,16]	$3,200	$4,000	$3,600
Quality Insulation Installation	no	no		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$200	$220	$210
Estimated Labor Costs (40%)				$80	$88	$84
Estimated Incremental Cost of Energy Efficient Measures (total)				$280	$308	$294
Incremental Cost of Efficiency Measures (per SF)				$0.02	$0.02	$0.02

Annual Energy Cost	$ 3,227	$ 2,693
Energy Savings (annual)		$ 534
Simple Payback (years)		0.6
Net Savings (15 year)		$7,716
Return on Investment		2624%
Annual ROI		175%
Percent of Estimated Construction Cost		0.01%

100,000 SF 80-Unit Apartment Building (four-story)

Measure	Baseline	Proposed (15%)	Notes	Incremental Cost Est: min	max	avg
Fenestration Area (% of CFA)	40%	40%		$0	$0	$0
Roof Insulation	R-35	R-35		$0	$0	$0
Cool Roof	yes	yes		$0	$0	$0
Frame Walls	R-13 batt+R-5	R-13 batt+R-5		$0	$0	$0
Exposed Floor	R-8	R-8		$0	$0	$0
Fenestration (U/SHGC)	.79/.38	.47/.37	$1.30-$1.95/sf of window area [15]	$5,200	$7,800	$6,500
Skylights	no	no		$0	$0	$0
Fenestration Shading	no	no		$0	$0	$0
Space Heat Boiler	80%	90%	$0.03-0.05 /sf increase - [5]	$3,000	$5,000	$4,000
Duct Insulation	4.2	no (not exposed)	$0.10-0.15/sf savings [7]	-$10,000	-$15,000	-$12,500
DHW Water Boiler	80%	90%	$0.03-0.05 /sf increase - [5]	$3,000	$5,000	$4,000
Solar Thermal (25% offset)	no	yes		$25,000	$50,000	$37,500
Air Conditioner (SEER)	13	16		$0	$0	$0
Lighting Power	default	default		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$26,200	$52,800	$39,500
Estimated Labor Costs (40%)				$10,480	$21,120	$15,800
Estimated Incremental Cost of Energy Efficient Measures (total)				$36,680	$73,920	$55,300
Incremental Cost of Efficiency Measures (per SF)				$0.37	$0.53	$0.40

Annual Energy Cost	$ 77,367	$ 67,795
Energy Savings (annual)		$ 9,572
Simple Payback (years)		5.8
Net Savings (15 year)		$88,280
Return on Investment		160%
Annual ROI		11%
Percent of Estimated Construction Cost		0.28%

100,000 SF 80-Room Hotel Building (four-story)

Measure	Baseline	Proposed (5%)	Notes	Incremental Cost Est.		
Fenestration Area (% of CFA)	40%	40%		$0	$0	$0
Roof Insulation	R-35	R-35		$0	$0	$0
Cool Roof	yes	yes		$0	$0	$0
Frame Walls	R-13 batt	R-13 batt		$0	$0	$0
Exposed Floor	R-8	R-8		$0	$0	$0
Fenestration (U/SHGC)	.79/.40	.47/.38	$1.30-$1.95/sf of window area [15]	$5,200	$7,800	$6,500
Skylights	no	no		$0	$0	$0
Fenestration Shading	no	yes	projection: s&w facades, $100-106 /sf [13]	$8,712	$9,234	$8,973
Duct Insulation	standard	standard		$0	$0	$0
DHW Water Boiler	80%	90%	$0.03-0.05 /sf increase - [5]	$3,000	$5,000	$4,000
Solar Thermal (25% offset)	no	no		$0	$0	$0
Common Area space conditioning	13 SEER	15 SEER	$0.10-0.15 /sf cost [5]	$500	$2,500	
Room Heating and Cooling	11 EER, 2.89 COP	12 EER, 3.2 COP	$0.10-0.15 /sf cost [5]	$9,500	$14,250	$11,875
Lighting Power	default	default		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$26,912	$38,784	$31,348
Estimated Labor Costs (40%)				$10,765	$15,514	$12,539
Estimated Incremental Cost of Energy Efficient Measures (total)				$37,676	$54,298	$43,887
Incremental Cost of Efficiency Measures (per SF)				$0.38	$0.39	$0.31
Annual Energy Cost	$ 87,901	$ 83,372				
Energy Savings (annual)		$ 4,529				
Simple Payback (years)		9.7				
Net Savings (15 year)		$24,048				
Return on Investment		55%				
Annual ROI		4%				
Percent of Estimated Construction Cost		0.22%				

4,000 SF Non-Residential (Retail) Building 2008 Title 24

Measure	Baseline	Proposed (10%)	Notes	Incremental Cost Est.		
				min	max	avg
Roof Insulation	R-30	R-30		$0	$0	$0
Cool Roof (prescriptive std.)	yes	yes		$0	$0	$0
Wall Insulation (wood frame)	R-19	R-19		$0	$0	$0
Fixed Storefront: Solarban 60/Clear Low-E dual-pane, SHGC 0.38	yes	yes		$0	$0	$0
Storefront Area: 40% of south wall area	yes	yes		$0	$0	$0
Skylights: Tint dual-pane, standard metal frame	no	no		$0	$0	$0
Fenestration Shading	no	yes	projection: s&w facades, $100-106 /sf [13]	$3,896	$4,130	$4,013
Package AC units (EER/AFUE)	11.2/80%	13.0/80%	$.64-$1.06 /sf increase [5]	$2,560	$4,240	$3,400
Lighting Power: prescriptive allowance 1.5 watts/SF	1.095 W/SF	1.050 W/SF	$0.05-$0.1/sf savings [5]	-$200	-$400	-$300
Automatic Daylighting Controls [14]	yes	yes		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$6,256	$7,970	$7,113
Estimated Labor Costs (40%)				$2,502	$3,188	$2,845
Estimated Incremental Cost of Energy Efficient Measures (total)				$8,758	$11,158	$9,958
Incremental Cost of Efficiency Measures (per SF)				$2.19	$2.79	$2.49
Annual Energy Cost	$ 6,856	$ 6,259				
Energy Savings (annual)		$ 597				
Simple Payback (years)		16.7				
Net Savings (15 year)		-$1,003				
Return on Investment		-10%				
Annual ROI		-1%				
Percent of Estimated Construction Cost		0.89%				

20,000 SF Non-Residential (Retail) Building 2008 Title 24

Measure	Baseline	Proposed (10%)	Notes	Incremental Cost Est.		
				min	max	avg
Roof Insulation	R-24	R-24		$0	$0	$0
Cool Roof (prescriptive std.)	yes	yes		$0	$0	$0
Wall Insulation (metal frame)	R-19 plus R-5	R-19 plus R-5		$0	$0	$0
Fixed Storefront: Solarban 60/Clear Low-E dual-pane, SHGC 0.38	yes	yes		$0	$0	$0
Storefront Area: 40% of south wall area	yes	yes		$0	$0	$0
Skylights: Tint dual-pane, standard metal frame	no	no		$0	$0	$0
Fenestration Shading	no	yes	projection, s&w facades: $100-106 /sf [13]	$5,826	$6,175	$6,001
Package AC units (EER/AFUE)	11.2/80%	13.0/80%	$.64-$1.06 /sf increase [5]	$12,800	$21,200	$17,000
Lighting Power: prescriptive allowance 1.5 watts/SF	1.10 W/SF	1.025 W/SF	$0.05-$0.1/sf savings [5]	-$1,000	-$2,000	-$1,500
Automatic Daylighting Controls [14]	yes	yes		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$17,626	$25,375	$21,501
Estimated Labor Costs (40%)				$7,050	$10,150	$8,600
Estimated Incremental Cost of Energy Efficient Measures (total)				$24,676	$35,526	$30,101
Incremental Cost of Efficiency Measures (per SF)				$1.23	$1.78	$1.51
Annual Energy Cost	$ 27,858	$ 25,385				
Energy Savings (annual)		$ 2,473				
Simple Payback (years)		12.2				
Net Savings (15 year)		$6,994				
Return on Investment		23%				
Annual ROI		2%				
Percent of Estimated Construction Cost		0.75%				

140,000 SF Non-Residential (Retail) Building 2008 Title 24

Measure	Baseline	Proposed (10%)	Notes	Incremental Cost Est.		
				min	max	avg
Roof Insulation	R-30	R-30		$0	$0	$0
Cool Roof (prescriptive std.)	yes	yes		$0	$0	$0
CMU Walls	No furring	No furring		$0	$0	$0
Fixed Storefront: Solarban 60/Clear Low-E dual-pane, SHGC 0.38	yes	yes		$0	$0	$0
Storefront Area: 40% of south wall area	yes	yes		$0	$0	$0
Skylights: Tint dual-pane, standard metal frame	1.11/0.57	.82/.49	$2.50-$3.75/sf of skylight area (3,500 sf.) [16]	$8,750	$13,125	$10,938
Fenestration Shading	no	yes	projection, s&w facades: $100-106 /sf [13]	$9,476	$10,045	$9,761
Package AC units (EER/AFUE)	11.2/80%	13.0/80%	$.64-$1.06 /sf increase [5]	$89,600	$148,400	$119,000
Lighting Power: prescriptive allowance 1.5 watts/SF	.910 W/SF	.763 W/SF	$0.05-$0.1/sf savings [5]	-$7,000	-$14,000	-$10,500
Automatic Daylighting Controls [14]	yes	yes		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$100,826	$157,570	$129,198
Estimated Labor Costs (40%)				$40,331	$63,028	$51,679
Estimated Incremental Cost of Energy Efficient Measures (total)				$141,157	$220,598	$180,877
Incremental Cost of Efficiency Measures (per SF)				$1.01	$1.58	$1.29
Annual Energy Cost	$ 179,306	$ 160,675				
Energy Savings (annual)		$ 18,631				
Simple Payback (years)		9.7				
Net Savings (15 year)		$98,588				
Return on Investment		55%				
Annual ROI		4%				
Percent of Estimated Construction Cost		0.65%				

City of Mountain View Reach Code - BUILDING PROTOTYPE STUDIES 4/4/11

60,000 SF Non-Residential (Office) Building 2008 Title 24

Measure	Baseline	Proposed (10%)	Notes	Incremental Cost Est.		
				min	max	avg
Roof Insulation	R-19	R-30	$0.50-$1.00/sq.ft. of roof area [16]	$15,000	$30,000	$22,500
Cool Roof (prescriptive std.)	yes	yes		$0	$0	$0
Walls Insulation (wood frame)	R-19	R-19		$0	$0	$0
Fenestration	.77/.41	.77/.27	$1.30-$1.95/sf of window area [15]	$1,274	$1,911	$1,592
Skylights: Tint dual-pane, standard metal frame	no	no		$0	$0	$0
Fenestration Shading	no	yes	projection, s&w sides $100-106 /sf [13]	$6,260	$6,636	$6,448
Package AC units (EER/AFUE)	11.2/80%	13.0/80%	$.64-$1.06 /sf increase [5]	$38,400	$63,600	$51,000
Lighting Power: prescriptive allowance 1.5 watts/SF	.83 W/SF	.69 W/SF	$0.05-$0.1/sf savings [5]	-$3,000	-$6,000	-$4,500
Automatic Daylighting Controls [14]	yes	yes		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$57,934	$96,147	$77,040
Estimated Labor Costs (40%)				$23,174	$38,459	$30,816
Estimated Incremental Cost of Energy Efficient Measures (total)				$81,108	$134,605	**$107,856**
Incremental Cost of Efficiency Measures (per SF)				$1.35	$2.24	$1.80

Annual Energy Cost	$ 63,988	$ 57,879
Energy Savings (annual)		$ 6,109
Simple Payback (years)		17.7
Net Savings (15 year)		-$16,221
Return on Investment		-15%
Annual ROI		-1%
Percent of Estimated Construction Cost		0.90%

160,000 SF Non-Residential (Office) Building 2008 Title 24

Measure	Baseline	Proposed (10%)	Notes	Incremental Cost Est.		
				min	max	avg
Roof Insulation	R-20	R-30	$0.50-$1.00/sq.ft. of roof area [16]	$20,000	$40,000	$30,000
Cool Roof (prescriptive std.)	yes	yes		$0	$0	$0
Wall Insulation (metal frame)	R-19	R-19		$0	$0	$0
Fenestration	.77/.41	.77/.38	$1.30-$1.95/sf of window area [15]	$2,080	$3,120	$2,600
Skylights: Tint dual-pane, standard metal frame	no	no		$0	$0	$0
Fenestration Shading	no	no		$0	$0	$0
Package AC units (EER/AFUE)	11.2/80%	85% boiler, .95 kW/ton chiller		$100,000	$150,000	$125,000
Lighting Power: prescriptive allowance 1.5 watts/SF	.86 W/SF	.80 W/SF	$0.05-$0.1/sf savings [5]	-$8,000	-$16,000	-$12,000
Automatic Daylighting Controls [14]	yes	yes		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$114,080	$177,120	$145,600
Estimated Labor Costs (40%)				$45,632	$70,848	$58,240
Estimated Incremental Cost of Energy Efficient Measures (total)				$159,712	$247,968	**$203,840**
Incremental Cost of Efficiency Measures (per SF)				$1.00	$1.55	$1.27

Annual Energy Cost	$ 168,952	$ 137,607
Energy Savings (annual)		$ 31,345
Simple Payback (years)		6.5
Net Savings (15 year)		$266,335
Return on Investment		131%
Annual ROI		9%
Percent of Estimated Construction Cost		0.64%

60,000 SF Non-Residential (Office) Building - Lighting Only 2008 Title 24

Measure	Baseline	Proposed (10%)	Notes	Incremental Cost Est.		
				min	max	avg
Lighting Power: prescriptive allowance watts/SF	0.849	0.764	$0.05-$0.1/sf savings [5]	-$3,000	-$6,000	-$4,500
Lamp Types Modeled	F32 T8	F28 T5		$0	$0	$0
Number of Fixtures	548	509	$20 - $25/fixture savings	-$780	-$975	-$878
Incremental Construction Cost of Efficiency Measures				-$3,780	-$6,975	-$5,378
Estimated Labor Costs (40%)				-$1,512	-$2,790	-$2,151
Estimated Incremental Cost of Energy Efficient Measures (total)				-$5,292	-$9,765	**-$7,529**
Incremental Cost of Efficiency Measures (per SF)				-$0.09	-$0.16	-$0.13

Annual Energy Cost	$ 60,626	$ 58,921
Energy Savings (annual)		$ 1,705
Simple Payback (years)		(4.4)
Net Savings (15 year)		$33,104
Return on Investment		-440%
Annual ROI		-29%
Percent of Estimated Construction Cost		-0.06%

Notes:

1. CFA = conditioned floor area
2. Notes on Fenestration:
   U-Value = The capacity of an insulating material to prevent heat from escaping.
   SHGC = Solar Heat Gain Coefficient; how well a material blocks heat caused by sunlight.
   Single-family residence fenestration distribution: 50% on South; remaining area equally distributed on N, E and W. Small variances in fenestration U-factor were used to fine-tune energy budget to goal.
3. Radiant Barrier: This is a residential prescriptive requirement in warm climate zones. RB is not a nonresidential building efficiency credit.
4. FAU = Forced Air Unit, a typical central gas furnace. Efficiency is measured in AFUE.
5. Per quote from general contractor
6. Residential duct insulation: R-4.2 is the prescriptive requirement in Climate Zone
7. AC = Air Conditioner. For most homes, this is the outdoor condenser which generates chilled fluid that circulates to the FAU, using the FAU's fan and ducts to transmit cool air. Efficiency is measured in SEER. Duct insulation is approximately $.015/sq.ft.
   http://www.google.com/products/catalog?q=cost+of+duct+insulation&oe=utf-8&rls=org.mozilla:en-US:official&client=firefox-a&um=1&ie=UTF-8&cid=15167740227903644O&ei=5GorTeaXA5SosAPVmJWSBg&sa=X&oi=product_catalog_result&ct=result&resnum=4&ved=0CDUQ8wIwAw#
8. Domestic water heater notes: "Standard" water heating system is one natural gas storage type (per dwelling unit), 50 gallons maximum, no recirculation. The modeled Noritz tankless water heater is model NR71. This gas-fired model was selected because it is of moderate capacity, efficiency, and price, among tankless makes and models. This model has an EF of .82. New condensing tankless water heaters have

EF's in the 90% range. Quantity of tankless water heaters has no affect on the energy budget. The quantity listed is simply an estimate based on house size. Kitchen hot water pipe insulation: this is a residential prescriptive standard, modeled on all prototype buildings. Quotes for costs differences between "baseline" and "proposed" cases from a number of sources.
9. Airflow/Fan Power: These are two separate efficiency measures for which credit may be taken. The Fan Power credit is only available when the Airflow credit is also exercised. Because these individual credits are relatively small, for simplicity these
two credits were always modeled as a pair. Compliance information about these, and other efficiency credits, may be found in the '08 Residential Compliance Manual.
10. Per quote from HERS rater
11. Per quote from window installer
12. Per quote from HVAC distributor
13. Per quote from awning manufacturer and Lowe's web site
14. Automatic Daylighting Controls: prescriptive requirement at skylit daylit area (assumes 15' ceiling height minimum). Model interior AC zone lighting power at 1.357 watts/SF to simulate control credit.
15. Windows are roughly 10% of construction costs. On average, windows with low-E coatings will be about 10-15% more expensive than a comparable window.
http://hubpages.com/hub/low_solar_gain_windows. Window cost assume $13/sq.ft. of window.
16. Costs per Home Depot web site.
17. From Home Depot web site, assume 2x4 framing/furring and R-12 fiberglass batt

3.0 Cost-Effectiveness Study Results

Table 4 below summarizes the payback period in years and 15-year return on investment for the energy efficiency strategies required for the prototype buildings. Payback is a calculation of time, in years, that is required for an investment to "pay for itself" or be returned to the investor. Shorter payback periods are preferable to longer payback periods. Return on investment is a performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. A positive return on investment generally connotes that the investment will return more than the value of the initial investment, while a negative ROI indicates that the value of the initial investment will not returned within the investment period.

Table 4: Cost-Benefit Analysis Results

Building Type	Annual Savings	Upgrade Incremental Cost	Simple Payback (years)	15-Year ROI
Single-Family Residential (1,800 sf)	$101	$1,085	10.7	40%
Single-Family Residential (3,600 sf)	$131	$1,954	14.9	1%
Multi-Family Townhouse (8-unit)	$534	$294	.6	2624%
Multi-Family Apartment (80-unit)	$9,572	$55,300	5.8	160%
Hotel (80-unit)	$4,529	$34,787	7.7	95%
Retail (4,000 sf)	$597	$9,958	16.7	-10%
Retail (20,000 sf)	$2,473	$30,101	12.2	23%
Retail (140,000 sf)	$18,631	$180,877	9.7	98%
Office (60,000 sf)	$8,691	$107,856	17.7	-15%
Office (160,000 sf)	$31,345	$212,240	6.8	122%
Tenant Improvement Non-residential lighting only	$1,705	$1,922	1.1	1231%

The proposed Mountain View reach code cost-benefit analysis shows that all of the prototype buildings except the small retail and the medium size office have a payback of less than 15 years and a positive return on investment over a 15-year period. For these two projects, with 16.7 and 17.7-year simple paybacks the return on investment is negative when using a 15-year analysis period. These results are well within the 30-year range recommended by the California Energy Commission and are consistent with the general objective of the energy investment being returned with the average life of the materials, systems, and equipment.

4.0 Implementation Plan

The implementation of the City of Mountain View Energy Ordinance for low-rise residential buildings is a simple verification that the performance CF-1R form demonstrates that the proposed building exceeds 2008 Standards by at least 15% or the applicable percentage specified based on the dwelling square footage.

For high-rise residential buildings, the ordinance allows the deduction of the "static loads" for lighting and plug load, prior to conducting the percentage savings calculation. For nonresidential buildings, the PERF-1 is checked to verify that the TDV energy of the proposed building is at least at the required percentage reduction from the standard design TDV energy shown in Table 2.

The City of Mountain plan review will involve:

(a) Verifying the occupancy type(s) and scope of work to determine whether and how the ordinance applies;

(b) Checking the drawings, specifications, and Title 24 documentation to ensure compliance under the 2008 Building Energy Efficiency Standards; and,

(c) Checking any additional drawings or specifications or compliance forms needed to demonstrate compliance with the Ordinance.

Field inspection will be identical to working with the 2008 Standards or subsequently adopted state energy standards; whichever is applicable at the time of the building permit application.

COUNCIL REPORT

CITY OF MOUNTAIN VIEW

AGENDA: March 22, 2011 **5.1**

CATEGORY: Public Hearing

DEPT.: Community Development

TITLE: Mountain View Green Building Code

RECOMMENDATION

1. Make the required findings for amendments to the California Green Building Code.

2. Introduce AN ORDINANCE AMENDING CHAPTER 8, ARTICLE I, DIVISION III, OF THE MOUNTAIN VIEW CITY CODE, RELATING TO THE ADOPTION OF THE 2010 CALIFORNIA GREEN BUILDING STANDARDS CODE TO INCLUDE LOCAL GREEN BUILDING REQUIREMENTS (Attachment 5 to the staff report) to be read in title only, further reading waived.

FISCAL IMPACT

The fiscal impact to the City from this ordinance will be minimal. Funding for staff training has already been budgeted for this year and any additional training can be accomplished from the Community Development Department's existing training budget.

INTRODUCTION

The proposed Mountain View Green Building Code (MVGBC) amends the State-mandated California Green Building Code (CalGreen) to include local green building standards and requirements for private development. The proposed MVGBC applies green building requirements per building type and threshold to new construction, residential additions and commercial/industrial tenant improvements and includes energy efficiency standards that exceed the 2008 Building Energy Efficiency Standards.

The process for amending CalGreen includes: (1) approval by the City Council; (2) submitting a cost-effectiveness study to the California Energy Commission (CEC) demonstrating that the proposed energy requirements are cost-effective; and (3) filing the amendments with the California Building Standards Commission (BSC). Approval from the CEC takes approximately three months and must be obtained before the amendments become effective. No approval is necessary from the BSC.

This report summarizes how the MVGBC has been developed, describes its major elements and discusses how the ordinance affects the associated costs and returns on investment for private development.

APPROVED BY THE MOUNTAIN VIEW CITY COUNCIL ON 3/22/11

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BACKGROUND

City Council Study Session—September 14, 2010

The purpose of the Study Session was to provide an update on the MVGBC process and receive feedback on the overall proposed approach. At this meeting, staff presented an overview of green building concepts and a framework for the MVGBC. This framework was based on the Santa Clara County Cities Association Green Building Collaborative's Phase II Recommendation (see Attachment 1—Phase II Recommendations), which is a reference guide for applying third-party green building standards to various building types and is intended to provide consistency of private green building standards within the County. Staff also developed the framework from input from the MVGBC's Technical Advisory Group and from internal staff criteria. The Study Session staff report summarizes the proposed MVGBC development process and staff's recommended approach to the requirements, verification process and incentives (see Attachment 2—City Council Study Session Staff Report, September 14, 2010).

At this meeting, Councilmembers asked for additional information on the following topics (see Attachment 3—Study Session Minutes, September 14, 2010); staff responses are included in italics:

- Existing Apartments: How can the MVGBC encourage owners of existing apartment buildings to make green building improvements?

  Staff and the TAG members think that outreach targeting multiple-family property owners with information on rebate programs for water and energy reduction and the use of green building products would be beneficial. However, additional requirements targeting existing apartments would not be effective. Typically, apartment building improvements involve minor upgrades to maintain the building; i.e., water heater and furnace replacements, reroofing, general maintenance and other minor repairs as needed. The Building Division currently enforces the State Building Code's minimum mandatory energy efficiency requirements when apartment units are remodeled or equipment is replaced. Typically, any landscaping modifications are captured by the Water Conservation in Landscaping Ordinance. Additional green building requirements focused on interior improvements such as finishes and low-water-use fixtures would likely deter property owners from the permit process and create enforcement issues. Therefore, staff does not recommend additional green building requirements for apartment buildings.

- Residential Remodels: Are there any improvements that can be required for residential remodels?

  The Building Division enforces State-mandated minimum energy efficiency standards when homes are remodeled or equipment replaced. By complying with current codes, the energy

efficiency of the existing house increases incrementally over time. Staff is concerned that adding green building or energy efficiency requirements for minor projects that are above and beyond the minimum State code might cause owners to avoid the permitting process due to added costs. Local building departments around the State are struggling with the lack of permits being obtained for equipment replacements like water heaters, furnaces and air conditioners. Staff worked with consultants to determine a threshold where energy improvements are reasonable, technically feasible and do not expand the proposed scope of work.

- Costs: Can staff provide additional cost information for green building improvements for private development?

  Cost information has been provided under the Costs to Private Development Section of this report.

- Training: Will staff receive green building-related training?

  Green building-related training for staff will be provided with $5,000 from the Fiscal Year 2009-10 budget earmarked for training. Staff is still developing the scope for this training, but it will likely include both introductory and advanced green building concepts relevant to Planning, Building and Public Works staff. Continual staff training can be accomplished internally and within the Community Development Department's existing training budget.

Development of the MVGBC: Public Outreach and Comments

After the Council Study Session, staff drafted the proposed MVGBC and performed additional outreach.

On November 5, 2010, two outreach meetings were held for contractors specializing in smaller building projects such as residential remodels. The purpose of these meetings was to receive input on how the proposed MVGBC might impact their business and their ability to comply with the requirements. The 11 attendees did not have major comments or issues with the proposed MVGBC.

On December 8, 2010, staff met with MVGBC Technical Advisory Group (TAG) members to discuss the draft ordinance. A main discussion topic was staff's proposed "meet the intent" of a rating system approach to verification. Some members questioned why formal third-party certification was not being required and felt that the formal certification process ensures consistent review and reliability that the standards are achieved. They noted that "meeting the intent" is not a meaningful documentation of performance. Other members commented that the recommended approach of "meeting the intent" of the rating system is a good first step to improved green building standards.

Other outreach efforts included staff discussions on the proposed MVGBC standards with applicants currently in the City's development review process; posting information on the City's web site and in the Community Development Department; and publishing an announcement in *The View* newsletter.

The Silicon Valley Leadership Group (SVLG) reviewed the proposed MVGBC and has submitted a letter of support (see Attachment 4—Letter from SVLG). The SVLG helped form the Santa Clara County Cities Association's Green Building Collaborative, which has provided direction for cities to consider as they develop their own green building ordinances.

ANALYSIS

MVGBC: Green Building Requirements

The proposed MVGBC amends the State's CalGreen Code to administer local green building standards and requirements for new construction, residential additions and commercial/ industrial tenant improvements for private development. The amendments also clarify existing mandatory CalGreen requirements to be consistent with existing City regulations (see Attachment 5—Ordinance—MVGBC Amendments).

The proposed MVGBC references third-party rating systems LEED®[1] (Leadership in Energy and Environmental Design) and GPR (GreenPoint Rated), and requires affected projects to attain a specific amount of points based on an itemized checklist of green building measures from the respective rating system. As discussed at the Study Session, these rating systems were selected because they are commonly used, marketable and many developers already have staff trained in these systems. The project thresholds and point requirements recommended by staff are based on our current development review process, current and foreseeable project types, TAG input and the Phase II recommendations.

Additionally, projects regulated by the proposed MVGBC will be required to exceed the 2008 Building Energy Efficiency Standards and comply with the mandatory requirements of the State's 2010 CalGreen Code. These requirements correspond with points in the LEED® and GPR systems and work towards meeting the respective minimum point totals. The proposed energy requirements are based on construction feasibility and cost-effectiveness as identified by our consultants and on third-party incentive or rebate programs that require specific energy efficiency above the 2008 Standard.

The proposed MVGBC also includes a list of prescriptive requirements for residential additions and nonresidential tenant improvements that focus on energy reduction, water reduction and the use of low VOC products. Staff has proposed to focus on these requirements for additions and tenant improvements because they do not expand the

[1] LEED is a trademark owned by the U.S. Green Building Council.

proposed scope of work, are cost-effective or cost-neutral, reduce the use of resources, or improve indoor air quality.

The proposed MVGBC applies energy and green building requirements per building type and threshold, as shown in the table below:

PROPOSED MANDATORY GREEN BUILDING REQUIREMENTS

Project Type	Energy Requirement[1]	Green Building Standard and Requirement
RESIDENTIAL PROJECTS (SINGLE-FAMILY, MULTI-FAMILY)		
New Construction		
New Residential < 5 units	15% above Title 24, Part 6	Mandatory CalGreen Requirements
New Residential ≥ 5 units	15% above Title 24, Part 6[2]	Meet the intent of 70 GreenPoint Rated points and Mandatory CalGreen Requirements
Additions[3] (applies to conditioned space only)		
Additions ≥1,000 square feet	10% above Title 24, Part 6	Mandatory CalGreen Requirements: Sec. 4.303 (Indoor Water Use) Sec. 4.504 (Pollutant Control)
MIXED-USE PROJECTS		
New Construction		
New Residential < 5 units and New Nonresidential Use < 25,000 square feet	15% above Title 24, Part 6 for Residential; 10% above Title 24, Part 6 for Nonresidential	Residential and Nonresidential criteria as applicable to each component of the project.
New Residential ≥ 5 units and New Nonresidential Use ≥25,000 square feet	15% above Title 24, Part 6 for Residential; 10% above Title 24, Part 6 for Nonresidential	
NONRESIDENTIAL PROJECTS (INCLUDE HOTEL[2])		
New Construction[4]		
New Nonresidential Buildings < 5,000 square feet	10% above Title 24, Part 6	Mandatory CalGreen Requirements
New Nonresidential Buildings 5,000 to 25,000 square feet	10% above Title 24, Part 6	Meet the intent of LEED® Certified and Mandatory CalGreen Requirements
New Nonresidential Buildings > 25,000 square feet	10% above Title 24, Part 6	Meet the intent of LEED® Silver and Mandatory CalGreen Requirements

Tenant Improvements		
Tenant Improvements ≥15,000 square feet with a $100,000 construction valuation where the scope of work includes any of the following: (1) requires a Title 24 energy calculation; (2) the replacement or addition of any plumbing fixtures and/or interior finish materials (i.e., carpeting, paint, etc.).	10% above Title 24, Part 6 for Lighting Only	Mandatory CalGreen Requirements: Section 5.303 (Indoor Water Use) Section 5.504 (Pollutant Control)

1. On-site generation of renewable energy in an amount equivalent to the required reductions may be used as an alternate means to meet the local energy requirement. Energy production shall be determined through use of the CECPV Calculator provided by the California Energy Commission.

2. For high-rise residential buildings (over three stories in height) and hotels, plug and lighting energies can be deducted from both the standard and proposed building when conducting the Title 24, Part 6 energy calculations.

3. Residential additions that include interior alterations may use the total area (in square feet) of improvements in the Title 24 energy calculations and may account for energy efficiency upgrades that already exist in the structure, assuming the upgrades comply with the 2008 Building Energy Efficiency Standards.

4. New shell construction with minimally installed systems are required to attain the following energy requirements above Title 24, Part 6: Cold Shell (no HVAC and no lighting)—5% or Warm Shell (includes HVAC and no lighting)—7%.

Verification

The proposed MVGBC does not require formal certification from a third-party organization. Instead, projects will be required to be designed and constructed to "meet the intent" of a third-party rating system. This approach aims to achieve environmental benefits while minimizing the administrative costs, enforcement issues and project review times associated with formal certification. This approach is consistent with most cities' green building ordinance policies and is one of the verification methods specified in the Phase II recommendations.

The MVGBC can be enforced and administered within our current process. For residential additions and nonresidential tenant improvements, the applicant can demonstrate compliance by incorporating the requirements into the building permit submittal documentation. For new construction projects, this process will require a green building professional with an industry license submitting the green building checklist, project construction documentation and specifications demonstrating compliance, and a letter describing that the project has been designed to meet requirements of the ordinance. Trained staff members will review the documentation for compliance. The City currently utilizes plan check consulting services with personnel already trained in LEED® and GPR.

Incentives

Incentives are not included within the proposed MVGBC. In most instances, incentives such as expedited processing or cost adjustments would not result in meaningful incentives for a developer. However, the General Plan update process has identified draft policy language that incentivizes highly sustainable development. To implement this, a proposed General Plan action item could be used to develop a range of highly sustainable performance measures for the North Bayshore and East Whisman change areas. These measures could be required for new development projects that propose to exceed a certain "base" floor area ratio.

Costs to Private Development: Cost-Effectiveness Study and Incremental Cost Analysis

Staff worked with Global Green USA, a green building consultant, and Gary Farber & Associates, an energy consultant, to conduct a Cost-Effectiveness Analysis to analyze the additional costs associated with improved energy performance for prototypical building types (see Attachment 6—Cost-Effectiveness Analysis). The prototypical building types are based on analysis of existing building types and anticipated future development types within the City. The Cost-Effectiveness Analysis demonstrates that all of the prototypical buildings analyzed in the study have a payback period of less than 15 years and a positive return on investment over a 15-year period, except for small retail and medium-size office buildings, which have a 16.7- and 17.7-year payback period, respectively. In California, the CEC identifies an acceptable payback period as 30 years or less. In February 2011, staff submitted the draft MVGBC to the CEC and received informal feedback that the energy requirements and Cost-Effectiveness Analysis meet their criteria.

Global Green USA also prepared a Green Building Incremental Measure and Cost Analysis to better understand the types of improvements and corresponding costs that would be necessary for projects to meet the proposed MVGBC (see Attachment 7—Green Building Incremental Measure and Cost Analysis). The projects reviewed include 220 View Street, a 22-unit condominium development; and 331 Fairchild Drive, an 87,000 square foot commercial office development. These projects were chosen because they are representative projects designed without the use of green building rating systems, and their building permit plans were available for review. The analysis shows that these projects could have been designed and constructed to meet the proposed MVGBC with a 1 percent construction cost increase. Importantly, some of the improvements that were calculated for the projects to meet the MVGBC are either already City policy, part of the State-mandated CalGreen Code or common trends found in new development in Mountain View.

STATEMENT OF FINDINGS

CalGreen Code Section 101.7.1 provides that for a city to make necessary changes to the CalGreen Code, it must make findings for each amendment, addition or deletion based upon climactic, topographical or geological conditions, including local environmental conditions as

established by the city. Staff recommends that the City find that the amendments to CalGreen are necessary due the following local environmental conditions:

1. Climate Change: The City finds that climate change is a global and local environmental condition. On November 3, 2009, in response to climate change, the City Council approved community-wide Greenhouse Gas Reduction Targets which align with the provisions of California Assembly Bill 32 (Global Warming Solutions Act). The development of the MVGBC is identified in the Mountain View Environmental Sustainability Action Plan (ESAP) as an action to reduce greenhouse gases. The proposed MVGBC amendments include provisions that administer and improve energy efficiency, preserve natural resources, encourage the use of sustainable materials, manage waste and reduce other direct and indirect causes of climate change.

2. Limited Water Supply: The City finds that limited water supply is a local environmental condition. On October 31, 2008, the San Francisco Public Utilities Commission (SFPUC) made a unilateral decision to limit the water supply available from the San Francisco Regional Water System to the City of San Francisco and to the Bay Area Water Supply and Conservation Agency (BAWSCA) member agencies until at least 2018. The proposed MVGBC amendments include provisions that administer and improve outdoor and indoor water reduction.

3. Existing City Policy Addressing Local Environmental Conditions: The City finds that, as a result of local environmental conditions, other existing City policies have been incorporated into CalGreen by reference, such as storm water management and waste management.

ENVIRONMENTAL REVIEW

This ordinance is not subject to the California Environmental Quality Act (CEQA) pursuant to Section 15061(b)(1) as the project is statutorily exempt from CEQA under Section 15308, as it is an action by a regulatory agency for the protection of the environment and as it assures the maintenance, restoration, enhancement or protection of the environment where the regulatory process involves procedures for protection of the environment.

CONCLUSION

The proposed MVGBC was formed with key input from the Technical Advisory Group and meets the overall goal of the Phase II recommendations for maintaining regional consistency of green building standards across local jurisdictions within Santa Clara County. Staff believes that the MVGBC is enforceable, environmentally effective and not overly burdensome to the development community.

NEXT STEPS

If approved by the City Council, the next steps in this process include submitting a formal application to the CEC with the cost-effectiveness study and filing findings with the BSC for the proposed amendments. The improved energy requirements and Cost-Effectiveness Analysis must be approved by the CEC prior to the amendments becoming effective, and the approval process takes 45 to 90 days. Once the CEC approves the application, staff will return to the City Council for a second reading. Staff estimates the second reading will occur in June 2011 with a 30-day effective date following the second reading. No approval is necessary from the BSC.

OPTIONS

1. Modify any section or language within the proposed MVGBC ordinance.
2. Do not approve the proposed MVGBC ordinance and findings to the BSC.

PUBLIC NOTICING—Agenda posting.

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ND-LH-AG/5/CAM/896-03-22-11M-E^

Attachments:
1. Phase II Recommendations
2. City Council Study Session Staff Report—September 14, 2010
3. Study Session Minutes—September 14, 2010
4. Letter from SVLG
5. Ordinance—MVGBC Amendments
6. Cost-Effectiveness Analysis
7. Green Building Incremental Measure and Cost Analysis

ATTACHMENTS ON FILE IN THE COMMUNITY DEVELOPMENT DEPARTMENT OR ON THE CITY'S WEBSITE AT:
WWW.MOUNTAINVIEW.GOV

Green Building Collaborative
Santa Clara County Cities Association
Overview—Phase II

Overview
The Green Building Collaborative, (GBC), originated in June 2007 per the direction of the Santa Clara County Cities Association. In partnership with the Silicon Valley Leadership Group, its goal was to help meet our climate change goals by developing green building policy that would:

- Be easy to navigate and consistent across jurisdictions
- Appropriately nudge the public and private sector to more quickly adopt green building practices

Since that time, the Green Building Collaborative has met regularly, determining early on to work towards the following:

1) Phase I: Near term, easy steps in green building policy. (Done!)
2) Phase II: Moderate level compliance standards. (June 11th Cities Association meeting expected action to adopt Phase II.)
3) Phase III: More stringent standards based on an evaluation of Phase II

Cities who have regularly contributed to the Green Building Collaborative through staff, council or planning commissioner participation include Cupertino, Campbell, Mountain View, Sunnyvale, Santa Clara, San Jose, Palo Alto, Saratoga and Morgan Hill.

Progress
Last year, the Cities Association adopted Phase I: Near Term Green Building Policy Recommendations. Those recommendations, or something tougher in some cases, were subsequently adopted by all cities/towns and the County, making Santa Clara County the only County to have all jurisdictions moving in the same direction on green building policy.

The past seven months have been spent developing Phase II, the phase meant to transition cities from entry-level green building policy to something slightly ratcheted up, yet not out of step with the evolution and capacity of the green building industry. In March, the Green Building Collaborative gave a progress report to the Cities Association Board. At that meeting, the Cities Association conceptually agreed with the Phase II recommendations and asked for more information on two specific items related to cost and verification. The following document is intended to help Cities Association Board Members understand the key issues that the Green Building Collaborative has grappled with. It focuses on the following:

- Green Building Standards and Rating Systems: A quick overview of green building standards/rating systems.
- Phase II Chart Explanation: A brief explanation of the chart outlining Phase II recommendations
- Verification: Various methods cities decide if an applicant has met the green building requirements.
- Costs: An overview of costs associated with green building
- General Principles: The reasoning and rationale behind some of the major Phase II conclusions

Green Rating Systems

There are two major green building rating systems in use in California - Build It Green's (BIG) GreenPoint Rated and the U.S. Green Building Council's (USGBC) LEED® [1]. Both BIG and USGBC are not-for-profit 501c organizations. The USGBC is a national ratings system that focuses on all building types, while BIG has a California focus and specializes in homes. Both rating systems are based on a series of prerequisites, green building features or strategies required for every project, and a minimum amount of optional points that can be claimed for additional green building features or strategies. With the adoption of Phase I: Near Term Green Building Policy Recommendations, every city accepted the two major sets of standards. For GPR, 50 points is the minimum number needed in order to be green. For LEED, different point amounts correlate to specific LEED levels of green: Certified, Silver, Gold or Platinum. Both systems have different sets of rating systems tailored to construction types, listed below.

Table 1. Rating Systems

Build It Green	USGBC
GPR New Home Construction	LEED For Homes
GPR Home Remodeling	LEED Core & Shell
GPR Multifamily	LEED New Construction
	LEED Commercial Interiors
	LEED Schools, Retail & Health Care
	LEED for Existing Buildings

Phase II Chart Explanation

The Phase II Policy Recommendations Chart is intended to be a quick reference guide that clearly lays out what green threshold applies to what building type. It is broken down into two main sections, residential and nonresidential. Within those categories, it is further broken down into subsets based on building size and valuation.

Verification

Many cities and counties have been working to adopt green building policies and ordinances. However, it is a new area of policy and as a result, cities and counties are working through some tricky questions. This section focuses on one of those tricky elements—the process for determining if an applicant has met the jurisdiction's green building requirements.

The Collaborative has deliberated in great length on this subject, discussed the pros and cons of different approaches and concluded that it is best to put forward two methods of addressing verification and encourage cities and counties to choose the path that works best for them.

As mentioned above, there are two major rating systems, GPR and LEED, both of which have different methods for administering their programs. An assessment of verification methods performed by the County of Santa Clara found that there are several methods that cities use:

[1] The U.S. Green Building Council's green building rating system is called Leadership in Energy and Environmental Design (LEED). There are versions tailored for commercial new construction, tenant improvement, existing buildings, homes (focused mainly on larger development projects) and neighborhoods, as well as others in development.

Table 2. Description of Verification Categories

USGBC	Certificate from USGBC required
BIG	Certificate from BIG required
AP	Sign-off by certified GreenPoint Rater LEED Accredited Professional required
Internal	Verified by city
Third-Party	Qualified 3rd party other than LEED AP
Self-verify	Applicant provides assurance

Examples: Rohnert Park, & San Jose
Rohnert Park: Rohnert Park is one of the very first cities to enact a green building ordinance that covers the private sector – both residential and non-residential. As such, they have been on the cutting edge of working through issues around verification and enforcement. Rohnert Park contracts with a third party for their plan check function and has added green building verification to the responsibilities of that contracted party. Rohnert Park uses the LEED rating system for non-residential projects and GreenPoint Rated for residential projects. For most commercial projects, an applicant seeking to meet the city's green building requirements is not required to achieve accreditation from USGBC but submits the required paperwork to the City. The City, through its plan check consultant then verifies that, for all intent and purposes, the building meets the LEED requirements. However, that does not make the building a LEED certified building. Only USGBC is authorized to award that designation.

San Jose: San Jose recently passed a private sector green building policy for new construction that requires applicants building commercial developments over a certain size to obtain certification through the USGBC at the Silver level and residential projects of a certain size to be GreenPoint Rated or LEED certified. The city does not intend to play a role in "certifying" but instead will rely upon the verification processes established by USGBC or BIG. The way they intend to enforce this is by requiring an upfront deposit that will be returned once proof of certification from USGBC or BIG is provided.

There reasons these two types of approaches evolved are listed below:

"Internal" Verification such as Rohnert Park:

1. Some cities *want* to do the verification and have the resources to do so.
2. The green building industry is rapidly evolving. A mandatory approach with a select rating system should be approached with caution until any potential kinks are worked out, especially regarding capacity and communication with the certification entity.
3. Because private, third party rating systems are not accountable to local governments, there are concerns about granting so much "power" to such organizations.
4. There is a concern that verification can be costly and bureaucratic.

USGBC Verification such as San Jose

1. Local governments do not have the capacity, expertise or resources to do a good job at verifying whether a building is green or not.
2. Third party verification assures there is no conflict of interest and that rigorous green standards are being met.

Verification Recommendation
After debating the good and bad elements of these different approaches, the Green Building Collaborative decided that both approaches are acceptable. It is important, as stated above, for local jurisdictions to understand their capacities and tailor their verification system accordingly.

1. Private, third party certification via BIG/USGBC
2. In-house verification that does not require certification by USGBC or BIG

Regional Verification
As stated above, the Cities Association during the March meeting requested information on the viability of pursuing a regional approach to verification. Because of the difficulty of putting something like this together, the Green Building Collaborative, early on, did not consider it as a viable option for Phase II. The GBC has been focused on policy and implementation options that are viable in the short term and a regional approach, although it has merit, is beyond the capacity of the staff support currently provided by the Leadership Group and the Cities Association.

With that said, staff has asked the firm Davis Langdon, an expert in green building policy and administration and the authors of one of the most comprehensive surveys on green building costs, to outline a ballpark figure on what it might cost to put together a regional approach to verification. Those figures are pending.

Green Building Costs
At the last Cities Association meeting, the group also requested information on the cost of building green, specifically, the costs associated with certification. Below is an outline of cost issues.

On average, the up front building cost is around 4-11% with an overall decrease in operational costs of 8-9%[2]. Over half the up front costs are related to the actual "greening" of the building while the rest are attributed to "soft costs"—costs to hire consultants, assemble the documentation and go through the commissioning process. A comprehensive study performed by Davis Langdon looked at the costs of building conventionally and green. Their conclusion was that there is an equal amount of fluctuation in cost between the two. You can have a really expensive conventionally built building or a really expensive green building—it depends upon the choices made, the green building products used and how experienced your green team is.[3]

For the LEED process, which again, mainly addresses nonresidential buildings, cost categories associated with greening are broken out in Table 3.

Table 3. Soft Costs as a Percent of Total Project Costs[4]

Design	0.4% to 0.6%
Commissioning	0.5% to 1.5%
Documentation/Fees	0.5% to 1%
Energy Modeling	0.1%

For the BIG process, which is used only for residential construction, a local builder provided specific cost data, detailed below.

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[2] US Green Building Council, http://www.usgbc.org/DisplayPage.aspx?CMSPageID=1720
[3] The Cost of Green Revisited, Davis Langdon, July 2007
[4] Analyzing the Cost of Obtaining LEED Certification, Northbridge Environmental Management Consultants, April 2003

GREEN FEATURES - Per Plan	
Minimum 25% Fly ash or Slag in Concrete Mix	No additional cost
Comfortwise - 15% plus over T-24	$1,650.00
Construction Debris recycle	No additional cost
High Efficiency Irrigation Systems	$700.00
Wood I-Joists & Web Trusses	No additional cost
Oriented Strand Board for Subfloor, Wall and Roof Sheathing	No additional cost
Durable and Non Combustible Siding and Roofing Materials	No additional cost
Low Emitting Insulation at Walls and Ceilings	No additional cost
Insulate all Hot Water Pipes	$500.00
Energy Star Appliances	$250.00
Low VOC Paint, Caulking and Construction Adhesives	$150.00
Energy Star Bath Fans	$285.00
HVAC Filter MERV 6 or 8	$15.00
Duct Mastic on all Duct Joints and Seams	Included in Comfortwise
HVAC System Designed to ACCA Manual J, D and S recommendations	Included in Comfortwise
High Efficiency Air Conditioner with Environmentally Responsible Refrigerants (SEER 14 slimline)	$1,250.00
Radiant Barrier Roof Sheathing	$200.00
HERS Rater/Energy Star	$550.00
Green Rater & BIG fees	$450.00
Total Additional Cost	$6,000.00
Optional: Solar panel system. Cost varies greatly depending on size of house and availability of tax credits. For a 2,200 square foot home	*$16,000*

Other Issues

Below are some key issues that were discussed at length at the GBC and should help explain the rationale behind the conclusions that were made.

The GBC understands that the cities in Santa Clara County are different and that development activity varies. In some cities, such as Saratoga, residential remodels and additions are the bulk of building permit activity. San Jose on the other hand has more multifamily building permits in addition to large and medium sized commercial buildings. Each city is different and therefore, a one-size shoe fits all policy approach might not be appropriate. However, the goal of the GBC is to try to ensure that Santa Clara County jurisdictions are not radically different, but are, in fact, fairly similar in their approach to green building policy.

With regard to determining the difference between large, medium and small projects, each city may have a typical set of break points already incorporated into its planning processes. We encourage each city to align green building policy to existing planning and code requirements in order to minimize complexity. However, we do offer suggestions as a guide and if they work for your city, great.

Basic Principles Behind Trigger Points

With that said, the basic premise behind the choice of thresholds is based on a few fundamentals:

- Larger projects have a greater environmental impact and should therefore be subject to greener rules.

- Larger projects are more likely to mean that the applicant has more resources to dedicate to learning /implementing green building. For example, a large company has more capacity than a small commercial owner to invest in green building.
- It is easier to build a building green than it is to retrofit/remodel an existing building to become green.

To capture the principles above, permit valuation, square feet and floor area ratio are all suggested as potential trigger points in the Phase II Policy Recommendations.

Multifamily Remodels
At this point, the multifamily remodel guidelines are still being perfected. Build It Green does not recommend implementing mandatory policy based on these guidelines yet. We recommend requiring submittal of the checklist in the interim and as soon as BIG gives the green light, to require 50 points for multifamily remodels.

Nonresidential Remodels/Tenant Improvements
After much deliberation on this issue, the group discovered that there is no easy answer for determining large and small projects. With that said, the group settled upon using square footage, permit valuation and project scope. Project scope is defined by the number of building systems touched by the remodel. The group believes this is a good, modest starting point that will need to be checked and revisited for appropriateness over time.

Cutting Edge...
It is important to note that the efforts of the Green Building Collaborative are cutting edge. The green building industry is still relatively new and maturing/evolving quickly as is the world of green building policy. The GBC recognizes that perfection is unlikely right out of the gate and as a result, the proposed approach is a moderate one that encourages cities to be flexible in working with applicants. After all, at the end of the day, we want to achieve our climate change goals and a large part of being able to achieve those goals is making sure the path to get there is one on which people are happy to walk along.

Santa Clara County Cities Association Green Building Collaborative

Phase II Policy Recommendations

Type of Project	Level of Standard
Residential, New Construction	
Single-family & Multi-family < 9 homes	GPR Rated** or LEED Certified
Multi-family =/> 9 homes	GPR Rated or LEED Silver
Residential, Remodels	
Single-family <$100,000 permit valuation or, <500 square foot addition or FAR increase <50%. This category also includes maintenance items that require a permit	BIG's Elements checklist or LEED Checklist
Single-family w/$100,000-200,000 permit valuation, or 500-1,000 square foot addition	BIG's Elements 25-49 or LEED Certified
Single-family w/$200,000+ permit valuation, or 1,000+ square foot addition or FAR increase of 50%	GPR Rated or LEED Certified
Small Multi-family projects (TBD)	Applicable GPR Checklist or applicable LEED checklist
Large Multi-family projects (TBD)	Applicable GPR 50 or applicable LEED level of certified

Type of Project	Green Standard*
Nonresidential, New Construction	
Small, <5,000 square feet	LEED Checklist
Mid-size, 5,000-25,000 square feet	LEED Certified
Large, >25,000 square feet	LEED Silver
Nonresidential, Remodels/Tenant Improvements	
Small projects	LEED Checklist
Large w/o HVAC: 2 of four systems are touched*** + >10,000 square feet + > $1 million permit valuation	LEED Certified w/o prerequisites
Large w/HVAC: 2 of four systems are touched, one being HVAC + >10,000 square feet + > permit valuation of $1 million	LEED Certified

* The latest applicable version of the U.S Green Building Council's LEED® Rating System – New Construction (which includes major remodels); Commercial Interiors; Existing Buildings; Core & Shell; etc.

** It is understood that GPR Rated currently requires a minimum level of 50 points. It is also understood that Build It Green will continue to adjust its checklist to reflect code changes and that 50 points today may be equivalent to something different in the future. However, the "Rated" term equates to BIG's minimum green standard, which again, is currently 50 points.

*** The four systems are envelope, lighting, interior services and HVAC.

CITY OF MOUNTAIN VIEW
MEMORANDUM

DATE: September 9, 2010

TO: City Council

FROM: Randal Tsuda, Community Development Director

SUBJECT: SEPTEMBER 14, 2010 STUDY SESSION—GREEN BUILDING ORDINANCE

INTRODUCTION

The purpose of this report is to update the City Council on the development of the City's Green Building Ordinance. This report includes a discussion of key green building concepts, the ordinance development process and a recommended framework for the Green Building Ordinance.

EXECUTIVE SUMMARY

Green building regulations and standards are technical in nature and constantly evolving to keep pace with industry and regulatory improvements. Staff, the City's Technical Advisory Group and the City consultant team have been working through the technical details and "trade-offs" involved in creating an effective Green Building Ordinance for Mountain View. Staff has developed a recommended framework for this new ordinance, which is summarized within this report. Additional detailed information on several key green building topics is included as attachments to this report.

Staff's recommended ordinance framework is intended to balance several key goals of achieving environmental benefits, such as reduced greenhouse gas emissions, with creating an efficient and streamlined green building regulatory process. Council may wish to focus on key ordinance elements such as recommended thresholds, requirements for renovations, the verification process and incentives as this report is reviewed.

Finally, since green building regulations and standards are constantly being reviewed and modified by green building organizations and government agencies, staff expects Mountain View's own ordinance to change as we move forward. Staff plans to monitor and evaluate the effectiveness of our green building ordinance and will suggest modifications to it over time to respond to changing regulatory and industry requirements.

SCOPE OF WORK

On October 27, 2009, the City Council authorized the hiring of Global Green USA, a nonprofit green building organization, to assist staff in the development of a Green Building Ordinance. This project is identified in the City's Environmental Sustainability Action Plan as a proposed action item for Fiscal Year 2009-10.

The approved scope of work includes creating and facilitating a Technical Advisory Group (TAG) consisting of local green building professionals, who will advise staff on how best to apply the Santa Clara County Cities Association Green Building Collaborative's Phase II Recommendations for Mountain View's ordinance. Released in June 2009, the Phase II Recommendations are a reference guide for applying third-party green building standards to various building types (see Attachment 1, Phase II Recommendations).

The scope of work also includes reviewing recommended measures in the Bay Area Water Supply and Conservation Agency's (BAWSCA) Template Indoor Water-Use Efficiency Ordinance (IWUEO) (see Attachment 2, Template Indoor Water Efficiency Ordinance). This ordinance includes a brief, prescriptive list of commonly used residential and commercial water-conserving fixtures that can aid in reducing water use by 20 percent.

KEY GREEN BUILDING CONCEPTS

The following section includes a high-level overview of green building standards and the costs and benefits of a green building ordinance. Additional information on these topics is included as attachments.

Green Building Standards

There are a variety of green building standards referenced in municipal green building ordinances for private development. These standards can include voluntary, third-party rating systems and existing State codes. Third-party rating systems, including Build It Green's GreenPoint Rated (GPR) and U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED), require projects to attain a specific amount of points based on an itemized checklist in order to receive certification as a green building (see Attachment 3, GPR and LEED Checklists). Some cities have opted to augment existing State codes, such as the California Energy Code (Title 24, Part 6) and the California Green Building Code (Title 24, Part 11), to meet their green building goals. Cities can also adopt a local energy code that exceeds the code outlined in Title 24, Part 6 and/or amend the California Green Building Code (CalGreen) to include additional requirements or building types. CalGreen has a list of mandatory measures

that must be met by all residential and nonresidential new construction (see Attachment 4, Green Building Standards).

Costs and Benefits

The application of green building is comprehensive and implements many of the sustainability-related values expressed in the City's *Environmental Sustainability Task Force Final Report* and during the General Plan update. However, it is generally understood that the measures and standards within green building ordinances increase the costs of development.

In most instances, the upfront costs can be recovered over the life of a building and many of the benefits can be quantified in the form of reduced utility costs. However, there are aspects of green building, particularly related to health, that are difficult to accurately quantify and monetize, even if the benefits are perceived as valuable.

Examples of costs and benefits specific to development in Mountain View are included in Attachment 5, Costs and Benefits of Green Building. However, this information is preliminary and is being introduced to Council now to provide an initial understanding of this topic, but should not be considered comprehensive.

ORDINANCE DEVELOPMENT PROCESS

Initial Staff Research

To begin the ordinance development process, staff researched green building ordinances from a number of Bay Area cities. Staff found that these ordinances vary in terms of stringency, requirements and the verification process (see Attachment 6, Comparison of Other Bay Area Cities' Green Building Ordinances). Staff also found that there is consistency in green building ordinance structures across Santa Clara County cities (following the Phase II Recommendations) but that each city has developed their own unique thresholds and requirements.

Technical Advisory Group (TAG)

The TAG includes 19 volunteers who represent a broad range of building expertise (see Attachment 7, Technical Advisory Group Members). They were invited to serve as TAG members because of their interest and experience in green building. To date, there have been three TAG meetings focused on green building standards, ordinance structure and approach, and standards for renovations (see Attachment 8, Technical Advisory Group Meeting Summaries).

In summary, the group suggested that a modified version of the Phase II Recommendations with incentives for higher-performing buildings is suitable for the City. The modification included an increase in the point requirement for residential projects as they felt additional measures could be obtained without significant cost. TAG members also preferred established third-party rating systems because they are marketable, many developers already have staff trained in these systems, they have clear documentation requirements and the environmental commitment that these standards represent can be easily communicated. The TAG recommendations also maintain regional consistency with the Phase II Recommendations.

Staff Criteria

City staff reviewed feedback from TAG and aligned it with existing City procedures, policies, regulations and review processes. In reviewing this information, staff created the following criteria for developing the framework of the ordinance (see Attachment 9, Staff Criteria Details):

1. An easy and efficient program for staff to implement.

2. An ordinance that is understandable to developers and the public.

3. A reduction in greenhouse gas emissions.

4. The cost of green building can reasonably achieve the desired environmental benefits.

STAFF RECOMMENDATIONS

Staff is recommending an ordinance framework that best integrates the criteria listed above, the suggestions made by TAG and the Phase II Recommendations. Staff believes that this approach will result in an ordinance that is enforceable, environmentally effective and not overly burdensome to the development community.

The recommended green building requirements are divided into residential, mixed-use and nonresidential project types with new construction and renovation subcategories. Each project type is discussed along with proposed rating systems, point levels and thresholds (see Attachment 10, Recommended Green Building Requirements for the City of Mountain View).

Ordinance Framework and Requirements

Green Building Standards

Staff is recommending the use of third-party rating systems LEED and GPR as green building standards for new construction (both residential and nonresidential) and a prescriptive list of green building requirements (based on CalGreen mandatory measures) for residential additions and nonresidential tenant improvements. Staff believes that addition and renovation projects have limited project scopes and, thus, cannot comply with measures in formal rating systems. The prescriptive lists for both residential and nonresidential projects focus on indoor environmental quality, energy and water reduction as these have quantifiable economic impacts. Mixed-use projects will need to comply with the standards applicable to the project type. This language provides flexibility for mixed-use projects and is commonly found in other local green building ordinances.

A list of optional green building standards has been included for those applicants that wish to use third-party rating systems or an equivalent system not referenced in the ordinance.

Local Energy Code

Staff is also recommending the adoption of a local energy code that will require all projects regulated by the green building ordinance to exceed the California Energy Code by 15 percent. This requirement is already captured by the third-party rating system standards for new construction, but has been extended to small projects and renovations.

Thresholds and Points

The project thresholds suggested by staff are based on existing thresholds in the Mountain View development review process. For example, new residential projects have a threshold of five units because this is the project size that requires a tentative map and review by the City Council.

The green building standard requirements, or point values, are based on input from the TAG, review of other local green building ordinances and the Phase II Recommendations.

Verification

Staff recommends not requiring projects to obtain formal certification from LEED or GPR. Instead, staff recommends requiring a qualified green building professional to

submit documentation demonstrating that the project is designed and constructed to meet the requirements of the applicable green building rating system.

Staff's recommendation for verification is to "meet the intent" of a third-party rating system without requiring formal certification. This approach aims to achieve environmental benefits while minimizing the administrative costs, enforcement issues and project review times associated with formal certification. This approach is consistent with most cities' green building ordinance policies. By "meeting the intent," the applicant is confirming at two development review phases (submittal to Planning and Building) that they meet the requirements outlined in LEED or GPR.

Additionally, for smaller projects and renovations staff will internally confirm the project complies with the local energy code and the mandatory measures of CalGreen.

Incentives

Staff recommends reserving the discussion of incentives to the General Plan update process. Policies and/or incentives which could promote higher-performing green buildings could be developed for the North Bayshore and Whisman areas. One example is to allow a new, increased maximum allowable FAR in these key "change areas" only if projects are designed to be certified and/or meet a higher green building requirement.

Attachment 11, Framework and Criteria, provides additional details on the recommended requirements and thresholds, as well as details regarding verification and incentives.

ALTERNATIVE ORDINANCE APPROACHES

While staff has provided a recommended approach, there are other options for Council consideration. The following two options present green building requirements that can be modified by Council to address different goals. Option 1 represents an ordinance approach that includes reduced requirements and is less stringent (see Attachment 12, Option 1: Reduced Green Building Requirements). The major changes of this option include the elimination of renovation categories from both residential and non-residential projects, as well as reducing the standards for new construction for both residential and nonresidential projects. Overall, a less stringent approach would mean less projects are regulated by the ordinance with lower standards applied, resulting in less impacts to project review time lines and less cost to applicants. It would also mean developing an ordinance that is less consistent with the Phase II Recommendations.

Option 2 represents an ordinance approach that includes more requirements and higher standards (see Attachment 13, Option 2: Increased Green Building Requirements). The

changes include higher green building standards for new construction residential projects and for the renovation sections of residential and nonresidential projects. Additionally, the City could require third-party certification for larger projects, which would need more consideration from staff on an appropriate threshold. Overall, this option would mean more projects would be captured by the ordinance and higher standards applied, which would result in greater impacts to project review time lines and increased costs to applicants. It would also mean an ordinance that would be more consistent with and, in some cases, more stringent than elements of the Phase II Recommendations.

These two options are only suggested approaches and can be used as "jumping-off" points for further discussion.

NEXT STEPS

Following the City Council Study Session, staff will meet with the Technical Advisory Group to: (1) update them on the progress to date and next steps in the process; and (2) make refinements to the Green Building Ordinance from comments and direction provided by Councilmembers. Staff will then draft the Green Building Ordinance and meet with various community members, such as contractors, developers, architects, homeowners and businesses, independently, or in small groups, to collect additional feedback and comments on the draft ordinance.

Simultaneously, Global Green USA will prepare an application to the California Energy Commission (CEC). This application is required by the State and must be approved by the CEC to demonstrate that any proposed energy improvements are cost-effective. The application will include preparing analysis of building prototypes representative of anticipated development in Mountain View in order to generate a cost-effectiveness analysis to be included in the completed CEC application.

Finally, staff plans to bring a draft Green Building Ordinance to the City Council. Once the City Council adopts the ordinance, staff and consultants will identify what public awareness and education materials are needed to educate community members on the new ordinance.

QUESTIONS FOR THE CITY COUNCIL

1. Does the City Council concur with the staff-recommended ordinance framework?

2. Does the City Council have specific input on thresholds, standards for renovations (residential and nonresidential), verification processes and/or incentives?

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ND/LH/4/CAM/823-09-14-10M-E^

Attachments:
1. Phase II Recommendations
2. Template Indoor Water Efficiency Ordinance
3. GPR and LEED Checklists
4. Green Building Standards
5. Costs and Benefits of Green Building
6. Comparison of Other Bay Area Cities' Green Building Ordinances
7. Technical Advisory Group Members
8. Technical Advisory Group Meeting Summaries
9. Staff Criteria Details
10. Recommended Green Building Requirements for the City of Mountain View
11. Framework and Criteria
12. Option 1: Reduced Green Building Requirements
13. Option 2: Increased Green Building Requirements

cc: Technical Advisory Group, CA, PWD

Santa Clara County Cities Association Green Building Collaborative

Phase II Policy Recommendations

Residential, New Construction	
Single-family & Multi-family < 9 homes	GPR Rated** or LEED Certified
Multi-family =/> 9 homes	GPR Rated or LEED Silver
Residential, Remodels	
Single-family <$100,000 permit valuation or, <500 square foot addition or FAR increase <50%. This category also includes maintenance items that require a permit	BIG's Elements checklist or LEED Checklist
Single-family w/$100,000-200,000 permit valuation, or 500-1,000 square foot addition	BIG's Elements 25-49 or LEED Certified
Single-family w/$200,000+ permit valuation, or 1,000+ square foot addition or FAR increase of 50%	GPR Rated or LEED Certified
Small Multi-family projects (TBD)	Applicable GPR Checklist or applicable LEED checklist
Large Multi-family projects (TBD)	Applicable GPR 50 or applicable LEED level of certified

Nonresidential, New Construction	
Small, <5,000 square feet	LEED Checklist
Mid-size, 5,000-25,000 square feet	LEED Certified
Large, >25,000 square feet	LEED Silver
Nonresidential, Remodels/Tenant Improvements	
Small projects	LEED Checklist
Large w/o HVAC: 2 of four systems are touched*** + >10,000 square feet + > $1 million permit valuation	LEED Certified w/o prerequisites
Large w/HVAC: 2 of four systems are touched, one being HVAC + >10,000 square feet + > permit valuation of $1 million	LEED Certified

* The latest applicable version of the U.S Green Building Council's LEED® Rating System – New Construction (which includes major remodels); Commercial Interiors; Existing Buildings; Core & Shell; etc.

** It is understood that GPR Rated currently requires a minimum level of 50 points. It is also understood that Build It Green will continue to adjust its checklist to reflect code changes and that 50 points today may be equivalent to something different in the future. However, the "Rated" term equates to BIG's minimum green standard, which again, is currently 50 points.

*** The four systems are envelope, lighting, interior services and HVAC.

Attachment 2

Bay Area Water Supply and Conservation Agency's
Template Indoor Water Use Efficiency Ordinance

All new construction and applicable remodels will have, at a minimum, fixtures that comply with the efficiency standards listed below in the "Indoor Water Use Efficiency Table":

INDOOR WATER USE EFFICIENCY TABLE

Fixture	Residential	Non-Residential
Toilets	≤1.28 gpf, and ≥350 grams	≤1.28 gpf, and ≥350 grams
Urinals	≤0.5 gpf	≤0.5 gpf
Showers	≤2.0 gpm	≤2.0 gpm
Bathroom faucets	≤1.5 gpm	≤0.5 gpm
Kitchen faucets	≤2.2 gpm	≤2.2 gpm
Clothes washers	≤6.0 Water Factor	≤6.0 Water Factor
Dishwashers	≤6.5 gal/cycle, or Energy Star Qualified	Energy Star Qualified
Cooling towers	≥5 - 10 cycles, or ≥2.5 LSI	≥5 - 10 cycles, or ≥2.5 LSI
Food steamers	--	Boiler less, or Self-contained
Ice machines	--	≤25 gal/100 lbs ice, or Air-cooled
Pre-rinse spray valves	--	≤1.15 gpm
Automatic vehicle wash facilities	--	≥50% of water that is recycled on site
Commercial refrigeration	--	Closed loop, or Air-cooled
Meters	Submeters for RMF, and Separate meter for outdoor if landscape >5000 sq. ft.	Submeters, and Separate meter for outdoor if landscape >5000 sq. ft.

More information: http://bawsca.org/water-conservation/

GreenPoint Rated Checklist: Single Family

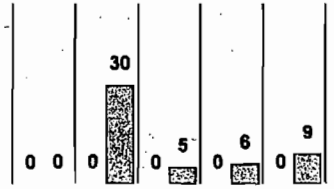
The GreenPoint Rated checklist tracks green features incorporated into the home. A home is only GreenPoint Rated if all features are verified by a Certified GreenPoint Rater through Build It Green. GreenPoint Rated is provided as a public service by Build It Green, a professional non-profit whose mission is to promote healthy, energy and resource efficient buildings in California.
The minimum requirements of GreenPoint Rated are: verification of 50 or more points; Earn the following minimum points per category: Energy (30), Indoor Air Quality/Health (5), Resources (6), and Water (9); and meet the prerequisites A.2.a, H10a., J.2., N.1, and Q0.

This checklist accommodates the verification of mandatory CALGreen measures but does not signify compliance unless accepted by enforcing agency. All CALGreen measures within the checklist must be selected as "Yes" or "n/a" for compliance with GreenPoint Rated. Build It Green is not a code enforcement agency.

The criteria for the green building practices listed below are described in the GreenPoint Rated Single Family Rating Manual. For more information please visit www.builditgreen.org/greenpointrated

GreenPointRATED
A PROGRAM OF BUILD IT GREEN

Total Points Targeted: 0



Single Family New Home 4.2 / 2008 Title 24

Enter Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
A. SITE		Possible Points					
1. Protect Topsoil and Minimize Disruption of Existing Plants & Trees							
TBD a. Protect Topsoil and Reuse after Construction	0	1				1	
TBD b. Limit and Delineate Construction Footprint for Maximum Protection	0					1	
2. Divert/Recycle Job Site Construction Waste (Including Green Waste and Existing Structures)							
TBD a. Required: Divert 50% (by weight) of All Construction and Demolition Waste (Recycling or Reuse) (CALGreen Code)	N				R		
TBD b. Divert 100% of Asphalt and Concrete and 65% (by weight) of Remaining Materials	0				2		
TBD c. Divert 100% of Asphalt and Concrete and 80% (by weight) of Remaining Materials	0				2		
3. Use Recycled Content Aggregate (Minimum 25%)							
TBD a. Walkway and Driveway Base	0				1		
TBD b. Roadway Base	0				1		
TBD **4. Cool Site: Reduce Heat Island Effect On Site**	0	1					
5. Construction Environmental Quality Management Plan, Duct Sealing, and Pre-Occupancy Flush-Out [*This credit is a requirement associated with J4: EPA IAP]							
TBD a. Duct openings and other related air distribution component openings shall be covered during construction. (CALGreen code if applicable)	0			1			
TBD b. Full environmental quality management plan and pre-occupancy flush out is conducted (Prerequisite is A5a)	0			1			
Total Points Available in Site = 12	0						
B. FOUNDATION		Possible Points					

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	1. Replace Portland Cement in Concrete with Recycled Fly Ash and/or Slag (Minimum 20%)	0				2		
TBD	2. Use Frost-Protected Shallow Foundation in Cold Areas (CEC Climate Zone 16)	0				2		
TBD	3. Use Radon Resistant Construction [*This credit is a requirement associated with J4: EPA IAP]	0			2			
TBD	4. Install a Foundation Drainage System [*This credit is a requirement associated with J4: EPA IAP]	0				2		
TBD	5. Moisture Controlled Crawlspace [*This credit is a requirement associated with J4: EPA IAP]	0			2			
	6. Design and Build Structural Pest Controls							
TBD	a. Install Termite Shields & Separate All Exterior Wood-to-Concrete Connections	0				1		
TBD	b. All Plants Have Trunk, Base, or Stem Located At Least 36 Inches from Foundation	0				1		
	Total Points Available in Foundation = 12	0						
C. LANDSCAPE			Possible Points					
0%	*Enter in the % of landscape area. (Projects with less than 15% of the total site area (i.e. total lot size) as landscape area are capped at 6 points for the following measures: C1 through C7 and C9 through C11.*							
TBD	1. Group Plants by Water Needs (Hydrozoning)	0					2	
TBD	2. Mulch All Planting Beds to the Greater of 3 Inches or Local Water Ordinance Requirement	0					2	
	3. Construct Resource-Efficient Landscapes							
TBD	a. No Invasive Species Listed by Cal-IPC Are Planted	0					1	
TBD	b. No Plant Species Will Require Shearing	0				1		
TBD	c. 75% of Plants Are Drought Tolerant, California Natives or Mediterranean Species or Other Appropriate Species	0					3	
	4. Minimize Turf in Landscape Installed by Builder							
TBD	a. Turf Shall Not Be Installed on Slopes Exceeding 10% and No Overhead Sprinklers Installed in Areas Less than 8 Feet Wide	0					2	
TBD	b. Turf is Small Percentage of Landscaped Area (2 Points for ≤25%, 4 Points for ≤10%)	0					4	
TBD	5. Plant Shade Trees	0	1	1			1	
	6. Install High-Efficiency Irrigation Systems							
TBD	a. System Uses Only Low-Flow Drip, Bubblers, or Sprinklers	0					2	
TBD	b. System Has Smart (Weather-Based) Controller (CALGreen code if applicable)	0					3	
TBD	7. Incorporate Two Inches of Compost in the Top 6 to 12 Inches of Soil	0					3	
	8. Rain Water Harvesting System							
TBD	a. Cistern(s) is Less Than 750 Gallons	0					1	
TBD	b. Cistern(s) is 750 to 2,500 Gallons	0					1	
TBD	c. Cistern(s) is Greater Than 2,500 Gallons	0					1	
TBD	9. Irrigation System Uses Recycled Wastewater	0					1	
TBD	10. Submetering for Landscape Irrigation	0					1	
	11. Design Landscape to Meet Water Budget							

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	a. Install Irrigation System That Will Be Operated at ≤70% Reference ET (Prerequisites for Credit are C1 and C2.)	0					1	
TBD	b. Install Irrigation System That Will Be Operated at ≤50% Reference ET (Prerequisites for Credit are C1, C2, and C6a or C6b.)	0					1	
TBD	**12. Use Environmentally Preferable Materials for 70% of Non-Plant Landscape Elements and Fencing** A) FSC-Certified Wood, B) Reclaimed, C) Rapidly Renewable, D) Recycled-Content E) Finger-Jointed or F) Local	0				1		
TBD	**13. Reduce Light Pollution by Shielding Fixtures and Directing Light Downward**	0	1					
	Total Points Available in Landscape = 35	0						
D. STRUCTURAL FRAME & BUILDING ENVELOPE			Possible Points					
	1. Apply Optimal Value Engineering							
TBD	a. Place Joists, Rafters and Studs at 24-Inch On Center	0				3		
TBD	b. Door and Window Headers are Sized for Load	0				1		
TBD	c. Use Only Cripple Studs Required for Load	0				1		
	2. Construction Material Efficiencies							
TBD	a. Wall and Floor Assemblies (Excluding Solid Wall Assemblies) are Delivered Panelized from Supplier (Minimum of 80% Square Feet)	0				2		
TBD	b. Modular Components Are Delivered Assembled to the Project (Minimum 25%)	0				6		
	3. Use Engineered Lumber							
TBD	a. Engineered Beams and Headers	0				1		
TBD	b. Wood I-Joists or Web Trusses for Floors	0				1		
TBD	c. Engineered Lumber for Roof Rafters	0				1		
TBD	d. Engineered or Finger-Jointed Studs for Vertical Applications	0				1		
TBD	e. Oriented Strand Board for Subfloor	0				1		
TBD	f. Oriented Strand Board for Wall and Roof Sheathing	0				1		
TBD	**4. Insulated Headers**	0		1				
	5. Use FSC-Certified Wood							
TBD	a. Dimensional Lumber, Studs and Timber (Minimum 40%)	0				6		
TBD	b. Panel Products (Minimum 40%)	0				3		
	6. Use Solid Wall Systems (Includes SIPS, ICFs, & Any Non-Stick Frame Assembly)							
TBD	a. Floors	0				2		
TBD	b. Walls	0				2		
TBD	c. Roofs	0				1		
TBD	**7. Energy Heels on Roof Trusses** (75% of Attic Insulation Height at Outside Edge of Exterior Wall)	0		1				
	8. Install Overhangs and Gutters							
TBD	a. Minimum 16-Inch Overhangs and Gutters	0				1		
TBD	b. Minimum 24-Inch Overhangs and Gutters	0		1				
	9. Reduce Pollution Entering the Home from the Garage [*This credit is a requirement associated with J4: EPA IAP]							
TBD	a. Install Garage Exhaust Fan OR Build a Detached Garage	0			1			

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	b. Tightly Seal the Air Barrier between Garage and Living Area (Performance Test Required)	0			1			
	Total Points Available in Structural Frame and Building Envelope = 39	0						
E. EXTERIOR				Possible Points				
TBD	1. Use Environmentally Preferable Decking	0				2		
TBD	2. Flashing Installation Techniques Specified and Third-Party Verified [*This credit is a requirement associated with J4: EPA IAP]	0				1		
TBD	3. Install a Rain Screen Wall System	0				2		
TBD	4. Use Durable and Non-Combustible Siding Materials	0				1		
TBD	5. Use Durable and Fire Resistant Roofing Materials or Assembly	0				2		
	Total Points Available in Exterior = 8	0						
F. INSULATION				Possible Points				
	1. Install Insulation with 75% Recycled Content							
TBD	a. Walls	0				1		
TBD	b. Ceilings	0				1		
TBD	c. Floors	0				1		
	Total Points Available in Insulation = 3	0						
G. PLUMBING				Possible Points				
	1. Distribute Domestic Hot Water Efficiently (Max. 5 points, G1a. is a Prerequisite for G1b-e)							
TBD	a. Insulate All Hot Water Pipes [*This credit is a requirement associated with J4: EPA IAP]	0		1			1	
TBD	b. Use Engineered Parallel Plumbing	0					1	
TBD	c. Use Engineered Parallel Plumbing with Demand Controlled Circulation Loop(s)	0					1	
TBD	d. Use Traditional Trunk, Branch and Twig Plumbing with Demand Controlled Circulation Loop(s)	0		1			2	
TBD	e. Use Central Core Plumbing	0		1		1	1	
	2. Water Efficient Fixtures							
TBD	a. High Efficiency Showerheads ≤2.0 Gallons Per Minute (gpm) at 80 psi. (Multiple showerheads shall not exceed maximum flow rates) (CALGreen code if applicable)	0					3	
TBD	b. High Efficiency Bathroom Faucets ≤ 1.5 gpm at 60psi (CALGreen code)	0					1	
TBD	c. High Efficiency Kitchen and Utility Faucets ≤1.8 gpm (CALGreen code if applicable)	0					1	
TBD	3. Install Only High Efficiency Toilets (Dual-Flush or ≤1.28 Gallons Per Flush (gpf)) (CALGreen code if applicable)	0					2	
	Total Points Available in Plumbing = 12	0						
H. HEATING, VENTILATION & AIR CONDITIONING				Possible Points				
	1. Properly Design HVAC System and Perform Diagnostic Testing							
TBD	a. Design and Install HVAC System to ACCA Manual J, D, and S Recommendations (CALGreen code if applicable) [*This credit is a requirement associated with J4: EPA IAP]	0		4				
TBD	b. Test Total Supply Air Flow Rates [*This credit is a requirement associated with J4: EPA IAP]	0		1				
TBD	c. Third Party Testing of Mechanical Ventilation Rates for IAQ (meet ASHRAE 62.2)	0		1				

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
	2. Install Sealed Combustion Units [*This credit is a requirement associated with J4: EPA IAP]							
TBD	a. Furnaces	0			2			
TBD	b. Water Heaters	0			2			
TBD	**3. Install High Performing Zoned Hydronic Radiant Heating**	0		1	1			
TBD	**4. Install High Efficiency Air Conditioning with Environmentally Preferable Refrigerants**	0	1					
	5. Design and Install Effective Ductwork							
TBD	a. Install HVAC Unit and Ductwork within Conditioned Space	0		1				
TBD	b. Use Duct Mastic on All Duct Joints and Seams [*This credit is a requirement associated with J4: EPA IAP]	0		1				
TBD	c. Pressure Relieve the Ductwork System [*This credit is a requirement associated with J4: EPA IAP]	0		1				
TBD	**6. Install High Efficiency HVAC Filter (MERV 6+)** [*This credit is a requirement associated with J4: EPA IAP]	0			1			
TBD	**7. No Fireplace OR Install Sealed Gas Fireplace(s) with Efficiency Rating >60% using CSA Standards** [*This credit is a requirement associated with J4: EPA IAP]	0			1			
TBD	**8. Install ENERGY STAR Bathroom Fans on Timer or Humidistat** (CALGreen code if applicable)	0			1			
	9. Install Mechanical Ventilation System for Cooling (Max. 4 Points)							
TBD	a. Install ENERGY STAR Ceiling Fans & Light Kits in Living Areas & All Bedrooms	0		1				
TBD	b. Install Whole House Fan (Credit Not Available if H9c Chosen) (CALGreen code if applicable)	0		1				
TBD	c. Automatically Controlled Integrated System with Variable Speed Control	0		3				
	10. Advanced Mechanical Ventilation for IAQ							
TBD	a. *Required:* Compliance with ASHRAE 62.2 Mechanical Ventilation Standards (as adopted in Title 24 Part 6) [*This credit is a requirement associated with J4: EPA IAP]	N			R			
TBD	b. Advanced Ventilation Practices (Continuous Operation, Sone Limit, Minimum Efficiency, Minimum Ventilation Rate, Homeowner Instructions)	0			1			
TBD	c. Outdoor Air Ducted to Bedroom and Living Areas of Home	0			2			
TBD	**11. Install Carbon Monoxide Alarm(s)** (or No Combustion Appliances in Living Space and No Attached Garage) [*This credit is a requirement associated with J4: EPA IAP]	0			1			
	Total Points Available in Heating, Ventilation and Air Conditioning = 27	0						
I. RENEWABLE ENERGY			Possible Points					
TBD	**1. Pre-Plumb for Solar Water Heating**	0				1		
TBD	**2. Install Wiring Conduit for Future Photovoltaic Installation & Provide 200 ft² of South-Facing Roof**	0				1		
0.0%	**3. Offset Energy Consumption with Onsite Renewable Generation (Solar PV, Solar Thermal, Wind)** *Enter % total energy consumption offset, 1 point per 4% offset*	0		25				

Enter Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
Total Available Points in Renewable Energy = 27	0						
J. BUILDING PERFORMANCE		Possible Points					
1. Building Envelope Diagnostic Evaluations							
TBD a. Verify Quality of Insulation Installation & Thermal Bypass Checklist before Drywall [*This credit is a requirement associated with J4: EPA IAP]	0		1				
TBD b. House Passes Blower Door Test [*This credit is a requirement associated with J4: EPA IAP]	0		1				
TBD c. Blower Door Results are Max 2.5 ACH_{50} for Unbalanced Systems (Supply or Exhaust) or Max 1.0 ACH_{50} for Balanced Systems (2 Total Points for J1b. and J1c.)	0		1				
TBD d. House Passes Combustion Safety Backdraft Test	0			1			
0% **2. *Required:* Building Performance Exceeds Title 24 (Minimum 15%)** *(Enter the Percent Better Than Title 24, Points for Every 1% Better Than Title 24)*	0		≥30				
TBD **3. Design and Build Near Zero Energy Homes** *(Enter number of points, minimum of 2 and maximum of 6 points)*	0		6				
TBD **4. Obtain EPA Indoor airPlus Certification** *(Total 42 points, not including Title 24 performance; read comment)*	0			2			
TBD **5. Title 24 Prepared and Signed by a CABEC Certified Energy Plans Examiner (CEPE)**	0		1				
6. Participation in Utility Program with Third Party Plan Review							
TBD a. Energy Efficiency Program [*This credit is a requirement associated with J4: EPA IAP]	0		1				
TBD b. Renewable Energy Program with Min. 30% Better Than Title 24 (High Performing Home)	0		1				
Total Available Points in Building Performance = 45+	0						
K. FINISHES		Possible Points					
TBD **1. Design Entryways to Reduce Tracked-In Contaminants**	0			1			
2. Use Low-VOC or Zero-VOC Paint (Maximum 3 Points)							
TBD a. Low-VOC Interior Wall/Ceiling Paints (CALGreen code if applicable) (<50 Grams Per Liter (gpl) VOCs Regardless of Sheen) [*This credit is a requirement associated with J4: EPA IAP]	0			1			
TBD b. Zero-VOC: Interior Wall/Ceiling Paints (<5 gpl VOCs Regardless of Sheen)	0			2			
TBD **3. Use Low-VOC Coatings that Meet SCAQMD Rule 1113 (CALGreen code if applicable) [*This credit is a requirement associated with J4: EPA IAP]**	0			2			
TBD **4. Use Low-VOC Caulks, Construction Adhesives and Sealants that Meet SCAQMD Rule 1168 (CALGreen code if applicable)**	0			2			
TBD **5. Use Recycled-Content Paint**	0				1		
6. Use Environmentally Preferable Materials for Interior Finish A) FSC-Certified Wood, B) Reclaimed, C) Rapidly Renewable, D) Recycled-Content or E) Finger-Jointed F) Local							
TBD a. Cabinets (50% Minimum)	0				3		

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	b. Interior Trim (50% Minimum)	0				2		
TBD	c. Shelving (50% Minimum)	0				2		
TBD	d. Doors (50% Minimum)	0				2		
TBD	e. Countertops (50% Minimum)	0				2		
TBD	**7. Reduce Formaldehyde In Interior Finish – Meet Current CARB Airborne Toxic Control Measure (ATCM) for Composite Wood Formaldehyde Limits by Mandatory Compliance Dates** (CALGreen code if applicable) [*This credit is a requirement associated with J4: EPA IAP]	N			0			
	8. Reduce Formaldehyde In Interior Finish - Exceed Current CARB ATCM for Composite Wood Formaldehyde Limits Prior to Mandatory Compliance Dates							
TBD	a. Doors (90% Minimum)	0			1			
TBD	b. Cabinets & Countertops (90% Minimum)	0			2			
TBD	c. Interior Trim and Shelving (90% Minimum)	0			1			
TBD	**9. After Installation of Finishes, Test of Indoor Air Shows Formaldehyde Level <27ppb**	0			3			
	Total Available Points in Finishes = 27	0						
L. FLOORING			Possible Points					
TBD	**1. Use Environmentally Preferable Flooring (Minimum 15% Floor Area)** A) FSC-Certified Wood, B) Reclaimed or Refinished, C) Rapidly Renewable, D) Recycled-Content, E) Exposed Concrete, F) Local. *Flooring Adhesives Must Meet SCAQMD Rule 1168 for VOCs.*	0				4		
TBD	**2. Thermal Mass Floors (Minimum 50%)**	0		1				
TBD	**3. Low Emitting Flooring (Section 01350, CRI Green Label Plus, Floorscore** [*This credit is a requirement associated with J4: EPA IAP]	0			3			
TBD	**4. All carpet and 50% of Resilient Flooring is low emitting.** (CALGreen code if applicable)	N						
	Total Available Points in Flooring = 8	0						
M. APPLIANCES AND LIGHTING			Possible Points					
TBD	**1. Install ENERGY STAR Dishwasher (Must Meet Current Specifications)**	0		1			1	
	2. Install ENERGY STAR Clothes Washer							
TBD	a. Meets ENERGY STAR and CEE Tier 2 Requirements (Modified Energy Factor 2.0, Water Factor 6.0 or less)	0		1			2	
TBD	b. Meets ENERGY STAR and CEE Tier 3 Requirements (Modified Energy Factor 2.2, Water Factor 4.5 or less)	0					2	
	3. Install ENERGY STAR Refrigerator							
TBD	a. ENERGY STAR Qualified & < 25 Cubic Feet Capacity	0		1				
TBD	b. ENERGY STAR Qualified & < 20 Cubic Feet Capacity	0		1				
	4. Install Built-In Recycling Center or Composting Center							
TBD	a. Built-In Recycling Center	0				1		
TBD	b. Built-In Composting Center	0				1		
	5. Install High-Efficacy Lighting and Design Lighting System							

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	a. Install High-Efficacy Lighting	0		1				
TBD	b. Install a Lighting System to IESNA Footcandle Standards or Hire Lighting Consultant	0		1				
	Total Available Points in Appliances and Lighting = 13	0						
N. OTHER			Possible Points					
TBD	1. *Required:* Incorporate GreenPoint Rated Checklist in Blueprints [*This credit is a requirement associated with J4: EPA IAP]	N				R		
TBD	2. Pre-Construction Kick-Off Meeting with Rater and Subs	0	1					
TBD	3. Homebuilder's Management Staff are Certified Green Building Professionals	0	1					
	4. Develop Homeowner Education							
TBD	a. Develop Homeowner Manual of Green Features/Benefits (CALGreen code if applicable) [*This credit is a requirement associated with J4: EPA IAP]	0		1			1	
TBD	b. Conduct Educational Walkthroughs (Prerequisite is N4a) [*This credit is a requirement associated with J4: EPA IAP]	0			1			
TBD	5. Install a Home System Monitor OR Participate in a Time-of-Use Pricing Program	0		1				
	Total Available Points in Other = 6	0						
O. COMMUNITY DESIGN & PLANNING			Possible Points					
	1. Develop Infill Sites							
TBD	a. Project is an Urban Infill Development	0	1			1		
TBD	b. Home(s)/Development is Located within 1/2 Mile of a Major Transit Stop	0	2					
TBD	2. Build on Designated Brownfield Site	0	3					
	3. Cluster Homes & Keep Size In Check							
TBD	a. Cluster Homes for Land Preservation	0	1			1		
TBD	b. Conserve Resources by Increasing Density (10 Units per Acre or Greater)	0	2			2		
	c. Home Size Efficiency	0				9		
	i. Enter Average Unit Square Footage							
	ii. Enter Average Number of Bedrooms/Unit							
	4. Design for Walking & Bicycling							
	a. Site Has Pedestrian Access Within 1/2 Mile of Community Services: TIER 1: Enter Number of Services Within 1/2 Mile 1) Day Care 2) Community Center 3) Public Park 4) Drug Store 5) Restaurant 6) School 7) Library 8) Farmer's Market 9) After School Programs 10) Convenience Store Where Meat & Produce are Sold							
	TIER 2: Enter Number of Services Within 1/2 Mile 1) Bank 2) Place of Worship 3) Laundry/Cleaners 4) Hardware 5) Theater/Entertainment 6) Fitness/Gym 7) Post Office 8) Senior Care Facility 9) Medical/Dental 10) Hair Care 11) Commercial Office or Major Employer 12) Full Scale Supermarket							
	i. 5 Services Listed Above (Tier 2 Services Count as 1/2 Service Value)	0	1					
	ii. 10 Services Listed Above (Tier 2 Services Count as 1/2 Service Value)	0	1					

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	b. Development is Connected with A Dedicated Pedestrian Pathway to Places of Recreational Interest Within 1/4 mile	0	1					
TBD	c. Install Traffic Calming Strategies (Minimum of Two): - Designated Bicycle Lanes are Present on Roadways; - Ten-Foot Vehicle Travel Lanes; - Street Crossings Closest to Site are Located Less Than 300 Feet Apart; - Streets Have Rumble Strips, Bulbouts, Raised Crosswalks or Refuge Islands	0	2					
	5. Design for Safety & Social Gathering							
TBD	a. All Home Front Entrances Have Views from the Inside to Outside Callers	0	1					
TBD	b. All Home Front Entrances Can be Seen from the Street and/or from Other Front Doors	0	1					
TBD	c. Orient Porches (min. 100sf) to Streets and Public Spaces	0	1					
TBD	d. Development Includes a Social Gathering Space	0	1					
	6. Design for Diverse Households (6a. is a Prerequisite for 6b. and 6c.)							
TBD	a. All Homes Have At Least One Zero-Step Entrance	0	1					
TBD	b. All Main Floor Interior Doors & Passageways Have a Minimum 32-Inch Clear Passage Space	0	1					
TBD	c. Locate Half-Bath on the Ground Floor	0	1					
TBD	d. Provide Full-Function Independent Rental Unit	0	1					
	Total Achievable Points in Community Design & Planning = 35	0						
P. INNOVATION			Possible Points					
	A. Site							
	1. Stormwater Control: Prescriptive Path (Maximum of 3 Points, Mutually Exclusive with PA2.)							
TBD	a. Use Permeable Paving for 25% of Driveways, Patios and Walkways	0	1					
TBD	b. Install Bio-Retention and Filtration Features	0	2					
TBD	c. Route Downspout Through Permeable Landscape	0	1					
TBD	d. Use Non-Leaching Roofing Materials	0	1					
TBD	e. Include Smart Street/Driveway Design	0	1					
TBD	2. Stormwater Control: Performance Path (Mutually Exclusive with PA1): Perform Soil Percolation Test and Capture and Treat 85% of Total Annual Runoff	0	3					
	C. Landscape							
TBD	1. Meet Local Landscape Program Requirement	0					2	
	D. Structural Frame & Building Envelope							
	1. Design, Build and Maintain Structural Pest and Rot Controls							
TBD	a. Locate All Wood (Siding, Trim, Structure) At Least 12" Above Soil	0				1		
TBD	b. All Wood Framing 3 Feet from the Foundation is Treated with Borates (or Use Factory-Impregnated Materials) OR Walls are Not Made of Wood	0				1		
TBD	2. Use Moisture Resistant Materials in Wet Areas: Kitchen, Bathrooms, Utility Rooms, and Basements [*This credit is a requirement associated with J4: EPA IAP]	0			1	1		
	E. Exterior							
TBD	1. Vegetated Roof (Minimum 25%)	0	2	2				

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
	G. Plumbing							
TBD	1. Greywater Pre-Plumbing (Includes Washing Machine at Minimum)	0					1	
TBD	2. Greywater System Operational (Includes Washing Machine at Minimum)	0					2	
TBD	3. Innovative Wastewater Technology (Constructed Wetland, Sand Filter, Aerobic System)	0					1	
TBD	4. Composting or Waterless Toilet	0					2	
TBD	5. Install Drain Water Heat-Recovery System	0		1				
TBD	6. Install a Hot Water Desuperheater	0		2				
	H. Heating, Ventilation, and Air Conditioning							
TBD	1. Humidity Control Systems (Only in California Humid/Marine Climate Zones 1,3,5,6,7) [*This credit is a requirement associated with J4: EPA IAP]	0			1			
TBD	2. Design HVAC System to Manual T for Register Design	0		1				
	K. Finishes							
TBD	1. Materials Meet SMaRT Criteria *(Select the number of points, up to 5 points)*	0				5		
	N. Other							
TBD	1. Detailed Durability Plan and Third-Party Verification of Plan Implementation	0				2		
	2. Educational Signage of Project's Green Features							
TBD	a. Promotion of Green Building Practices	0	1					
TBD	b. Installed Green Building Educational Signage	0	1					
	3. Innovation: List innovative measures that meet green building objectives. Enter in the number of points in each category for a maximum of 4 points for the measure in the blue cells. Points achieved column will be automatically fill in based on the sum of the points in each category. Points and measures will be evaluated by Build It Green.							
TBD	Innovation: Enter up to 4 Points at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points at right. Enter description here	0						
	Total Achievable Points in Innovation = 33+	0						
Q. CALIFORNIA CALGreen CODE			**Possible Points**					
No	Home meets all applicable CAL Green measures listed in above Sections A - P of the GreenPoint Rated checklist.	N	R				-	
	The following measures are mandatory in the CALGreen code and do not earn points in the GreenPoint Rated Checklist, but have been included in the Checklist for the convenience of jurisdictions. *The GreenPoint Rater is not a code enforcement official. The measures in this section may be verified by the GreenPoint Rater at their own discretion and/or discretion of the building official.*							
TBD	1. CALGreen 4.106.2 Storm water management during construction.	N						
TBD	2. CALGreen 4.106.3 Design for surface water drainage away from buildings.	N						
TBD	3. CALGreen 4.303.1 As an alternative to perscriptive compliance, a 20% reduction in baseline water use shall be demonstrated through calculation	N						

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	4. CALGreen 4.406.1 Joints and openings. Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected	N						
TBD	5. CALGreen4.503.1 Gas fireplace shall be a direct-vent sealed-combustion type. Woodstove or pellet stove shall comply with US EPA Phase II emission limits	N						
TBD	6. CALGreen 4.505.2 Vapor retarder and capillary break is installed at slab on grade foundations.	N						
TBD	7. CALGreen 4.505.3 19% moisture content of building framing materials	N						
TBD	8. CALGreen 702.1 HVAC system installers are trained and certified in the proper installation of HVAC systems.	N						
	Total Achievable Points in California Green Code = 0	0						
Summary								
	Total Available Points in Specific Categories	-	35	96+	44	110	56	
	Minimum Points Required in Specific Categories	50	0	30	5	6	9	
	Total Points Achieved	0	0	0	0	0	0	

Project has not yet met the following recommended minimum requirements:

- *Total Project Score of At Least 50 Points*
- *Required measures:*
  - *-A3a: 50% waste diversion by weight*
  - *-H10a: Compliance with ASHRAE 62.2 Mechanical Ventilation Standards*
  - *-J2: 15% above Title 24*
  - *-N1: Incorporate GreenPoint Rated Checklist into blueprints*
- *Minimum points in specific categories:*
  - *-Energy (30 points)*
  - *-IAQ/Health (5 points)*
  - *-Resources (6 points)*
  - *-Water (9 points)*

LEED 2009 for New Construction and Major Renovations

Project Checklist

Project Name

Date

Sustainable Sites — Possible Points: 26

Y	?	N			
Y			Prereq 1	Construction Activity Pollution Prevention	
			Credit 1	Site Selection	1
			Credit 2	Development Density and Community Connectivity	5
			Credit 3	Brownfield Redevelopment	1
			Credit 4.1	Alternative Transportation—Public Transportation Access	6
			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1
			Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3
			Credit 4.4	Alternative Transportation—Parking Capacity	2
			Credit 5.1	Site Development—Protect or Restore Habitat	1
			Credit 5.2	Site Development—Maximize Open Space	1
			Credit 6.1	Stormwater Design—Quantity Control	1
			Credit 6.2	Stormwater Design—Quality Control	1
			Credit 7.1	Heat Island Effect—Non-roof	1
			Credit 7.2	Heat Island Effect—Roof	1
			Credit 8	Light Pollution Reduction	1

Water Efficiency — Possible Points: 10

Y	?	N			
Y			Prereq 1	Water Use Reduction—20% Reduction	
			Credit 1	Water Efficient Landscaping	2 to 4
			Credit 2	Innovative Wastewater Technologies	2
			Credit 3	Water Use Reduction	2 to 4

Energy and Atmosphere — Possible Points: 35

Y	?	N			
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems	
Y			Prereq 2	Minimum Energy Performance	
Y			Prereq 3	Fundamental Refrigerant Management	
			Credit 1	Optimize Energy Performance	1 to 19
			Credit 2	On-Site Renewable Energy	1 to 7
			Credit 3	Enhanced Commissioning	2
			Credit 4	Enhanced Refrigerant Management	2
			Credit 5	Measurement and Verification	3
			Credit 6	Green Power	2

Materials and Resources — Possible Points: 14

Y	?	N			
Y			Prereq 1	Storage and Collection of Recyclables	
			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3
			Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1
			Credit 2	Construction Waste Management	1 to 2
			Credit 3	Materials Reuse	1 to 2

Materials and Resources, Continued

Y	?	N			
			Credit 4	Recycled Content	1 to 2
			Credit 5	Regional Materials	1 to 2
			Credit 6	Rapidly Renewable Materials	1
			Credit 7	Certified Wood	1

Indoor Environmental Quality — Possible Points: 15

Y	?	N			
Y			Prereq 1	Minimum Indoor Air Quality Performance	
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control	
			Credit 1	Outdoor Air Delivery Monitoring	1
			Credit 2	Increased Ventilation	1
			Credit 3.1	Construction IAQ Management Plan—During Construction	1
			Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1
			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1
			Credit 4.2	Low-Emitting Materials—Paints and Coatings	1
			Credit 4.3	Low-Emitting Materials—Flooring Systems	1
			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1
			Credit 5	Indoor Chemical and Pollutant Source Control	1
			Credit 6.1	Controllability of Systems—Lighting	1
			Credit 6.2	Controllability of Systems—Thermal Comfort	1
			Credit 7.1	Thermal Comfort—Design	1
			Credit 7.2	Thermal Comfort—Verification	1
			Credit 8.1	Daylight and Views—Daylight	1
			Credit 8.2	Daylight and Views—Views	1

Innovation and Design Process — Possible Points: 6

Y	?	N			
			Credit 1.1	Innovation in Design: Specific Title	1
			Credit 1.2	Innovation in Design: Specific Title	1
			Credit 1.3	Innovation in Design: Specific Title	1
			Credit 1.4	Innovation in Design: Specific Title	1
			Credit 1.5	Innovation in Design: Specific Title	1
			Credit 2	LEED Accredited Professional	1

Regional Priority Credits — Possible Points: 4

Y	?	N			
			Credit 1.1	Regional Priority: Specific Credit	1
			Credit 1.2	Regional Priority: Specific Credit	1
			Credit 1.3	Regional Priority: Specific Credit	1
			Credit 1.4	Regional Priority: Specific Credit	1

Total — Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

GreenPoint Rated Checklist: Multifamily

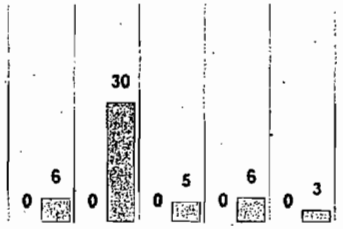
The GreenPoint Rated checklist tracks green features incorporated into the home. **A home is only GreenPoint Rated if all features are verified by a Certified GreenPoint Rater through Build It Green.** GreenPoint Rated is provided as a public service by Build It Green, a professional non-profit whose mission is to promote healthy, energy and resource efficient buildings in California.
The minimum requirements for a GreenPoint Rated home are: Earn a total of 50 points or more; obtain the following minimum points per category: Community (6), Energy (30), Indoor Air Quality/Health (5), Resources (6), and Water (3); and meet the prerequisites A2a, E2a, H4a. (for 2008 permitted projects), J1a, N1. and Q0.

This checklist accommodates the verification of mandatory CALGreen measures but does not signify compliance unless accepted by jurisdictional authority. All CALGreen measures within the checklist must be selected as "Yes" or "n/a" for compliance with GreenPoint Rated. Build It Green is not a code enforcement agency.

The green building practices listed below are described in the GreenPoint Rated Multifamily Rating Manual. For more information please visit **www.builditgreen.org/greenpointrated.**

GreenPointRATED
A PROGRAM OF BUILD IT GREEN

Total Targeted Points:	0



Multifamily New Home 2.2 / 2008 Title 24

REQUIRED: ENTER FLOOR AREAS AND LANDSCAPED AREA BEFORE BEGINNING CHECKLIST

Enter Total Conditioned Floor Area of the Project:	100
Enter Total Non-Residential Floor Area of Project:	0
Percent of Project Dedicated to Residential Use	100%
Percentage of Site Dedicated to Landscaping	0%

Enter Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
AA. COMMUNITY DESIGN AND PLANNING		Possible Points					
1. Develop Infill Sites							
TBD a. Project is an Urban Infill Development	0	1					
b. Conserve Resources by Increasing Density -15 Units Per Acre or Greater (1 Point for every additional 5 dwelling units/acre) *Enter Project Density Number (in du/acre)*	0	10					
TBD c. Project Includes the Redevelopment of At Least One Existing Building	0				1		
TBD d. Build on Designated Brownfield Site or City-Designated Redevelopment Area	0	1					
2. Design for Walking & Bicycling							
TBD a. Sidewalks Are Buffered from Roadways & Are 5 Feet Wide (8 Feet in Retail Areas)	0	1					
TBD b. Install Traffic Calming Strategies	0	1					
TBD c. Provide Dedicated, Covered & Secure Bicycle Storage for 15% of Residents	0	1					
TBD d. Provide Secure Bicycle Storage for 5% of Non-Residential Tenant Employees & Visitors	0	1					
3. Alternative Transportation							
a. Site has Pedestrian Access Within ½ Mile of Community Services:							
TIER 1: *Enter number of services within ½ Mile:*							
1) Day Care 2) Community Center 3) Public Park							
4) Drug Store 5) Restaurant 6) School							
7) Library 8) Farmer's Market 9) After School Programs							
10) Convenience Store Where Meat & Produce are Sold							

Enter Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	TIER 2: *Enter number of services within ½ Mile:*						
	1) Bank 2) Place of Worship 3) Laundry/Cleaners 4) Hardware 5) Theater/Entertainment 6) Fitness/Gym 7) Post Office 8) Senior Care Facility 9) Medical/Dental 10) Hair Care 11) Commercial Office or Major Employer 12) Full Scale Supermarket						
	i. 5 Services Listed Above (Tier 2 Services Count as 1/2 Service Value)	0	1				
	ii.10 Services Listed Above (Tier 2 Services Count as 1/2 Service Value)	0	1				
	b. Proximity to Public Transit: Development is Located Within						
TBD	i. 1/4 Mile of One Planned or Current Bus Line Stop	0	1				
TBD	ii. 1/2 Mile of a Major Transit Stop (Commuter Train/Light Rail Transit System OR Two or More Planned/Current Bus Line Stops	0	1				
	c. Reduced Parking Capacity						
TBD	i. Less than 1.5 Parking Spaces Per Unit	0	1				
TBD	ii. Less than 1.0 Parking Spaces Per Unit	0	1				
	4. Mixed-Use Developments						
TBD	a. At least 2% of Development Floor Space Supports Mixed-Use (Non-Residential Tenants)	0	1				
TBD	b. Half of the Non-Residential Floor Space is Dedicated to Community Services (See AA3a)	0	1				
	5. Outdoor Gathering Places						
TBD	a. Private or Semi-Public Outdoor Gathering Places for Residents (Minimum of 50 sf Per Unit) (mutually exclusive with AA5b)	0	1				
TBD	b. Outdoor Gathering Place of Compact Site Provides Natural Elements (mutually exclusive with AA5a) (Projects Must Be a Minimum of 50 du/acre)	0	1				
TBD	c. Public Outdoor Gathering Places have Direct Access to At Least Two Tier 1 Community Services (See AA3a)	0	1				
	6. Design for Safety and Vandalism Deterrence						
TBD	a. Residence Entries Have Views to Callers (Windows or Double Peep Holes) & Can Be Seen By Neighbors	0	1				
TBD	b. All Main Entrances to the Building and Site are Prominent and Visible from the Street	0	1				
	7. Passive Solar Design						
TBD	a. Provide Appropriate Orientation for Maximum Energy Efficiency	0		2			
TBD	b. Provide Appropriate Shading On All South-Facing Windows for Effective Passive Solar Control	0		1			
TBD	c. Provide Thermal Mass	0		2			
	8. Adaptable Buildings						
	a. Include Universal Design Principles in Units						
TBD	i. 50% of Units	0	1				
TBD	ii. 80% of Units	0	1				

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	b. Live/Work Units Include A Dedicated Commercial Entrance	0	1					
	9. Affordability							
	a. Units are Dedicated to Households Making 80% or Less of AMI							
TBD	I. 10% of All Units	0	1					
TBD	II. 25%	0	1					
TBD	III. 50% or More	0	1					
TBD	b. Development Includes Multiple Bedroom Units (Minimum of 2 3-Bdrm Units At or Less Than 80% AMI)	0	1					
TBD	c. At least 20% of Units at 120% or Less of AMI are For-Sale	0	1					
	Total Available Points in Community Design and Planning: 42	0						
A. SITE			**Possible Points**					
	1. Protect Topsoil and Minimize Disruption of Existing Plants & Trees							
TBD	a. Protect Topsoil and Reuse After Construction	0	1			1		
TBD	b. Limit and Delineate Construction Footprint for Maximum Protection	0				1		
	2. Divert/Recycle Job Site Construction Waste (Including Green Waste and Existing Structures)							
TBD	a. Required: Divert 50% (by weight) of All Construction & Demolition Waste (Recycling or Reuse) (CALGreen code)	N				R		
TBD	b. Divert 100% of Asphalt and Concrete and 65% (by weight) of Remaining Materials	0				2		
TBD	c. Divert 100% of Asphalt and Concrete and 80% (by weight) of Remaining Materials	0				2		
	3. Construction Environmental Quality Management Plan, Duct Sealing, and Pre-Occupancy Flush-Out [*This credit is a requirement associated with PJ1: EPA IAP]							
TBD	a. Duct openings and other related air distribution component openings shall be covered during construction. (CALGreen code if applicable)	0			1			
TBD	b. Full environmental quality management plan and pre-occupancy flush out is conducted (Prerequisite is A5a)	0			1			
TBD	**4. Use Recycled Content Aggregate (Minimum 25%)**	0				1		
TBD	**5. Cool Site: Reduce Heat Island Effect on Site**	0	1					
	Total Available Points in Site: 11	0						
B. LANDSCAPE			**Possible Points**					
	1. Landscaping							
No	*Is the landscape ≥ 10% of the site area? Sites with less than 10% of the total site area dedicated to landscaping can only earn up to 4 points for measure B1a through B1g. Calculate the landscape area percentage by dividing the landscape area by the total site area. Include the building footprint(s) and all other developed portions of the site up to the site boundary.*							
TBD	a. Group Plants by Water Needs (Hydrozoning)	0					2	
TBD	b. Mulch All Planting Beds to the Greater of 3 Inches or Local Water Ordinance Requirement	0					2	
	c. Construct Resource-Efficient Landscapes							
TBD	I. No Invasive Species Listed by Cal-IPC Are Planted	0				1		
TBD	II. No Plant Species will Require Shearing	0				1		

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	iii. 75% of Plants are Drought-tolerant, California Natives, Mediterranean or Other Appropriate Species	0					3	
	d. Minimize Turf in Landscape Installed by Builder							
TBD	i. Turf Shall Not Be Installed on Slopes Exceeding 10% and No Overhead Sprinklers Installed in Areas Less than 8 Feet Wide	0					2	
TBD	ii. Turf is ≤ 25% of Landscaped Area	0					2	
	e. Install High-Efficiency Irrigation Systems							
TBD	i. System Uses Only Low-Flow Drip, Bubblers or Sprinklers	0					2	
TBD	ii. System Has Smart (Weather-based) Controller (CALGreen code if applicable)	0					3	
TBD	f. Incorporate Two Inches of Compost in the Top 6 to 12 Inches of Soil	0					3	
	g. Design Landscape to Meet Water Budget							
TBD	i. Install Irrigation System That Will Be Operated at <70% Reference ET (B1a. and B1b. are Prerequisites for Credit)	0					1	
TBD	ii. Install Irrigation System That Will Be Operated at <50% Reference ET (B1a., B1b. and B1ei. or B1eii. are Prerequisites for Credit)	0					1	
TBD	h. Incorporate Community Garden	0	1					
	2. Source Water Efficiency							
TBD	a. Use Recycled Water for Indoor and/or Outdoor Water Use	0					2	
TBD	b. Use Rainwater for Indoor and/or Outdoor Water Use	0					4	
	3. Outdoor Play Structures and Outdoor Furniture							
TBD	a. Play Structures & Surfaces Have an Average Recycled Content ≥20%	0				1		
TBD	b. Environmentally Preferable Exterior Site Furnishings	0				1		
TBD	**4. Reduce Light Pollution by Shielding Fixtures and Directing Light Downward**	0	1					
	Total Available Points in Landscape: 33	0						
C. DESIGN CONSIDERATIONS			Possible Points					
	1. Acoustics: Noise and Vibration Control (minimum 2 points for credit, including 1 Tier 1 measure, maximum of 4 points)							
TBD	TIER 1: 1) Exterior Noise Reduction	0	1					
TBD	2) Loud Single-Event Noise Reduction in Noise-Sensitive Spaces	0	1					
TBD	3) Airborne and Structure-borne Noise Reduction (e.g., walls, floor-ceilings)	0	1					
TBD	4) Mechanical Ventilation Noise and Vibration Control	0	1					
TBD	5) Plumbing Noise and Vibration Reduction	0	1					
TBD	TIER 2: 1) Minimize Stair Impact Noise	0	0.5					
TBD	2) Minimize Floor Squeaks	0	0.5					
TBD	3) Minimize Trash Chute Noise	0	0.5					
TBD	4) Mixed-Use Noise and Vibration Reduction	0	0.5					
	2. Mixed-Use Design Strategies							
TBD	a. Develop Green Tenant Improvement Requirements for Build Outs	0	2					
TBD	b. Commercial Loading Area Separated from Residential area	0			1			
TBD	c. Separate Mechanical and Plumbing Systems	0			1			
	3. Commissioning							
TBD	a. Design Phase (Define Owner's Project Requirements, Basis of Design, and Develop Plan)	0		1	1			

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	b. Construction Phase (Perform Functional Testing)	0		2				
TBD	c. Post-Construction Phase (Verify Compliance, Commissioning Report, Training and Warranty Review)	0	1	1				
	Total Available Points in Design Considerations: 14	0						
D. FOUNDATION, STRUCTURAL FRAME & BUILDING ENVELOPE				Possible Points				
TBD	1. Replace Portland Cement in Concrete with Recycled Fly Ash and/or Slag (Minimum 20%)	0				3		
TBD	2. Design, Build and Maintain Structural Pest and Rot Controls (for low-rise projects)	0			1	1		
	3. Construction Material Efficiencies							
TBD	a. Wall and Floor Assemblies (excluding solid wall assemblies) are Delivered Panelized from Supplier (Minimum of 80% square feet)	0				1		
TBD	b. Modular Components are Delivered Assembled to the Project (Minimum 25%)	0				6		
	c. Optimal Value Engineering							
TBD	i. Studs at 24 Inch on Center at Interior Non-Bearing Walls and Top Floor	0				1		
TBD	ii. Door & Window Headers Sized for Load	0				1		
TBD	iii. Use Only Cripple Studs Required for Load	0				1		
	4. Use Engineered Lumber							
TBD	a. Engineered Beams and Headers	0				1		
TBD	b. Wood I-Joists or Web Trusses for Floors	0				1		
TBD	c. Engineered Lumber for Roof Rafters	0				1		
TBD	d. Engineered or Finger-Jointed Studs for Vertical Applications	0				1		
TBD	e. Oriented Strand Board for Subfloor	0				1		
TBD	f. Oriented Strand Board for Wall and Roof Sheathing	0				1		
TBD	5. Insulated Headers	0		1				
	6. Use FSC-Certified Wood							
TBD	a. Dimensional Lumber, Studs and Timber (Minimum 40%)	0				4		
TBD	b. Panel Products (Minimum 40%)	0				2		
TBD	7. Energy Heels on Roof Trusses for Low-Rise Projects	0		1				
	8. Use Solid Wall Systems (Includes SIPS, ICFs, & Any Non-Stick Frame Assembly)							
TBD	a. Floors	0				2		
TBD	b. Walls	0				2		
TBD	c. Roofs	0				1		
	Total Available Points in Foundation, Structural Frame & Building Envelope: 34	0						
E. EXTERIOR				Possible Points				
	1. Drainage Planes and Durable Siding							
TBD	a. Install a Rain Screen Wall System	0				2		
TBD	b. Use Durable and Non-Combustible Siding Materials	0				1		
	2. Durable Roofing Options							
TBD	a. *Required:* All Roofing Has 3-Year Subcontractor Warranty and a 20-Year Manufacturer Warranty	N				R		
TBD	b. Build with Durable and Fire Resistant Roofing Materials or Assembly	0				1		

Enter Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD 3. Vegetated Roof (2 points for 25%, 4 points for 50%)	0	4					
Total Available Points in Exterior: 8	0						
F. INSULATION		Possible Points					
1. Install Insulation with 75% Recycled Content							
TBD a. Walls	0				1		
TBD b. Ceilings	0				1		
TBD c. Floors	0				1		
Total Available Points in Insulation: 3	0						
G. PLUMBING		Possible Points					
1. Water Efficient Fixtures							
a. Install High Efficiency Toilets (Dual Flush or ≤ 1.28 Gallons Per Flush (gpf)) (CALGreen code if applicable)							
TBD i. In All Residences	0					2	
TBD ii. In All Non-Residential Areas	0					0	
b. High Efficiency Urinals or No-Water Urinals Are Specified:							
TBD i. Average Flush Rate is ≤0.5 gpf (CALGreen code if applicable)	0					1	
TBD ii. Average Flush Rate is ≤0.1 gpf	0					1	
TBD c. High Efficiency Showerheads Use ≤ 2.0 Gallons Per Minute (gpm) at 80 psi (CALGreen code if applicable)	0					3	
d. Flow Limiters Or Flow Control Valves Are Installed on All Faucets							
TBD i. Residences: Kitchen - ≤ 1.8 gpm (CALGreen code if applicable)	0					1	
TBD ii. Non-Residential Areas: Kitchen - ≤ 1.8 gpm (CALGreen code applicable)	0					0	
TBD iii. Residences: Bathroom Faucets- ≤ 1.5 gpm at 60psi	0					1	
TBD iv. Non-Residential Areas: Bath Faucets - ≤ .5 gpm or .25 gal for meter faucets (CALGreen code if applicable)	N					0	
2. Distribute Domestic Hot Water Efficiently (G2a is a Prerequisite for credit for G2 b-e. Maximum 5 Points)							
TBD a. Insulate All Hot Water Pipes [*This credit is a requirement associated with PJ1: EPA IAP]	0		1			1	
TBD b. Use Engineered Parallel Plumbing	0					1	
TBD c. Use Engineered Parallel Plumbing with Demand Controlled Circulation Loop(s)	0					1	
TBD d. Use Traditional Trunk, Branch and Twig Plumbing with Demand Controlled Circulation Loop(s)	0		1			2	
TBD e. Use Central Core Plumbing	0		1		1	1	
TBD 3. Water Submetering: Bill Tenants for Actual Usage	0					4	
Total Available Points in Plumbing: 18	0						
H. HEATING VENTILATION AND AIR CONDITIONING		Possible Points					
TBD 1. Install High Performing Zoned Radiant Hydronic Heating	0			2			
TBD 2. Install High Efficiency Air Conditioning with Environmentally Preferable Refrigerants	0	1					
3. Advanced Ventilation Practices for Cooling							

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	a. Operable Windows or Skylights Are Placed To Induce Cross Ventilation In At Least One Room In 80% of Units	0		1	1			
	b. Mechanical Ventilation System for Cooling:							
TBD	i. ENERGY STAR Ceiling Fans and Light Kits in Living Areas & All Bedrooms	0		1				
TBD	ii. Whole House Fan (CALGreen code if applicable)	0		1				
	4. Advanced Mechanical Ventilation for IAQ							
TBD	a. *Required:* Compliance with ASHRAE 62.2 Mechanical Ventilation Standard (As Adopted in Title 24 Part 6). *N/A for projects permitted under 2005 Title 24.*	N			R			
TBD	b. Advanced Ventilation Practices (Continuous Operation, Sone Limit, Minimum Efficiency, Minimum Ventilation Rate, Homeowner Instructions)	0			1			
TBD	c. Outdoor Air Ducted to Bedroom and Living Areas of Home	0			2			
TBD	d. ENERGY STAR Bathroom Fans on Timer or Humidistat (CALGreen code if applicable)	0			1			
TBD	**5. Garage Ventilation Fans Are Controlled by Carbon Monoxide Sensors** (Passive Ventilation Not Eligible) [*This credit is a requirement associated with PJ1: EPA IAP]	0			1			
TBD	**6. Install Carbon Monoxide Alarms** (or No Combustion Appliances in Living Space and No Attached Garage) [*This credit is a requirement associated with PJ1: EPA IAP]	0			1			
	Total Available Points in Heating Ventilation and Air Conditioning: 13	0						
I. RENEWABLE ENERGY			Possible Points					
TBD	**1. Solar Hot Water System Preheats Domestic Hot Water**	0		4				
	2. Offset a Percentage of the Project's Estimated Electricity Demand with Onsite Renewable Generation							
TBD	a. 60% of Common Area Load	0	2	2				
TBD	b. 90% of Common Area Load	0	2	2				
TBD	c. 10% or More of Residential Units Load	0	2	2				
	Total Available Points in Renewable Energy: 16	0						
J. BUILDING PERFORMANCE			Possible Points					
	1. Building Performance Exceeds Title 24							
2008	*Is project permitted under 2005 Title 24 or 2008 Title 24?*							
	Enter the Percent Better Than Title 24 for Residential and Non-Residential Portions of the Project.							
0%	a. *Required:* Residences: Minimum 15% Better Than Title 24. 2 Points for Every 1% Better Than Title 24	0		30+				
0%	b. Non-Residential Spaces: 1 Point for Every 1% Better Than Title 24, adjusted for square footage	0		1+				
	2. Building Envelope Diagnostic Evaluations							
TBD	a. Duct Testing Results in Leakage < 6% [*This credit is a requirement associated with PJ1: EPA IAP]	0		1				

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	b. Blower Door Testing Results for Air Change per Hour is < 3.5 ACH_{50} [*This credit is a requirement associated with PJ1: EPA IAP]	0		2				
TBD	c. Verify Quality of Insulation Installation & Thermal Bypass Checklist before Drywall [*This credit is a requirement associated with PJ1: EPA IAP]	0		1				
TBD	**3. Design and Build Near Zero Energy Homes** *(Enter number of points, minimum of 2 and maximum of 6 points)*	0		6				
TBD	**4. Title 24 Prepared and Signed by a CABEC Certified Energy Plans Examiner (CEPE)**	0		1				
	5. Participation in Utility Program with Third Party Plan Review							
TBD	a. Energy Efficiency Program [*This credit is a requirement associated with PJ1: EPA IAP]	0		1				
TBD	b. Renewable Energy Program with Min. 30% Better Than Title 24 (High Performing Home)	0		1				
	Total Available Points in Building Performance: 43+	0						
K. FINISHES				**Possible Points**				
	1. Entryways							
TBD	a. Design Entryways to Reduce Tracked-In Contaminants for All Home Entrances	0			1			
TBD	b. Permanent Walk-Off Systems Are Provided at All Main Building Entrances & In Common Areas	0			1			
TBD	**2. Use Recycled Content Paint**	0				1		
	3. Low/No-VOC Paints & Coatings [*This credit is a requirement associated with PJ1: EPA IAP]							
	a. Low-VOC Interior Wall/Ceiling Paints (<50 grams per liter (gpl) VOCs regardless of sheen) (CALGreen code if applicable)							
TBD	i. In All Residences	0			1			
TBD	ii. In All Non-Residential Areas	0			0			
	b. Zero-VOC: Interior Wall/Ceiling Paints (<5 gpl regardless of sheen)							
TBD	i. In All Residences	0			1			
TBD	ii. In All Non-Residential Areas	0			0			
	c. Use Low-VOC Coatings That Meet SCAQMD Rule 1113 (CALGreen code if applicable)							
TBD	i. In All Residences	0			2			
TBD	ii. In All Non-Residential Areas	0			0			
TBD	**4. Use Low VOC Caulks, Construction Adhesives and Sealants that Meet SCAQMD Rule 1168 (CALGreen code if applicable)**	0			1			
	5. Environmentally Preferable Materials for Interior Finish: A) FSC-Certified Wood, B) Reclaimed Lumber, C) Rapidly Renewable, D) Recycled-Content, E) Finger-Jointed, or F) Local							
	a. Residences: At Least 50% of Each Material:							
TBD	i. Cabinets	0				2		
TBD	ii. Interior Trim	0				2		
TBD	iii. Shelving	0				2		
TBD	iv. Doors	0				2		
TBD	v. Countertops	0				2		
	b. Non-Residential Areas: At Least 50% of Each Material:							

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	I. Cabinets	0				0		
TBD	II. Interior Trim	0				0		
TBD	iii. Shelving	0				0		
TBD	Iv. Doors	0				0		
TBD	v. Countertops	0				0		
TBD	**6. Reduce Formaldehyde in Interior Finish – Meet Current CARB Airborne Toxic Control Measure (ATCM) for Composite Wood Formaldehyde Limits by Mandatory Compliance Dates** (CALGreen code if applicable) [*This credit is a requirement associated with PJ1: EPA IAP]	N			0			
	7. Reduce Formaldehyde in Interior Finish - Exceed Current CARB ATCM for Composite Wood Formaldehyde Limits Prior to Mandatory Compliance Dates							
	a. Residences: At Least 90% of Each Material:							
TBD	i. Doors	0			1			
TBD	ii. Cabinets and Countertops	0			2			
TBD	iii. Interior Trim and Shelving	0			1			
	b. Non-Residential Areas: At Least 90% of Each Material							
TBD	i. Doors	0			0			
TBD	ii. Cabinets and Countertops	0			0			
TBD	iii. Interior Trim and Shelving	0			0			
	8. Durable Cabinets							
TBD	a. Residences	0				1		
TBD	b. Non-Residential Areas	0				0		
TBD	**9. At Least 25% of All Newly Supplied Interior Furniture has Environmentally Preferable Attributes**	0				1		
	Total Available Points in Finishes: 26	0						
L. FLOORING			Possible Points					
	1. Use Environmentally Preferable Flooring (Minimum 15% of Floor Area) A) FSC-Certified Wood, B) Reclaimed or Refinished, C) Rapidly Renewable, D) Recycled-Content, E) Exposed Concrete, or F) Local. *Flooring Adhesives Must Meet SCAQMD Rule 1168 for VOCs*							
TBD	a. Residences	0				4		
TBD	b. Non-Residential Areas	0				0		
	2. Low-Emitting Flooring [*This credit is a requirement associated with PJ1: EPA IAP]							
TBD	a. Residences: Low Emitting Flooring (50% Minimum) (Section 01350, CRI Green Label Plus, Floorscore)	0			2			
TBD	b. Non-Residential Areas: Low-Emitting Flooring (50% Minimum) (Section 01350, CRI Green Label Plus, Floorscore)	0			0			
TBD	**3. All carpet and 50% of Resilient Flooring is low emitting.** (CALGreen code if applicable)	N			0			
	Total Available Points in Flooring: 6	0						
M. APPLIANCES & LIGHTING			Possible Points					

Enter Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
1. ENERGY STAR Appliances							
TBD a. Install ENERGY STAR Dishwasher (Must Meet Current Specifications)	0		1			1	
b. Install ENERGY STAR Clothes Washer							
TBD i. Meets ENERGY STAR and CEE Tier 2 Requirements (Modified Energy Factor ≥2.0; Water Factor ≤6.0) (Total 3 Points)	0		1			2	
TBD ii Meets ENERGY STAR and CEE Tier 3 Requirements (Modified Energy Factor ≥2.2; Water Factor ≤4.5) (Total 5 Points)	0					2	
c. Install ENERGY STAR Refrigerators in All Locations							
TBD i. ENERGY STAR-Qualified & < 25 Cubic Feet Capacity	0		1				
TBD ii. ENERGY STAR-Qualified & < 20 Cubic Feet Capacity	0		1				
TBD **2. Common Laundry Facilities Are Provided for All Occupants**	0				1		
TBD **3. Provide Built-In Recycling Center In Each Residential Unit**	0				1		
4. Low-Mercury Lamps							
TBD a. Low-Mercury Products Are Installed Wherever Linear Fluorescent Lamps Are Used or Replaced	0				1		
TBD b. Low-Mercury Products Are Installed Wherever Compact Fluorescent Lamps Are Used or Replaced	0				1		
5. Install High-Efficacy Lighting and Design Lighting System							
TBD a. Install High-Efficacy Lighting	0		1				
TBD b. Install a Lighting System to IESNA Footcandle Standards or Hire Lighting Consultant	0		1				
TBD **6. Gearless Elevators Are Installed**	0		1				
Total Available Points in Appliances & Lighting: 16	0						
N. OTHER			Possible Points				
TBD 1. *Required:* **Incorporate GreenPoint Rated Checklist in Blueprints** [*This credit is a requirement associated with PJ1: EPA IAP]	N	R					
TBD **2. Pre-Construction Kick-Off Meeting with Rater and Subs**	0	1					
3. Operations & Maintenance Manuals and Training [*This credit is a requirement associated with PJ1: EPA IAP]							
TBD a. Provide O&M Manual to Building Maintenance Staff (CALGreen code if applicable)	0		1				
TBD b. Provide O&M Manual to Occupants and Orientation	0		1			1	
TBD **4. Residents Are Offered Free or Discounted Transit Passes**	0	2					
TBD **5. Educational Signage of Project's Green Features**	0	1					
TBD **6. Install Home/Building System Monitor(s)**	0		1				
TBD **7. Use Vandalism Deterrence Practices and Develop Vandalism Management Plan**	0	1					
Total Available Points in Other: 9	0						
O. (Not Used)							
P. INNOVATIONS			Possible Points				
A. Site							
1. Stormwater Control: Prescriptive Path (Maximum of 3 Points, Mutually Exclusive With PA2)							
TBD a. Use Permeable Paving for 25% of Driveways, Patios and Walkways	0	1					
TBD [illegible] Retention and Filtration Features	0						

Enter Project Name		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	c. Route Downspout Through Permeable Landscape	0	1					
TBD	d. Use Non-Leaching Roofing Materials	0	1					
TBD	e. Include Smart Street/Driveway Design	0	1					
	2. Stormwater Control: Performance Path (Mutually Exclusive With PA1):	0						
TBD	Perform a Soil Percolation Test and Capture and Treat 85% of Total Annual Runoff	0	3					
	D. Foundation, Structural Frame and Building Envelope							
TBD	1. Use Radon Resistant Construction [*This credit is a requirement associated with PJ1: EPA IAP]	0			2			
TBD	2. Install a Foundation Drainage System [*This credit is a requirement associated with PJ1: EPA IAP]	0				2		
TBD	3. Moisture Controlled Crawlspace [*For projects with crawlspaces, this credit is a requirement associated with PJ1: EPA IAP]	0			2			
	E. Exterior							
TBD	1. Flashing Installation Techniques Specified and Third-Party Verified [*This credit is a requirement associated with PJ1: EPA IAP]	0				1		
	H. Heating Ventilation and Air Conditioning							
TBD	1. Design and Install HVAC System to ACCA Manual J, D, and S Recommendations (CALGreen code if applicable) [*This credit is a requirement associated with PJ1: EPA IAP]	0		4				
TBD	2. Pressure Relieve the Ductwork System (Mutually exclusive with H1) [*For projects with ducted systems, this credit is a requirement associated with PJ1: EPA IAP]	0		1				
TBD	3. Install High Efficiency HVAC Filter (MERV 6+, Mutually exclusive with H1.) [*This credit is a requirement associated with PJ1: EPA IAP]	0		1				
	J. Building Performance							
TBD	1. Obtain EPA Indoor airPlus Certification *(Total 39 possible points, not including Title 24 performance; read comment)*	0		2				
TBD	2. Third-Party Testing of Mechanical Ventilation Rates for IAQ (Meet ASHRAE 62.2) [*This credit is a requirement associated with PJ1: EPA IAP]	0			2			
TBD	3. ENERGY STAR New Homes: High-Rise Pilot Program	0		1				
	K. Finishes							
TBD	1. Use Moisture Resistant Material in Wet Areas: Kitchens, Bathrooms, Utility Rooms and Basements [*This credit is a requirement associated with PJ1: EPA IAP]	0			1	1		
TBD	2. Materials Meet SMaRT Criteria *(Select number of points, up to 5 points)*	0				5		
	N. Other							
	1. Innovation: List innovative measures that meet green building objectives. Enter in the number of points in each category in the blue cells for a maximum of 4 points for the measure. The "points achieved" column will be automatically fill in based on the sum of the points in each category. Points and measures will be evaluated by Build It Green.							
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						

Enter Project Name

		Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
TBD	Innovation: Enter up to 4 Points in blue cells at right. Enter description here	0						
	Total Available Points in Innovation: 26+	0						
Q.	CALGreen CODE		Possible Points					
No	**0. Home meets all applicable CALGreen measures listed in above Sections A - P of the GreenPoint Rated checklist.**	N	R					
	The following measures are mandatory in the CALGreen code and do not earn points in the GreenPoint Rated Checklist but have been included in the Checklist for the convenience of jurisdictions. *The GreenPoint Rater is not a code enforcement official. The measures in this section may be verified by the GreenPoint Rater at their own discretion and/or discretion of the building official.*							
TBD	1. CALGreen 4.106.2 Storm water management during construction.	N						
TBD	2. CALGreen 4.106.3 Design for surface water drainage away from buildings.	N						
TBD	3. CALGreen 4.303.1 As an alternative to perscriptive compliance, a 20% reduction in baseline water use shall be demonstrated through calculation	N						
TBD	4. CALGreen 4.406.1 Joints and openings. Annular spaces around pipes, electric cables, conduits, or other openings in plates at exterior walls shall be protected	N						
TBD	5. CALGreen4.503.1 Gas fireplace shall be a direct-vent sealed-combustion type. Woodstove or pellet stove shall comply with US EPA Phase II emission limits	N						
TBD	6. CALGreen 4.505.2 Vapor retarder and capillary break is installed at slab on grade foundations.	N						
TBD	7. CALGreen 4.505.3 19% moisture content of building framing materials	N						
TBD	8. CALGreen 702.1 HVAC system installers are trained and certified in the proper installation of HVAC systems.	N						
	Total Available Points in CALGreen Code: 0	0						

Summary

		Community	Energy	IAQ/Health	Resources	Water
Total Available Points		62	86+	35	87	48
Minimum Points Required		6	30	5	6	3
Total Points Achieved	0	0	0	0	0	0

Project has not yet met the recommended minimum requirements

- *Total Project Score of At Least 50 Points*
- *Required measures:*
  - *-A2a: 50% waste diversion by weight*

Enter Project Name	Points Achieved	Community	Energy	IAQ/Health	Resources	Water	Notes

-E2a: All Shingle Roofing Has 3-Yr Subcontractor Warranty & 20-Yr Manufacturer Warranty
-H4a: Compliance with ASHRAE 62.2 Mechanical Ventilation Standards (2008 Title 24 projects)
-J1a: 15% above Title 24
-N1: Incorporate GreenPoint Rated Checklist in Blueprints

- Minimum points in specific categories:
-Community (6 points)
-Energy (30 points)
-IAQ/Health (5 points)
-Resources (6 points)
-Water (3 points)

Attachment 4

Green Building Standards

Third Party Rating Systems

GreenPoint Rated (GPR)

Developed in the San Francisco Bay Area in 2003, Build It Green is a commonly used standard for residential projects. GPR's categories and the required minimum points to reach certification include Indoor Air Quality and Health (5 pts), Energy (30 pts), Community (no minimum), Resources (6 pts) and Water (9 pts). Each project type has its own checklist of requirements. To achieve project certification, a minimum of 50 points must be achieved, including the required points in each category listed above.

The process for certification begins when the property owner/developer contracts with a Certified GreenPoint Rater, an independent professional certified through Build It Green. The Rater performs inspections and verifications throughout the building process. The average cost of a Rater is $700 to $1,500 for a single-family home and $3,750 to $6,000 for a 30-unit multi-family project.[1]

LEED

Since 2001, LEED has been recognized as a standard for commercial, nonresidential projects but has since developed standards and rating systems for other project types. Today, LEED has nine project categories available for certification.

In addition, LEED has multiple certification tiers and required points – Certified (40-49 pts), Silver (50-59 pts), Gold (60-79 pts), and Platinum (80-100), in order of increasing stringency. In general, LEED focuses on the following categories: Sustainable Sites, Water Efficiency, Energy & Atmosphere, Materials & Resources, Indoor Environmental Quality, and Innovation & Design.

The certification cost for a LEED project is in the range of $2,000 to $27,500. The actual cost is based on the size of the project and the chosen review process.[2]

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[1] Build It Green web site, Rating Process and Fees: *http://www.builditgreen.org/rating-process--fees/.*
[2] U.S. Green Building Council, Green Building Certification Institute, web site: *http://www.gbci.org/main-nav/building-certification/certification-guide/leed-for-new-construction/submit-application/cert-fees.aspx.*

Other Third-Party Rating Systems

In addition to GPR and LEED, some cities have provided flexibility in their green building ordinance for the use of equivalent third-party certification systems outside of these popular systems. Some examples include Green Globes U.S., GBTool and CASBEE (Comprehensive Assessment System for Building Environmental Efficiency).

Title 24

Title 24, known as the California Building Standard Code, is administered by the California Building Standards Commission and provides standards for all building and occupancy types. The parts in Title 24 with direct regulatory impact on green building ordinances are Part 6, the California Energy Code, and Part 11, the California Green Building Standard Code (or CalGreen).

Part 6 – California Energy Code

The Energy Code mandates energy efficiency standards in new residential and nonresidential construction and is managed through the California Energy Commission. Updates to the code occur every three years. A city has the option to adopt a local energy code that exceeds the requirements of Part 6. Findings must be made that show the local energy code complies, at a minimum, with requirements of the Energy Code and must be approved by the California Energy Commission before being effective.

Part 11 – California Green Building Standard Code

The 2010 CalGreen Code is part of the State's new building code, effective January 1, 2011. The CalGreen Code has mandatory green building requirements for new construction as well as two sets of voluntary provisions referred to as Tier I and Tier II. Cities can adopt these tiers, in part or in their entirety, as their referenced standards. Once effective, all new development must meet the mandatory measures outlined in CalGreen. While CalGreen will not apply to renovations of existing buildings, a local jurisdiction can adopt these standards to apply to various residential and nonresidential projects.

CalGreen includes mandatory indoor water conversation measures that will be effective midyear 2011. These standards mirror those outlined by BAWSCA's Template Indoor Water Use Efficiency Ordinance. Thus, by default, complying with CalGreen will implement BAWSCA's recommended ordinance for new construction.

Comparison of CalGreen to Build It Green and LEED

Cities have the option of adopting of CalGreen's voluntary tiers, Tier I or Tier II, as an alternative to using GreenPoint Rated or LEED as a mandatory green building standard. CalGreen's tiers are not point-based rating systems; instead, they consist of additional prerequisite requirements and electives that go above and beyond the minimum mandatory requirements in CalGreen for new development. To understand how CalGreen's green building measures relate to GreenPoint Rated and LEED, Global Green USA assessed how the CalGreen's mandatory measures, Tier I and Tier II, compare to LEED and GreenPoint Rated for new residential and nonresidential projects. Table 1 summarizes their findings:

Table 1
Comparison of CalGreen Code Tier I and Tier II
to GreenPoint Rated and LEED

CalGreen Code	Mandatory	Tier I	Tier II
Nonresidential	15 LEED Points Note Certified	30 LEED Points Note Certified	40 LEED Points Certified
Residential	30 GPR Points No GPR Label	70 GPR Points GPR Label	100 GPR Points GPR Label

The comparison chart shows that to achieve the approximate equivalent of LEED certification a city would need to adopt Tier II for nonresidential projects. To achieve the equivalence of a GPR level, a city would need to adopt Tier I for residential projects. While this is a limited comparison, it does show that the third-party rating systems are more stringent than the mandatory elements of CalGreen.

Costs and Benefits of Green Building

The recently released study Greening Our Building World: Costs Benefits, and Strategies, by the nationally recognized environmental finance expert Greg Kats, provides an analysis of data from 170 LEED Certified, Silver, Gold, and Platinum certified buildings.[1] LEED is the most commonly used green building rating system nationally and is one of the rating systems cited in the GBC Phase II Recommendations.

The results from the Kats analysis showed that more than three quarters of the 170 projects in the data set added from 0-4 percent additional cost, or about $3-$9 per square foot. Sixty-nine buildings reported a 0-1 percent increase in cost associated with green building measures. Kats explains that the findings from the survey are similar to other studies using different approaches, most notable the *Costs of Green Building Revisited* (2007) by Davis Langdon Associates. Kats suggests that the design team's experience, choice of green building measures, and early integration of green design are critical to keeping costs down. Kats also notes that the "green premium tends to be higher in buildings that incorporate more green elements, [but] this is not universally true."

The average energy-use reduction for buildings in the Kats study was 35 percent, with a corresponding reduction in Greenhouse gases. Water savings of 20% are also typical of LEED certified buildings, as are construction waste reductions of 50% or greater. Additionally, research suggests that green building measures to improve indoor environmental quality improve the conditions that contribute to asthma, colds, flu, allergies, sick-building syndrome and mental health problems. But, Kats notes that the magnitude of impacts has not yet been ascertained.

Using cost information and averages from the Kats study, below is a summary on incremental costs of implementing green measures for a commercial and residential project. These calculations are basic and are not as accurate as those that will be introduced to Council in the Cost-Effectiveness Study. However, they are introduced here to provide context.

Using a 0-2 percent increase in cost, a large commercial building (100,000 sq.ft. with $20 Million construction valuation) achieving LEED Certified levels would experience an increased cost due to green measures of $0 - $400,000 (0-4%). Using industry standards for utility costs of $1.50 - $2.25/sq.ft./year, a 15% energy

[1] Greg Kats. *Our Built World: Costs, Benefits, and Strategies.* (Washington D.C.: Island Press, 2010), 3.

savings would result in annual savings of $22,500 to $33,750 or an 11-17 year payback. At a 35% energy savings, it increases to an annual savings of $52,500 - $78,750 with a payback of 5-7 years.

For a large single-family home (2,500 sq.ft. with $500,000 construction valuation) achieving a LEED Homes Certified level, the incremental cost of implementing green building measures would be $0-$10,000 (0-0.2%). Using utility costs of $.75-$1.25/sq.ft./year, at 15% energy savings would result in annual savings of $281-$468 with a payback of 21-35 years. At a 35% energy reduction, the savings increases to $656-$1,093 per year or a payback of 9-15 years.

Comparison of Other Bay Area Cities' Green Building Ordinances

City	Type of Construction	Type of Building	Green Building Thresholds and Standards	Require Third-Party Certification
Los Altos[1]	New	Residential	50 GreenPoint Rated pts	No
		Mixed Use	15% above Title 24	No
		NonResidential	15% above Title 24	No
	Renovations	Residential	50 GreenPoint Rated pts	No
		Mixed Use	15% above Title 24	No
		NonResidential	15% above Title 24	No
Milpitas[2]	New	Residential	**< 5 units** - GreenPoint Rated or LEED checklist **≥ 5 units** - 50 GreenPoint Rated pts	No
		Mixed Use	Combination of LEED and GreenPoint Rated that are applicable	No
		NonResidential	**500 - 25,000 SF** - LEED checklist **25,000 - 49,999 SF** - LEED Certified **≥50,000 SF** - LEED Silver	No
	Renovations	Residential	NA	No
		Mixed Use	NA	No
		NonResidential	≥50,000 SF - LEED Silver	No
Morgan Hill	New	Residential	≤ 2,000 SF - 70 GreenPoint Rated pts or LEED Home Certified > 2,000 SF - 70 GreenPoint Rated pts + 1 point per additional 75 SF - Bonus points for LEED Silver	No
		Mixed Use	≤10,000 SF - comply with residential and commercial standards and 1) exceed Title 24 by 10-15%, 2) provide a built-in recycling center, 3) use LEED approved recyclable or recycled content carpet/cushion, 4) use LEED approved VOC limits > 10,000 SF - same as above + bike storage and changing room facility	No
		NonResidential	≤1,000 SF - 15 LEED pts > 5,000 SF - LEED Silver	No
	Renovations	Residential	New Additions ≤ 250 SF - 25 GreenPoint Rated pts, > 700 SF - 50 GreenPoint Rated pts Remodels: Permit Value ≥ $100,000 - 25 GreenPoint Rated pts, Permit Value ≥ $250,000 - 50 GreenPoint Rated pts	No
		Mixed Use	Must comply with applicable standards	No

City	Type of Construction	Type of Building	Green Building Thresholds and Standards	Require Third-Party Certification
		NonResidential	(Small) Permit Value ≥ $350,000 - 10 LEED pts (Medium) Permit Value ≥ $500,000 - LEED Certified (Large) Permit Value ≥ $15 M - LEED Silver	No
Palo Alto[4]	New	Residential	SFR: **> 1250 SF** - 70 GreenPoint Rated pts + 1 pt per additional 70 so over 2,550 SF (150 max pts) Multi-Fam: **3+ Units** - 70 GreenPoint Rated pts	No
		Mixed Use	Apply the standards that are applicable	No
		NonResidential	**500 - 5,000 SF** - LEED Prerequisites + 5 pts required for every 500 SF **≥ 5000 SF** - LEED Silver	No
	Renovations	Residential	SFR: **250 - 1250 SF and ≥ $100,000 valuation** - GreenPoint Rated checklist; **>1250 SF** - 50 GreenPoint Rated pts Multi-Fam: **250 - 1250 SF and ≥ $100,000 valuation** - GreenPoint Rated checklist; **adding 50% SF or more to units and include replacement of 2 building systems** (HVAC, Building envelope, hot water, lighting) - 50 GreenPoint Rated pts	No
		Mixed Use	Apply the standards that are applicable	No
		NonResidential	**≥ 500 SF and ≥ $100,000 valuation** - GreenPoint Rated checklist and Energy Star Portfolio Manager Rating **≥ 5000 SF that include alteration/replacement of 2 building systems** (HVAC, building envelope, hot water, lighting system) - LEED Certified	No
San Jose[5]	New	Residential	(Small) < 10 units - GreenPoint Rated or LEED Homes checklist (Large) >10 units - 50 GreenPoint Rated pts or LEED Homes certified (High Rise Residential) 75 ft or higher - LEED Certified	Yes, large and/or high rise residential projects must be certified
		Mixed Use	Apply the standards that are applicable	Yes, if applicable
		NonResidential	(Small) < 25,000 SF - LEED Checklist (Large) ≥25,000 SF - LEED Silver	Yes, large projects must be certified
	Renovations	Residential	NA	NA
		Mixed Use	NA	NA
		NonResidential	NA	NA

City	Type of Construction	Type of Building	Green Building Thresholds and Standards	Require Third-Party Certification
Sunnyvale[6]	New	Residential	SFR: ≤ 1500 SF - GreenPoint Rated checklist; > 1500 SF - 70 GreenPoint Rated pts Multi-Fam: ≥3 Units - 70 GreenPoint Rated pts	No (Yes, if granted incentives)
		Mixed Use	NA	NA
		NonResidential	500 - 5,000 SF - LEED checklist 5,001- 50,000 SF - LEED checklist at Certified level > 50,000 SF - LEED checklist at Silver Certified level	No (Yes, if granted incentives)
	Renovations	Residential	SFR: > $100,000 valuation - GreenPoint Rated checklist Multi-Fam: > $250,000 valuation - GreenPoint Rated checklist	No
		Mixed Use	NA	NA
		NonResidential	10,000 - 50,000 SF - LEED Checklist > 50,000 SF - LEED checklist at Certified level	No
San Rafael	New	Residential	SFR: 500 - 2,499 SF - 75 GreenPoint Rated pts; 2,500 - 3,999 SF - 100 GreenPoint Rated pts; 4,000 - 5,499 SF - 125 GreenPoint Rated pts; 5,500 - 6,999 SF - 150 GreenPoint Rated pts; 7,000+ SF - 200 GreenPoint Rated pts Multi-Fam: 2 - 1,000 SF - 50 GreenPoint Rated pts; 1000+ SF - 75 GreenPoint Rated pts	Yes
		Mixed Use	None	No
		NonResidential	2,000 - 4,999 SF - LEED checklist and compliance with prerequisites 5,000 - 49,999 SF - LEED Silver > 50,000 - SF - LEED Gold	Yes (> 50,000 Square feet)
	Renovations	Residential	SFR: < $50,000 valuation - Insulate exposed hot water pipes, install radiant barrier when reroofing and remove sheathing; $50,000 - $99,999 Valuation or < 500 SF - GreenPoint Rated checklist and completion of HERS II Performance Audit; $100,000 - $149,999 or 500 - 749 SF - 25 GreenPoint Rated pts; $150,000 - $299,999 valuation or 750 - 999 SF - 35 GreenPoint Rated pts; $300,000+ valuation or 1,000+ SF - 50 GreenPoint Rated pts and 20% improvement in HERS II Performance Audit or minimum score of 100 Multi-Fam: None	No

City	Type of Construction	Type of Building	Green Building Thresholds and Standards	Require Third-Party Certification
		Mixed-Use	None	N/A
		NonResidential	~$500,000 valuation or 500 - 4,999 SF - voluntary compliance with LEED prerequisites WE P1, EA P3, EA C1.3 $500,000 - $5 M valuation or 5,000 - 24,999 SF - mandatory compliance with LEED prerequisites WE P1, EA P3, EA C1.3, $5 M+ valuation or 25,000+ SF - LEED Silver	No
Novato[8]	New	Residential	50 pts from measures in 2007 CalGreen Code	No
		Mixed-Use	NA	No
		NonResidential	NA	No
	Renovations	Residential	**adding 50% more SF to home/unit** - 30 pts from measures in 2007 CalGreen Code	No
		Mixed-Use	NA	No
		NonResidential	NA	No
Pleasanton[9]	New	Residential	SFR: ≥2,000 SF - 50 GreenPoint Rated pts Multi-Fam: All projects - 50 GreenPoint Rated pts	No
		Mixed-Use	50 GreenPoint Rated pts	
		NonResidential	≥20,000 SF - LEED Certified	
	Renovations	Residential	≥2,000 SF - 50 GreenPoint Rated pts	No
		Mixed-Use	NA	
		NonResidential	≥20,000 Sq. ft. - LEED Certified	
Rohnert Park[10]	New	Residential	SFR: **1-6 units** - 110 pts; **7-12 units** - 100 pts; **13+ units** - 90 pts Multi-Fam: **All projects** - 80 pts.	No
		Mixed-Use	None	No
		NonResidential	**< 20,000 SF** - LEED Certified **20,000 - 50,000 SF** - LEED Silver **> 50,000 SF** - LEED Silver	Yes, projects over 50,000 SF must be certified
	Renovations	Residential	**> 500 SF** - 1 pt	No
		Mixed-Use	NA	No
		NonResidential	**< 20,000 SF** - must get 35% of possible LEED pts **20,000 - 50,000 SF** - must get 45% of possible LEED pts **> 50,000 SF** - must get 55% of possible LEED pts	No

For more information:

1. http://www.losaltosca.gov/committees-commissions/environmental/home/pages/greenbuilding.html
2. http://www.ci.milpitas.ca.gov/government/building/green.asp
3. http://www.morgan-hill.ca.gov/index.aspx?NID=833
4. http://www.cityofpaloalto.org/depts/pln/green_building/default.asp
5. http://www.sanjoseca.gov/planning/green_building/default.asp
6. http://www.sunnyvale.ca.gov/Departments/CommunityDevelopment/NonResidentialInformation/GreenBuilding.aspx

City	Type of Construction	Type of Building	Green Building Thresholds and Standards	Require Third-Party Certification

7. http://www.cityofsanrafael.org/Government/Community_Development/Planning/Green_Building.htm
8. http://www.cityofnovato.org/Index.aspx?page=517
9. http://www.ci.pleasanton.ca.us/business/planning/
10. http://www.ci.rohnert-park.ca.us/index.aspx?page=98

Technical Advisory Group Members

	Name	Company/Association (Title)
1	Forrest Linebarger	Vox Design Group, Inc. (CEO)
2	John Eckstein	The Performing Home (Owner/Energy Auditor - Green Point Rater)
3	Bruce England	Green Mountain View, Mountain View Coalition for Sustainable Planning (Director) and ESTF member
4	Julianna Wittman	Chamber of Commerce (Government Affairs Coordinator)
5	Jay Bechtel	Google (Real Estate and Construction Manager)
6	Anthony Ravitz	Google (Real Estate and Workplace Specialist)
7	Aileen La Bouff	Aileen La Bouff Real Estate (Agent)
8	Pete Bergeron	Microsoft (Senior Silicon Valley Campus Facility Manager)
9	Ciro Giammona	Harrell Remodeling (General Manager)
10	Nathan Tuttle	Prometheus (Senior Development Manager)
11	Elisa Peters	Ennovationz (Director of Government and Community Programs) and ESTF member
12	Peter Back	Boston Properties (Vice President of Construction, San Francisco Region)
13	David Sabalvaro	Studios Architecture (Principal Architect)
14	Sharon Refvem	Hawley, Peterson and Snyder (Senior Associate Architect, Sustainability Resource Group)
15	Andrew Giba	Devcon Construction, Inc. (Senior Project Architect)
16	W. Jeffrey Heid	W. Jeffrey Heid Architecture (Owner/Landscape Architect)
17	Julie Lovins	Mountain View Resident
18	Steve Stenton	Milroy Construction
19	Sam Milroy	Milroy Construction (Owner/Project Manager)

Technical Advisory Group Meeting Summaries

Meeting 1—February 16, 2010

The first meeting covered building concepts, strategies, terminology, rating systems and programs. Global Green USA described the Template Indoor Water Use Efficiency Ordinance, Phase II Recommendations and the degree to which existing City codes and ordinances already achieve measures within the LEED and GPR rating systems. The meeting ended with a discussion among members about their experiences with green building, the level of current green building practices and any unique economic or development challenges to the business community in Mountain View.

Meeting 2—March 11, 2010

The second meeting focused on the potential structure of a green building ordinance. Global Green USA provided an assessment of how CalGreen Tier I and Tier II compare to both GPR and LEED. The TAG was presented with five potential options for structuring a green building ordinance, including: (1) the adoption of a local energy standard; (2) CalGreen Tier I; (3) Phase II Recommendations; (4) a modified version of the Phase II Recommendations; and (5) incentives for high-performing LEED or GPR projects.

The group suggested that a modified version of the Phase II Recommendations with incentives for higher-performing buildings might be appropriate for the City and also regionally consistent. The modification was an increase in the GPR point requirement for multiple-family residential projects. The group suggested that additional measures could be obtained without any significant cost.

TAG members and staff also recognize that developers would prefer established rating systems because they are marketable, many developers already have staff trained in these systems, they have clear documentation requirements and the environmental commitment that these standards represent can be easily communicated. Conversely, CalGreen Tier I or Tier II is not established and, therefore, does not have a track record of success or a clear enforcement path for local jurisdictions.

Meeting 3—May 10, 2010

The third meeting included discussions on the renovation portions of the ordinance, specifically additions and tenant improvements. Global Green USA described the discussion points for additions and tenant improvements, including thresholds for participation (square footage, cost and number of elements/systems), plan review, field verification and the available standards. Global Green USA then summarized different green building standards for renovations. The group discussed and provided feedback on applying relevant CalGreen mandatory measures to renovations and tenant improvements.

Staff Criteria Details

The following criterion was developed by staff to help guide the framework of the ordinance:

1. **An easy and efficient program for staff to implement.**
    a. Streamlined with no additional staffing needs placed on the existing development review process.
    b. Does not require Building Division staff to certify projects.
2. **An ordinance that is understandable to developers and the public.**
    a. Green building concepts and requirements are easy to understand.
    b. Maintain regional consistency.
3. **A reduction in greenhouse gas emissions.**
    a. Green Building Ordinance can be included in the City's Greenhouse Gas Reduction Program.
4. **The cost of green building can reasonably achieve the desired environmental benefits.**
    a. Keeping building fees low.
    b. Incentives must match the desired results.

Recommended Green Building Requirements for the City of Mountain View

Applicable Project	Required Local Energy Code*	Required Green Building Standard	Optional Green Building Standard
RESIDENTIAL PROJECTS (SINGLE FAMILY AND MULTI FAMILY)			
New Construction			
New Residential < 5 homes/units	15% above Title 24	Mandatory CalGreen Requirements	Meet the intent of 50 GreenPoint Rated points and Mandatory CalGreen Requirements
New Residential ≥5 homes/units	15% above Title 24	Meet the intent of 70 GreenPoint Rated points and Mandatory CalGreen Requirements	Meet the intent of LEED for Homes and Mandatory CalGreen Requirements
Additions (conditioned space only)			
Additions ≥500 square feet	15% above Title 24	Residential prescribed list of CalGreen requirements	Meet the intent of 25 GreenPoint Rated Points
MIXED USE PROJECTS			
New Construction			
New Residential < 5 units and New NonResidental Use < 25,000 square feet	15% above Title 24	Residential and NonResidential criteria as applicable to each component of the project.	
New Residential ≥5 units and New NonResidential Use ≥25,000 square feet	15% above Title 24		
NONRESIDENTIAL PROJECTS			
New Construction			
New NonResidential Buildings < 5,000 square feet	15% above Title 24	Mandatory CalGreen Requirements	-
New NonResidential Buildings 5,000 - 25,000 square feet	15% above Title 24	Meet the intent of LEED Certified and Mandatory CalGreen Requirements	A threshold and standard equivalent to meeting the intent of LEED Certified and Mandatory CalGreen Requirements
New NonResidential Buildings ≥ 25,000 square feet	15% above Title 24	Meet the intent of LEED Silver and Mandatory CalGreen Requirements	A threshold and standard equivalent to meeting the intent of LEED Silver and Mandatory CalGreen Requirements
Tenant Improvements and Alterations			
Alterations with a $1 Million construction valuation and 15,000 square feet or greater	15% above Title 24	NonResidential prescribed list of CalGreen requirements	-

* The installation of a solar photovoltaic (PV) energy system (min. 3KW) may be used to meet the local energy code. To calculate the PV energy equivalency use the CECPV Calculator (most recent) provided by the California Energy Commission.

Framework and Criteria

Staff is recommending an ordinance framework and criteria option that best integrates the criteria listed above, the suggestions made by TAG and the Phase II recommendations.

There are a few elements that should be discussed prior to the technical discussion. First, staff is recommending that the ordinance include a local energy code that requires developments subject to the ordinance to exceed Title 24 energy requirements by 15 percent. This requirement is already incorporated into LEED and GPR rating systems, but is not included in CalGreen's mandatory measures. This requirement has been "called out" for each project-type to provide greater clarification and is recommended because it has real economic benefits to both the City and developer.

Second, for renovations, it became evident that staff needed to focus on a limited number of green building measures in order to create an effective ordinance. Instead of incorporating requirements that relate to every green building component, staff focused on water, energy and indoor environmental quality. Energy consumption and water conservation are quantifiable improvements that can be calculated with real economic benefits to both the City and the developer. Also, the indoor environmental quality requirements provide a healthier user environment while adding limited additional costs.

Lastly, staff has made a conscious decision to "call out" CalGreen requirements as not all third-party rating systems incorporate state-mandated green measures. By clarifying this early in the process, staff will deter applicant confusion.

Residential Requirements:

Staff Recommendation and Analysis:

Applicable Project	Required Local Energy Code*	Required Green Building Standard	Optional Green Building Standard
RESIDENTIAL PROJECTS (SINGLE FAMILY AND MULTI-FAMILY)			
New Construction			
New Residential < 5 homes/units	15% above Title 24	Mandatory CalGreen Requirements	Meet the intent of 50 GreenPoint Rated points and Mandatory CalGreen Requirements
New Residential ≥5 homes/units	15% above Title 24	Meet the intent of 70 GreenPoint Rated points and Mandatory CalGreen Requirements	Meet the intent of LEED for Homes and Mandatory CalGreen Requirements
Additions (conditioned space only)			
Additions ≥500 square feet	15% above Title 24	Residential prescribed list of CalGreen requirements	Meet the intent of 25 GreenPoint Rated Points

New Residential < 5 Homes/Units:

The Phase II recommendations suggest GPR (50 points) for single-family homes and multiple-family homes less than or equal to 9 units. Upon review of the analysis conducted by Global Green USA, City staff and the consultant determined that requiring 15 percent above Title 24 (a requirement of GPR) in addition to the CalGreen mandatory measures would be equivalent to approximately 45 GPR points. This is consistent with the Phase II recommendations. Staff proposes to lower the threshold for new residential homes to 5 units, which aligns with the threshold for which a subdivision needs to be reviewed by the City Council.

Staff recommends requiring the CalGreen mandatory measures in addition to a required local energy code for small projects in order to lower costs. No qualified green building professional will be required. All compliance review and verification will be completed by staff in-house.

New Residential ≥5 Homes/Units:

During Meeting 3, the TAG suggested a higher point requirement for multiple-family projects than the 50 GPR points included in the Phase II recommendations.

Staff recommends increasing the point level to 70 points, which is consistent with other cities' ordinances. For comparison purposes, the Minton's project and the Mayfield project both proposed 110 GPR points.

Residential Additions:

Some green building ordinances include categories for renovations, additions and remodels as the Phase II recommendations suggest. For this discussion, renovations are defined as modifications to the interior and exterior of a building, additions are defined as adding new square footage to an existing building and remodels are defined as making interior improvements only.

Staff recommends not requiring green building standards for remodels because it will increase the costs to homeowners for small projects without a significant environmental benefit. For instance, the hiring of a qualified green building professional for a kitchen remodel does not seem appropriate.

For residential projects, staff recommends capturing additions as it involves new construction. Third-party rating systems are unnecessary for residential additions because they add costs that often outweigh the cost of proposed improvements. Instead, staff recommends the use of a short, prescriptive list of requirements. The items on the list are considered common elements of residential additions.

Table 2
Prescribed CalGreen Mandatory Code Requirements for Residential Projects

Category	Requirement
Indoor Water Use	Must demonstrate a 20% reduction in indoor water use.
Materials	All materials used onsite with VOCs must comply with the limits set in CalGreen. This includes caulks, sealants, adhesives, paints, stains, aerosols and coatings compliant with MIR limits for ROC and other compounds.
	Aerosols and coatings must comply with MIR limits for ROC and other toxic compounds as outlined in CalGreen.
Documentation	Must provide documentation that VOC limits and finish materials comply with the standards

Additionally, staff recommends the 500 square foot threshold because it is a significant addition to the structure and aligns with other building impact fees.

Mixed-Use Requirements:

Staff Recommendation and Analysis:

Applicable Project	Required Local Energy Code*	Required Green Building Standard	Optional Green Building Standard
MIXED USE PROJECTS			
New Construction			
New Residential < 5 units and New NonResidental Use < 25,000 square feet	15% above Title 24	Residential and NonResidential criteria as applicable to each component of the project.	
New Residential ≥5 units and New NonResidential Use ≥ 25,000 square feet	15% above Title 24		

In green building ordinances, applying green building standards to the respective portions of a mixed-use project is typical. This means a mixed-use project with 5 residential units and 25,000 square feet of commercial area will apply GPR and LEED standards to the respective areas. Including language that states this is common practice in local green building ordinances. Staff recommends applying a similar approach. This approach allows flexibility in implementing an appropriate standard for a mixed-use project.

The thresholds used for mixed-use projects are the same as those in the residential and nonresidential new construction sections. They have been combined to create one threshold for projects that fall either below or above 5 residential units and 25,000 square feet of commercial space. Staff does not recommend including a renovation subcategory to the mixed-use section because mixed-use projects in Mountain View are often built to full site capacity and, thus, can not realistically add additional units or square footage.

Nonresidential Requirements:

Staff Recommendation and Analysis:

Applicable Project	Required Local Energy Code*	Required Green Building Standard	Optional Green Building Standard
NONRESIDENTIAL PROJECTS			
New Construction			
New Nonresidential Buildings < 5,000 square feet	15% above Title 24	Mandatory CalGreen Requirements	-
New NonResidential Buildings between 5,000 - 25,000 square feet	15% above Title 24	Meet the intent of LEED Certified and Mandatory CalGreen Requirements	A threshold and standard equivalent to meeting the intent of LEED Certified and Mandatory CalGreen Requirements
New NonResidential Buildings ≥25,000 square feet	15% above Title 24	Meet the intent of LEED Silver and Mandatory CalGreen Requirements	A threshold and standard equivalent to meeting the intent of LEED Silver and Mandatory CalGreen Requirements
Tenant Improvements and Alterations			
Alterations with a $1 Million construction valuation and 15,000 square feet or greater	15% above Title 24	NonResidential prescribed list of CalGreen requirements	-

New Nonresidential Buildings < 5,000 Square Feet:

Staff recommends that nonresidential new construction projects below 5,000 square feet meet the local energy code and the CalGreen mandatory measures because energy efficiencies above Title 24 are easier to achieve in new construction and can be implemented by smaller projects.

New Nonresidential Buildings 5,000 to 25,000 Square Feet and New Nonresidential Buildings > 25,000 Square Feet:

Staff supports the Technical Advisory Group's suggestion that the nonresidential Phase II recommendations are appropriate for Mountain View because they are consistent with other cities' requirements and reflect the certification levels that recent projects have proposed. Projects in the 5,000 square foot to 25,000 square foot range would be required to meet the intent of LEED Certified while projects greater than 25,000 square feet would be required to meet the intent of LEED Silver. For comparison purposes, the Verisign project proposed a 102,419 square foot, 4-story office building to be LEED Silver.

Tenant Improvements and Alterations:

Staff does not recommend following the Phase II recommendations for tenant improvements and alterations. The use of LEED as a standard will expand the scope and costs for smaller projects.

After an analysis of tenant improvements within the City over the last five years, staff determined that alterations with a $1 million construction valuation and building area of 15,000 square feet or greater is an appropriate threshold for the ordinance. This threshold represents roughly 10 percent of the projects. By using this threshold, staff's goal is to regulate the largest improvement projects that would be altering enough building and energy systems (i.e., HVAC, water, electrical, building envelope) to warrant additional energy and green building requirements. Thus, staff recommends that these projects comply with the following prescribed list of green building requirements focusing on indoor environmental quality, energy and water reductions:

Table 3
Prescribed CalGreen Mandatory Code Requirements
for Nonresidential Projects

Category	Requirement
Potable Water Use	Must demonstrate a 20% reduction in potable water use.
Materials	All materials used onsite with VOCs must comply with the limits set in CalGreen. This includes caulks, sealants, adhesives, paints, stains, aerosols and coatings compliant with MIR limits for ROC and other compounds.
	All carpets, cushions and adhesives must comply with the standards set in CalGreen.
	All paints must meet the MIR limits for ROC outlined in the CalGreen.

<u>Verification and Review</u>

Staff Analysis:
In general, the local jurisdictions that use third-party rating systems do not require formal certification. This is because formal certification adds costs and review times to developers for preparing and processing the certification submittals. Also, many third-party rating systems, including LEED and GPR, have measures or credits that assess performance during and after construction.

The challenges posed by enforcing the green building requirements after a project has been permitted are another reason many local jurisdictions do not require formal third-party certification.

Staff recommends not requiring projects to obtain formal certification from LEED or GPR. Instead, staff recommends requiring a qualified green building professional to submit documentation demonstrating that the project is designed and constructed to meet the requirements of the applicable green building rating system.

There are many ways to ensure compliance with a Green Building Ordinance. A city can require external verification using a third-party rater or a qualified green building professional or internal verification using staff knowledge and expertise.

Requiring formal certification from a third-party rater poses a potential enforcement issue if a recently constructed building does not perform to the standard and, therefore, does not obtain the third-party certification required as part of the approval. It would be difficult to ask the applicant to delay occupancy and spend additional time and money correcting portions of the project until certification is achieved. Cities that do require certification can get around this issue by requiring the payment of a reimbursable fee at the beginning of the project. Cities can reimburse the fee after formal certification is achieved or collected by the city if certification is never achieved. Certification also adds administrative costs to the applicant as well as the possibility that the project will be held up due to the third-party rater.

Instead, staff's recommendation for verification and review is intended to "meet the intent" without requiring formal certification. Cities pursuing this approach can choose to verify compliance externally or internally. The external verification process requires a qualified green building professional to provide documentation to the city demonstrating that the project achieves compliance. In this case, the burden of proof lies on the outside green building professional. For Mountain View, staff's recommended approach would require City staff to confirm compliance by reviewing submittal documentation. This process would have little impact on the City's development review process but would increase costs to the applicant for hiring a qualified green building professional.

On the other hand, the internal verification option allows staff to verify project compliance "in-house." For instance, a City staff member with qualified green building experience would review project documentation. This would add additional time to the development review process and could result in additional building permit fees.

Incentives

Staff Analysis:

To encourage compliance with green building standards, some cities have developed incentives for applicants that directly impact the proposed project. TAG members expressed that incentives were important to require developers to go above and beyond minimum requirements, especially to help promote higher-performing buildings. The following incentives were reviewed by staff, with staff comments in italics:

- **Expedited Review Process:** Higher-performing green buildings receive quicker building permit turnaround times.

  The Community Development Department has existing "quick turnaround" time frames for many project types and is actively looking to improve turnaround times for review of additional project types. The Community Development Department meets with developers at early stages to understand their concerns, communicate expectations and assist developers through the "plan check" process. The reduction of a week or two would not be a large enough incentive to push projects to higher levels of green building.

- **Cost Adjustments:** Provide an economic incentive such as a permit fee reimbursement or the reimbursement of the certification fees to the third-party rater.

  Staff's recommended verification and review approach is, in part, intended to minimize the administrative fees paid by the applicant. This incentive is more appropriate for a city requiring formal third-party rater certification.

- **Flexible Zoning Standards:** Increases in lot coverage, height, density and FAR or reduced setbacks or parking requirements are allowed in return for higher-performing green buildings.

  Zoning Standards incentives are appropriate for key areas such as North Bayshore and East Whisman and could be considered within the General Plan update. Other areas, such as residential neighborhoods, El Camino Real, Old Middlefield Way and other general industrial areas, either do not need additional flexibility from existing Zoning Standards, or flexibility would make the project incompatible with surrounding uses. For instance, increases in density, height, lot coverage and FAR for a multi-family project in return for higher-performing green buildings could create compatibility issues with existing uses.

Option 1: Reduced Green Building Requirements

Applicable Project	Required Local Energy Code*	Required Green Building Standard
RESIDENTIAL PROJECTS (SINGLE FAMILY AND MULTI-FAMILY)		
New Construction		
New Residential < 5 homes/units	~~15% above Title 24~~	Mandatory CalGreen Requirements
New Residential ≥ 5 homes/units	15% above Title 24	Meet the intent of ~~70~~ 50 GreenPoint Rated points and Mandatory CalGreen Requirements
~~Additions (conditioned space only)~~		
~~Additions ≥ 500 square feet~~	~~15% above Title 24~~	~~Residential prescribed list of CalGreen requirements~~
MIXED USE PROJECTS		
New Construction		
~~New Residential < 5 units and New NonResidental Use < 25,000 square feet~~	~~15% above Title 24~~	Residential and NonResidential criteria as applicable to each component of the project.
New Residential ≥ 5 units and New NonResidential Use ≥ 25,000 square feet	15% above Title 24	
NONRESIDENTIAL PROJECTS		
New Construction		
New NonResidential Buildings < 5,000 square feet	~~15% above Title 24~~	Mandatory CalGreen Requirements
New NonResidential Buildings between 5,000 - 25,000 square feet	15% above Title 24	~~Meet the intent of LEED Certified and~~ Mandatory CalGreen Requirements
New NonResidential Buildings ≥ 25,000 square feet	15% above Title 24	Meet the intent of LEED Certified ~~Silver~~ and Mandatory CalGreen Requirements
~~Tenant Improvements and Alterations~~		
~~Alterations with a $1 Million construction valuation and 15,000 square feet or greater~~	~~15% above Title 24~~	~~Nonresidential prescribed list of CalGreen requirements~~

* The installation of a solar photovoltaic (PV) energy system (min. 3KW) may be used to meet the local energy code. To calculate the PV energy equivalency use the CECPV Calculator (most recent) provided by the California Energy Commission.

Option 2: Increased Green Building Requirements

Applicable Project	Required Local Energy Code*	Required Green Building Standard
RESIDENTIAL PROJECTS (SINGLE FAMILY AND MULTI-FAMILY)		
New Construction		
New Residential < 5 homes/units	15% above Title 24	Meet the intent of 70 GreenPoint Rated points and Mandatory CalGreen Requirements
New Residential ≥ 5 homes/units	15% above Title 24	Meet the intent of 70 GreenPoint Rated points and Mandatory CalGreen Requirements
Additions and Remodels (conditioned space only)		
<$100,000 permit valuation or, <500 square foot addition	15% above Title 24	Residential prescribed list of CalGreen requirements
≥$100,000 permit valuation, or Additions ≥ 500 square feet	15% above Title 24	Meet the intent of GreenPoint Rated 25-49 or LEED Certified ~~Residential prescribed list of CalGreen requirements~~
MIXED USE PROJECTS		
New Construction		
New Residential < 5 units and New NonResidental Use < 25,000 square feet	15% above Title 24	Residential and NonResidential criteria as applicable to each component of the project.
New Residential ≥ 5 units and New NonResidential Use ≥ 25,000 square feet	15% above Title 24	
NONRESIDENTIAL PROJECTS		
New Construction		
New NonResidential Buildings < 5,000 square feet	15% above Title 24	Mandatory CalGreen Requirements
New NonResidential Buildings between 5,000 - 25,000 square feet	15% above Title 24	Meet the intent of LEED Certified and Mandatory CalGreen Requirements
New NonResidential Buildings ≥ 25,000 square feet	15% above Title 24	Meet the intent of LEED Silver and Mandatory CalGreen Requirements
Tenant Improvements and Alterations		
Large w/HVAC: 2 of four systems (envelope, lighting, interior, services, and HVAC) are touched and Alterations with a $1 Million construction valuation and ~~15,000~~ 10,000 square feet or greater	15% above Title 24	Meet the intent of LEED Certified ~~Nonresidential prescribed list of CalGreen requirements~~

* The installation of a solar photovoltaic (PV) energy system (min. 3KW) may be used to meet the local energy code. To calculate the PV energy equivalency use the CECPV Calculator (most recent) provided by the California Energy Commission.

CITY OF MOUNTAIN VIEW CITY COUNCIL MINUTES

SPECIAL MEETING – TUESDAY, SEPTEMBER 14, 2010
PLAZA CONFERENCE ROOM, CITY HALL – 500 CASTRO STREET
5:00 P.M.—CLOSED SESSION
6:30 P.M.—STUDY SESSION
CLOSED SESSION IMMEDIATELY FOLLOWING THE STUDY SESSION

5:00 P.M.—CLOSED SESSION

1. **CLOSED SESSION ANNOUNCEMENT (OPEN SESSION)**

At 5:00 p.m., an announcement was made by the City Attorney, who described the items the Council would consider on the Closed Session agenda below.

All Councilmembers present.

2. **CLOSED SESSION**

2.1 **Conference with Legal Counsel—Existing Litigation (§54956.9(a))**—Name of Case: *James Duke Lindner v. City of Mountain View*, Santa Clara County Superior Court Case No. 108-CV-103228

2.2 **Conference with Legal Counsel—Existing Litigation (§54956.9(a))**—Name of Case: *Silvestre Garcia v. Julie Anna Yong, City of Mountain View, et al.*, Santa Clara County Superior Court Case No. 110-CV-161513

2.3 **Conference with Real Property Negotiator (§54956.8)**—Property: 270 Escuela Avenue (Portion of APN 154-01-010)—Agency Negotiators: Kevin C. Duggan, City Manager; and Linda Forsberg, Business and Internal Services Manager—Negotiating Parties: Lisa B. Hendrickson, President and CEO, Avenidas—Under Negotiation: Price and Terms of Lease of Real Property

2.4 **Conference with Real Property Negotiator (§54956.8)**—Property: 449 Franklin Street (APN 158-11-046)—Agency Negotiators: Ellis M. Berns, Assistant Community Development Director/Economic Development Manager; and Dennis P. Drennan, Real Property Program Administrator—Negotiating Parties: Leonard J. and Pamalee K. Siegal—Under Negotiation: Price and Terms of Acquisition of Real Property

The Closed Session concluded at 6:26 p.m.

6:30 P.M.—STUDY SESSION

1. CALL TO ORDER

The meeting was called to order at 6:30 p.m. with Mayor Bryant presiding.

2. ROLL CALL

PRESENT: Councilmembers Abe-Koga, Inks, Kasperzak, Macias, Means, Vice Mayor Siegel and Mayor Bryant.

ABSENT: None.

3. ORAL COMMUNICATIONS FROM THE PUBLIC ON NONAGENDIZED ITEMS

Lloyd Yu, Mountain View, spoke to the McKelvey Park flood detention basin and asked the Council to alert potential participants at the next public planning meeting that the following information will be presented and to publish the information on the City's web site:

1. A project update on the designs for the Shoreline Sports Complex and McKelvey Park;

2. A listing of the City's operating and planning costs and revenues associated with McKelvey Park since 2008;

3. The percent of the Saint Francis Acres Neighborhood tax revenue and the dollar amount of that revenue that has been used to defray costs associated with McKelvey Park since 2008;

4. Any spending targets the City has set for McKelvey Park;

5. Whether, during the planning process for the McKelvey Park flood detention basin, the City Council plans to reconcile the misclassification of McKelvey Park with respect to its size, amenities and location, as incorrectly attributed in the Parks and Open Space Plan of 2008, using the guidelines of the Residential Neighborhoods Chapter adopted December 10, 2002; and

6. Identify the stakeholders in the planning process for the design of the McKelvey Park flood detention basin planning process and distinguish between those stakeholders who have self-interest and those stakeholders who have self-interest and standing with respect to planning input.

4. STUDY SESSION

4.1 GREEN BUILDING ORDINANCE

The Community Development Director explained that they will be providing a briefing on the Green Building Ordinance, including a status report, an update on the process they have gone through in preparing the ordinance and a suggested approach that is flexible and cost-effective. He explained that this is a very complicated and rapidly evolving area which will continually change. He noted that on January 1, 2011, the State's Green Building Codes will come into effect, and it will be necessary for staff to come back to Council over a period of time to update the City's code and ensure it is in sync. He noted that there are a multitude of factors at play, including the updated Title 24 Building Code requirements, third-party rating systems and recommendations from the Santa Clara County Cities Association on the structure of a Green Building Ordinance.

The Associate Planner then explained that in October 2009, the City authorized the hiring of Global Green USA, a nonprofit green building consulting firm, to assist staff with the development of a green building ordinance. The project is identified in the City's Environmental Sustainability Action Plan as a proposed action item for Fiscal Year 2009-10. The scope of work included creating and facilitating a technical advisory group (TAG), consisting of 19 local green building professionals who represent broad areas of expertise and who have advised staff on how best to apply the Santa Clara County Cities Association Green Building Collaborative's Phase 2 recommendations for Mountain View's ordinance. The scope of work also includes reviewing recommended measures in the Bay Area Water Supply and Conservation Agency's (BAWSCA) Template Indoor Water-Use Efficiency Ordinance.

He continued that there are a variety of green building standards referenced in municipal green building ordinances for private development, including third-party rating systems such as Build It Green's GreenPoint Rated (GPR), which is the commonly used standard for residential projects and requires a minimum of 50 points to be achieved. In addition, U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) is the standard for nonresidential projects, which also requires that projects attain a specific amount of points based on an itemized checklist in order to receive certification as a green building. Another option is for cities to augment existing State codes, such as the California Energy Code (Title 24, Part 6) and the California Green Building Code (Title 24, Part 11), to meet their green building goals, noting that cities have the potential to require higher energy

standards than the State. He pointed out that nearly all of the BAWSCA measures will be mandatory as part of CALGreen after January 2011.

The Associate Planner summarized that the TAG suggested that a modified version of the Phase 2 recommendations, with incentives for higher-performance buildings, is suitable for the City. He further explained that staff is recommending an ordinance framework which is understandable to developers and the public, which is an easy and efficient program for staff to implement, which produces a reduction in greenhouse gas emissions and where the cost of green buildings can reasonably achieve the desired environmental benefits. In addition, staff recommends integrating the suggestions made by TAG, as well as the use of third-party systems LEED and GPR, as green building standards for new construction and a prescriptive list of green building requirements based on CALGreen-mandatory measures for residential additions and nonresidential tenant improvements. Rather than requiring projects to obtain formal certification from LEED or GPR, staff recommends instead that verification is provided as to whether the project meets the intent of a third-party rating system. Other recommendations include the adoption of a local energy code that will require all projects regulated by the Green Building Ordinance to exceed the California Energy Code by 15 percent and reserving the discussion of incentives to the General Plan update process. Finally, he noted that the projects' thresholds suggested by staff are based on existing thresholds in the Mountain View development review process.

Councilmember Means asked what the rationale was for having different standards such as LEED-certified versus LEED silver on different-sized projects, and the Community Development Director explained that the intent behind the Cities Association recommendation is that there are economies of scale and levels of investment associated with larger projects that make it more feasible to achieve higher sustainability or green building levels, and they were trying to decrease the burden on smaller projects, where it is more difficult to achieve those same levels.

Vice Mayor Siegel asked how the requirement of making a home GreenPoint or LEED-certified adds to the cost and what it does to the community.

Staff responded that they are asking people to build a home with better energy systems, so that can be as inexpensive as installing a tankless hot water heater instead of a conventional hot water heater with some field testing by an energy rater or installing better windows and more insulation at a much higher cost. He remarked that the other things that developers can do are to recycle 50 percent of building materials and install more efficient shower heads and toilets, etc.

Vice Mayor Siegel questioned why the City cannot put a quantitative analysis on more expensive items, such as windows or insulation, and staff responded that the flexibility of the rating systems, combined with innumerable design and product choices, make a quantitative analysis difficult. Staff further responded that they cannot put a number on those because a developer might achieve the 15 percent over for under $1,000 in cost, while another developer might choose to pursue a higher cost because they might want to focus on promoting the efficiency of the house.

The Community Development Director suggested that perhaps they can take a typical house and run a couple of scenarios in conjunction with an architect and developer, such as one house with a tankless water heater, spray foam and windows versus a house with just the windows or just the tankless water heater, etc.

The consultant added that it is a public policy issue and so the Council can require people to put things into their homes that will only provide a return on their investment or they can require things that do not necessarily provide a return to the owner but, instead, are better for the City or the environment.

Councilmember Macias asked if these requirements are the same across the board from the smallest development to the largest, and staff responded that the City has the flexibility through the development agreement to impose unique standards on a project that is massive.

The Community Development Director remarked that staff has struggled with the fact that the LEED certification process and operational assessment occurs after occupancy and what to do when a project is designed for LEED silver but does not get certified at LEED silver because they cannot revoke the Certificate of Occupancy once the tenant is in. He noted that some cities have taken a deposit, which is returned if the LEED silver or gold level is met. He pointed out that staff looked at the cost and time imposed by the formal certification process versus what gets a sustainability benefit and decided that it will be more achievable to design to the standards but not require the formal certification.

Councilmember Macias asked for clarification about the process for developments under five units, and the Associate Planner explained that staff will handle the review and implementation and make sure that the project meets the ordinance provisions but that larger projects will need to hire a green building professional to provide documentation that the project meets the intent of certification.

Councilmember Macias asked for clarification on the point levels, and staff explained that in review of other cities, it seemed to be consistent to require a minimum of 70 points, and other staff members explained that the general agreement was that 50 points was too low and that 70 to 75 points seemed to be something that was an average across the board, but that quality developers have the potential to achieve much higher.

Councilmember Macias also asked if there is anything special they need to look at since Mountain View has more multi-family units and rentals, and staff responded that for existing buildings, there would be no improvements for remodels because it would be limited to a small space.

Councilmember Inks asked for an example of what 15 percent above Title 24 really means, and staff responded that in concept, Title 24 is an energy package and so developments need to meet those basic standards of energy efficiency, plus 15 percent, which can be achieved through thicker insulation or windows, etc. The consultant added that when they look at the local energy code portion, they do have to do the cost-effectiveness study just on the energy-related items and, in the process of doing that, they will need to pull an energy model from representative projects of different levels of buildings to make sure that the 15 percent above Title 24 is achievable.

The Community Development Director added that the 15 percent is embedded in the GreenPoint system and so they are extracting that out and saying that if the developer does that, then they have met the intent of the GreenPoint system without having to retain a professional to go through that process. They are trying to simplify the process to get what is producing the benefit without adding unnecessary costs and burdens to the process.

Councilmember Kasperzak clarified on intent versus certification that certification is by LEED or another agency, and intent is when the developer submits their plans saying what they are going to do which becomes part of their building permit and so, to get their Certification of Occupancy, they are going to have to build what they said they are going to build, but not spend the money on outside agencies for an official certification.

Councilmember Kasperzak also asked if there have been any unintended consequences as a result of going through a similar process, and the Building Official responded that another approach that some cities take is to adopt a policy before knowing how to implement it and that is why Mountain View brought in Global Green so that they can run these things in parallel, such as what the technical criteria is, who will implement it and how it would work, etc. Regarding intent, he explained that there is a protocol developed for who will review the project on behalf of the City. The best practice is to talk to the

stakeholders, build something that works and talk to staff so they have an administrative process that works when it hits the ground.

The Community Development Director added that they have talked to a city in Santa Clara County that implemented a green ordinance and did not think through it carefully, and now they have to work on the ordinance on a case-by-case basis.

Mayor Bryant questioned whether staff has considered how to figure out ways to deal with the remodeling given that the City of Mountain View is almost entirely built-out and they are letting all of the remodeling off the hook. Staff questioned how they enforce the green building requirements because there is always a way for developers and contractors to move around an ordinance like this. A staff member noted that the State is helping because they have minimum energy requirements and that the CALGreen Code will include remodeling provisions.

The Community Development Director remarked that it is difficult to come up with a minimum square footage threshold for a remodel to trigger the Green Building Ordinance because someone might only be moving walls and not expanding the living area or affecting plumbing fixtures. He added that they are recommending an easy entry into this area and are considering it as a Phase 1 of the process.

Mayor Bryant reported that there has been a lot of discussion at the Green Building Collaborative that if someone is doing a small remodel, then they should not be forced to rewire their whole house or replace all of their windows, etc. She asked, however, if there is a way to connect someone upgrading their wiring or plumbing to the ordinance.

The Building Official responded that any improvements being made have to meet the current prescriptive standards of the California Building Code and so homeowners do not get away with doing nothing because the standards are not decreasing. He noted that the City would have its own prescriptive list for all of these different items so that they see higher than the minimum State requirements.

Mayor Bryant commented that the CALGreen requirements are pretty minimal and that Mountain View needs to be on the same page as surrounding cities.

The Community Development Director explained in response to a question from Mayor Bryant that the area of green building is constantly evolving and the minimum point levels will continue to change almost every year and

there will be adjustments to the rating systems. He noted that the City can mandate compliance with the GreenPoint Rated checklist for a single-family home so they are always in sync with it; however, because they know they will be visiting this every three years due to the State's building cycle, they are taking a simpler, less-burdensome approach in order to avoid the constant ratcheting up of the requirements.

He also explained the optional green building standard, whereby clients do not have to meet the 15 percent requirement but, instead, can go through the official GreenPoint Rated process.

Mayor Bryant inquired about the training of staff in green building, and the Community Development Director explained that it is an ongoing process and they are gradually getting the training to all of the staff members.

The public input period was opened.

John Carpenter, Mountain View, expressed concern that if they set a threshold, there is the danger that a large amount of people might be doing work just slightly under that threshold, which defeats the purpose.

Bill Maston, William Maston and Associates, stated that he has taken a lot of certification classes and it is wonderful to see the City thinking about an ordinance, which allows flexibility and options to pick and choose from as to what works best for a particular project. He questioned how beneficial it is to the City to get that much farther ahead of the crowd, other than for egos sake, because this is changing so quickly that it is just going to get more confusing. He pointed out that California is so far ahead of the nation already and expressed concern that they are steering people away from developing by making things more complicated. He added that when he sits with his clients and explains the options, he is finding that education results in more compliance and so he supports emphasizing education rather than mandatory compliance. He added that he is happy that they are going with intent, rather than compliance, and suggested that whatever language is put in the ordinance, staff needs to make sure they can enforce what "intent" means.

John Epstein, Palo Alto, stated that he is a GreenPoint Rater and agreed that it is more important to look at the programs as incentive systems, whereby people are rewarded and educated, but not punished. He added that he is impressed that Mountain View hired a consultant prior to implementing the standards.

Nathan Tuttle, Prometheus, agreed with the former speaker that anything they can do to incentivize developers is good.

Seeing no one further wishing to speak, the public input period was closed.

Vice Mayor Siegel concurred with the staff-recommended ordinance framework because he likes that it is not tied to absolute numbers, given that the numbers are going to change every year. He stated that it is better to avoid confusion and avoid having to rewrite everything. He commented that most citizens who are remodeling have the goal of becoming more energy-efficient to begin with and are not trying to get out of it. He added that he does not want people to spend money on certification, unless it is an extremely large project, and he would rather have developers put money into greenhouse gas reduction. Finally, he suggested that staff make it very clear that typical minor remodels, such as painting, will not trigger an energy audit because he does not want property owners to be afraid to keep up their property.

Councilmember Macias expressed concern that this is something they will have to come back to continually.

The Community Development Director explained that there is a possibility of a tie-in to a rating system that automatically adjusts and craft the ordinance to say "like the latest CALGreen Code."

The consultant suggested that GreenPoint Rated requires earning a certain number of points but LEED has different levels to reach, so they should give thought as to how to not have this become obsolete.

Councilmember Abe-Koga explained that they have not heard from eight or nine of the cities in the Cities Association and questioned their positions on this issue, noting that she hopes that Mountain View will have best practices that other cities can follow. She added that she is fine with the intent and wants flexibility and would like to come up with incentives that work.

The Community Development Director responded that they will look at possible incentives, including a base-level floor area ratio (FAR) and a higher FAR if someone reaches certain sustainability goals that are designed to mitigate the larger square footage. He noted that staff will bring back options to Council and an outline on how the policy would work on development-based incentives.

The consultant pointed out that the issue with incentives is that they have to correspond to the costs, and he has learned through working with other cities

that the real valuable incentives at this time are development-based incentives.

Councilmember Kasperzak remarked that he agrees with the discussion on incentives and that they need to be valuable. In addition, he commented that it seems that there are some things that are particularly important to the City that they can incentivize more than others, such as solar panels (which everyone is doing) to getting rid of cars (which is more difficult to do). He also commented that he believes that thresholds are good.

Councilmember Inks explained that he has not absorbed this well enough to say that he would whole-heartedly endorse the recommended criteria. He stated that, in general, the idea of moving into a regulatory area that is based on a State-mandated policy environment is worrisome to him and that he would like to hear more from the building community which could attest to the savings and benefits. He believes that the report is heavy on requirements and specifics and there is not enough discussion of costs and savings.

Councilmember Means remarked that it is difficult to know how accurate the costs versus benefits are and so he would like to maintain a lot of flexibility and that he believes that incentives are difficult.

A staff member responded and provided several examples on incentives in other cities that have been successful, noting that it often is just telling developers that the City will be open and flexible to what the developer would like to do.

Mayor Bryant thanked staff and noted that educating the public is very important, as well as incorporating flexibility and providing incentives. Finally, she expressed concern about remodels and the fact that Mountain View has so many rentals and multi-family housing complexes, and she would like staff to think about what the City can do to incentivize more greening of these complexes in order to reduce energy costs for both owners and rentals.

No formal action was taken.

The Study Session adjourned at 9:05 p.m.

5. **CLOSED SESSION**

5.1 **CLOSED SESSION ANNOUNCEMENT (OPEN SESSION)**

At 9:10 p.m., an announcement was made by the City Attorney, who described the item the Council would consider on the Closed Session agenda below.

5.2 **Public Employee Appointment (§54957)**—Title of Position: City Clerk

6. **CLOSED SESSION REPORT (OPEN SESSION)**—None.

7. **ADJOURNMENT**

The Council adjourned at 9:30 p.m. The next Special Meeting will be held on Tuesday, September 21, 2010, at 6:30 p.m. in the Council Chambers at City Hall, 500 Castro Street.

ATTEST:

WANDA WONG
ACTING CITY CLERK

APPROVED:

RONIT BRYANT
MAYOR

WW/7/CLK
429-09-14-10mn^

Silicon Valley Leadership Group

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San Jose, California 95110
(408)501-7864 Fax (408)501-7861
www.svlg.net
CARL GUARDINO
President & CEO

March 8th, 2011

Mountain View Mayor and City Council
City of Mountain View
500 Castro Street
Mountain View, CA., 94306

Dear Mayor and Council,

On behalf of the Silicon Valley Leadership Group, we are writing to support the City of Mountain View Green Building Code.

The Silicon Valley Leadership Group, founded in 1978 by David Packard of Hewlett-Packard, represents more than 335 of Silicon Valley's most respected employers on issues, programs and campaigns that affect the economic health and quality of life in Silicon Valley, including energy, transportation, education, housing, health care, tax policies, economic vitality and the environment. Leadership Group members collectively provide nearly one of every three private sector jobs in Silicon Valley.

In partnership with the Cities Association, the Leadership Group led a collaborative effort to develop green building policy recommendations for cities in Santa Clara County. Our goal was to move every city in Santa Clara County together to more rapidly adopt green building standards. In the first year, we developed the Phase I recommendations, a set of entry-level green building recommendations. After every city had adopted some form of these recommendations we then set out to raise the bar. The Phase II recommendations ratchets the standards up in order to create a more environmentally sustainable built environment. It also provides guidance for the region so that cities' green building policies maintain a level of consistency.

Mountain View has taken several actions to move the City towards a more sustainable future of which the adoption of higher green building standard is the most recent. We applaud the City's efforts in this regard and thank the City for its commitment to green building.

Sincerely,

Shiloh Ballard
Vice President, Housing & Community Development
Silicon Valley Leadership Group

ORDINANCE NO.

AN ORDINANCE AMENDING CHAPTER 8, ARTICLE I, DIVISION III, OF THE MOUNTAIN VIEW CITY CODE, RELATING TO THE ADOPTION OF THE 2010 CALIFORNIA GREEN BUILDING STANDARDS CODE TO INCLUDE LOCAL GREEN BUILDING REQUIREMENTS

WHEREAS, on March 24, 2009, the Council approved the Environmental Sustainability Action Plan, a document that identifies strategic short-term goals to achieve environmental sustainability in Mountain View, one of which was the development of a green building ordinance for private development; and

WHEREAS, on November 3, 2009, the Council approved community-wide Greenhouse Gas Reduction Targets which align the City with the provisions of California Assembly Bill 32 (Global Warming Solutions Act). The City is currently developing a Greenhouse Gas Reduction program for new development that focuses on energy-use reduction to which the implementation of the Mountain View Green Building Code helps achieve; and

WHEREAS, the San Francisco Public Utilities Commission has limited the water supply available to the Bay Area Water Supply and Conservation Agency (BAWSCA) member agencies until at least 2018 to preserve the limited resource. The Mountain View Green Building Code is a strategic step in achieving water use reduction to meet the reduced supply; and

WHEREAS, green building design, construction, restoration, operation and maintenance can have a significant positive effect on energy, water and resource conservation, waste management and pollution generation, and on the health and productivity of building occupants over the life of the building and/or site; and

WHEREAS, the California Green Building Standards Code Section 101.7 provides that a local government may establish more stringent building standards if they are reasonably necessary due to local climatic, geological, topographical or environmental conditions; and

WHEREAS, the Public Resource Code Section 25402.1(h)(2) states that a local enforcement agency may adopt more restrictive energy standards when they are cost-effective and approved by the California Energy Commission; and

WHEREAS, the City of Mountain View has local conditions which allow amendments to the California Green Building Standards Code to add local green

building and energy requirements to achieve local and regional goals and initiatives; and

WHEREAS, the City of Mountain View has made amendments and adopted the California Building Codes as Chapter 8, Articles I, Division III, to address environmental conditions;

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MOUNTAIN VIEW DOES HEREBY ORDAIN AS FOLLOWS:

Section 1. Articles I, Division III of Chapter 8 of the Mountain View City Code is hereby amended to read as follows:

"ARTICLE I.
BUILDING CODE.

DIVISION III. GREEN BUILDING CODE.

SEC. 8.20.__. California Green Building Standards Code—Adopted.

The California Green Building Standards Code, 2010 edition, which regulates the design and construction of buildings through the use of building concepts having a reduced negative impact or positive environmental impact and encouraging sustainable construction for all new construction. One (1) copy of the California Building Code, including the Mountain View amendments, is on file and open to public inspection in the building inspection office.

SEC. 8.20.__. Subsection 101.1 —Amended—Title.

Subsection 101.1 of the 2010 California Green Building Standards Code is amended to read as follows:

101.1 Title. These regulations shall be known as the Mountain View Green Building Code and may be cited as such and will be referred to herein as "this code." The Mountain View Green Building Code is an amendment to Part 11 of 12 parts of the official compilation and publication of the adoption, amendment and repeal of building regulations to the California Code of Regulations, Title 24, also referred to as the California Building Standards Code.

SEC. 8.20.__. Subsection 101.3—Amended.

Subsection 101.3 of the 2010 California Green Building Standards Code is amended to read as follows:

101.3 Scope. The provisions of this code shall apply to the planning, design, operation, construction, use and occupancy of every privately owned, newly constructed building, addition or tenant improvement as regulated in this code throughout the City of Mountain View.

It is not the intent that this code substitute or be identified as meeting the certification requirements of any private, third-party green building program.

SEC. 8.20.__. Subsection 101.3.2—Added.

Subsection 101.3.2 is added to the 2010 California Green Building Standards Code to read as follows:

101.3.2 Exempted projects. Projects that are exempted from complying with the Mountain View Green Building Code are:

1. Accessory structures;

2. Registered or eligible to be registered local, state or federal historic structures;

3. Natural disaster repairs;

4. Temporary structures;

5. Improvements that include residential interior alterations (i.e., remodels) only;

6. Residential additions less than 1,000 square feet; and

7. Nonresidential tenant improvements less than 15,000 square feet with a construction valuation less than $100,000.

SEC. 8.20.__. Subsection 101.9.1—Added.

Subsection 101.9.1 is added to the 2010 California Green Building Standards Code to read as follows:

101.9.1 Adoption of Mountain View Amendments. Mountain View amendments to the 2010 California Green Building Standards Code shall be effective 30 days after adoption by the city council.

SEC. 8.20.__. Subsection 101.10—Amended.

Subsection 101.10 of the 2010 California Green Building Standards Code is amended to read as follows:

101.10 Mandatory requirements. This code contains the minimum mandatory green building measures and energy requirements as required by the City of Mountain View. All new structures in the City of Mountain View must comply with the mandatory measures of the 2010 California Green Building Standards Code as adopted by the state in addition to local amendments included in this code. This includes all residential new construction projects regardless of height or number of stories. Additionally, applicants must demonstrate that the area of improvement or new construction has an energy efficiency that is, at minimum, a specified percentage above the 2008 Building Energy Efficiency Standards in Title 24, Part 6.

SEC. 8.20.__. Subsection 101.10.1—Added.

Subsection 101.10.1 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1 Project types. Table 101.10 Mandatory Green Building Requirements, details the project types that are required to comply with this code.

SEC. 8.20.__. Subsection 101.10.1.1—Added.

Subsection 101.10.1.1 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1.1 Residential projects. All residential projects (single-family and multi-family) regulated by this code must comply with Mountain View's energy and green building requirements as listed below.

SEC. 8.20.__. Subsection 101.10.1.1.1—Added.

Subsection 101.10.1.1.1 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1.1.1 Residential additions. All residential additions with conditioned space greater than or equal to 1,000 square feet (gross) must comply with the applicable section of the code listed below if the addition (including interior improvements within the existing structure) includes any of the following:

A. Additions or alterations to plumbing fixtures must comply with Section 4.303 (Indoor Water Use);

B. Replacement or installation of new interior finish materials (i.e., flooring, carpeting, paint, etc.) must comply with Section 4.504 (Pollutant Control); and

C. New square footage to the existing structure must demonstrate energy compliance at least 10 percent above Title 24, Part 6.

Additionally, projects that include additions and interior alterations may use the total area (in square feet) of improvements in the Title 24, Part 6 energy calculations and may account for energy-efficiency upgrades that already exist in the structure, assuming the upgrades comply with the 2008 Building Energy Efficiency Standards.

SEC. 8.20.__. Subsection 101.10.1.1.2—Added.

Subsection 101.10.1.1.2 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1.1.2 Residential new construction—Less than five (5) units. All residential new construction less than five (5) units must comply with the following:

A. The mandatory measures of the California Green Building Standards Code and any Mountain View amendments; and

B. Must demonstrate energy compliance at least 15 percent above Title 24, Part 6.

SEC. 8.20.__. Subsection 101.10.1.1.3—Added.

Subsection 101.10.1.1.3 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1.1.3 Residential new construction—Five (5) units or more. All residential new construction with five (5) units or more must comply with the following:

A. The mandatory measures of the California Green Building Standards Code and any Mountain View amendments;

B. Meet the intent of seventy (70) GreenPoint Rated points; and

C. Must demonstrate the appropriate energy compliance above Title 24, Part 6 based on the following project characteristics:

1. Low-rise residential building (up to three stories in height)—15 percent above Title 24, Part 6; or

2. High-rise residential building (over three stories in height)—15 percent above Title 24, Part 6. Plug and lighting energies may be deducted from both the standard and proposed building models when conducting the energy calculations.

SEC. 8.20.__. Subsection 101.10.1.2—Added.

Subsection 101.10.1.2 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1.2 Nonresidential projects. All nonresidential projects regulated by this code must comply with Mountain View's energy and green building requirements as listed below.

SEC. 8.20.__. Subsection 101.10.1.2.1—Added.

Subsection 101.10.1.2.1 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1.2.1 Nonresidential tenant improvements. All nonresidential tenant improvements 15,000 square feet (gross) or greater with a $100,000 construction valuation must comply with the applicable section of the code listed below if the improvements include any of the following:

A. Alterations to plumbing fixtures must comply with Section 5.303 (Indoor Water Use);

B. Replacement or installation of new interior finish materials (i.e., flooring, carpeting, paint, etc.) must comply with Section 5.504 (Pollutant Control); and

C. Any lighting improvements that require a Title 24, Part 6 energy calculation must demonstrate energy compliance at least 10 percent above Title 24, Part 6 for lighting only.

SEC. 8.20.__. Subsection 101.10.1.2.2—Added.

Subsection 101.10.1.2.2 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1.2.2 Nonresidential new construction—Less than 5,000 square feet. All nonresidential new construction less than 5,000 square feet (gross) must comply with the following:

A. Meet the mandatory measures of the California Green Building Standards Code and any Mountain View amendments; and

B. Must demonstrate energy compliance 10 percent above Title 24, Part 6.

SEC. 8.20.__. Subsection 101.10.1.2.3—Added.

Subsection 101.10.1.2.3 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1.2.3 Nonresidential new construction—5,000 through 25,000 square feet. All nonresidential new construction of 5,000 through 25,000 square feet (gross) must comply with the following:

A. Meet the mandatory measures of the California Green Building Standards Code and any Mountain View amendments;

B. Meet the intent of LEED® certified; and

C. Must demonstrate energy compliance 10 percent above Title 24, Part 6.

SEC. 8.20.__. Subsection 101.10.1.2.4—Added.

Subsection 101.10.1.2.4 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1.2.4 Nonresidential new construction—Greater than 25,000 square feet. All nonresidential new construction greater than 25,000 square feet (gross) must comply with the following:

A. Meet the mandatory measures of the California Green Building Standards Code and any Mountain View amendments;

B. Meet the intent of LEED® Silver certified; and

C. Must demonstrate energy compliance 10 percent above Title 24, Part 6.

SEC. 8.20.__. Subsection 101.10.1.3—Added.

Subsection 101.10.1.3 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.1.3 Mixed-use projects. All new mixed-use construction projects must comply with Mountain View's energy and green building requirements and meet the requirements applicable to each primary occupancy component. See Table 101.10 for mixed-use project types that apply.

SEC. 8.20.__. Table 101.10—Added.

Table 101.10 is added to the 2010 California Green Building Standards Code to read as follows:

Table 101.10 Mandatory Green Building Requirements

Project Type	Energy Requirement[1]	Green Building Standard and Requirement
RESIDENTIAL PROJECTS (SINGLE-FAMILY, MULTI-FAMILY)		
New Construction		
New Residential < 5 units	15% above Title 24, Part 6	Mandatory CalGreen Requirements
New Residential ≥ 5 units	15% above Title 24, Part 6[2]	Meet the intent of 70 GreenPoint Rated points and Mandatory CalGreen Requirements
Additions[3] (applies to conditioned space only)		
Additions ≥1,000 square feet	10% above Title 24, Part 6	Mandatory CalGreen Requirements: Sec. 4.303 (Indoor Water Use) Sec. 4.504 (Pollutant Control)
MIXED-USE PROJECTS		
New Construction		
New Residential < 5 units and New Nonresidential Use < 25,000 square feet	15% above Title 24, Part 6 for Residential; 10% above Title 24, Part 6 for Nonresidential	Residential and Nonresidential criteria as applicable to each component of the project.
New Residential ≥ 5 units and New Nonresidential Use ≥25,000 square feet	15% above Title 24, Part 6 for Residential; 10% above Title 24, Part 6 for Nonresidential	
NONRESIDENTIAL PROJECTS (INCLUDE HOTEL[2])		
New Construction[4]		
New Nonresidential Buildings < 5,000 square feet	10% above Title 24, Part 6	Mandatory CalGreen Requirements
New Nonresidential Buildings 5,000 to 25,000 square feet	10% above Title 24, Part 6	Meet the intent of LEED® Certified and Mandatory CalGreen Requirements
New Nonresidential Buildings > 25,000 square feet	10% above Title 24, Part 6	Meet the intent of LEED® Silver and Mandatory CalGreen Requirements

Tenant Improvements		
Tenant Improvements ≥15,000 square feet with a $100,000 construction valuation where the scope of work includes any of the following: (1) requires a Title 24 energy calculation; (2) the replacement or addition of any plumbing fixtures and/or interior finish materials (i.e., carpeting, paint, etc.).	10% above Title 24, Part 6 for Lighting Only	Mandatory CalGreen Requirements: Section 5.303 (Indoor Water Use) Section 5.504 (Pollutant Control)

1. On-site generation of renewable energy in an amount equivalent to the required reductions may be used as an alternate means to meet the local energy requirement. Energy production shall be determined through use of the CECPV Calculator provided by the California Energy Commission.

2. For high-rise residential buildings (over three stories in height) and hotels, plug and lighting energies can be deducted from both the standard and proposed building when conducting the Title 24, Part 6 energy calculations.

3. Residential additions that include interior alterations may use the total area (in square feet) of improvements in the Title 24 energy calculations and may account for energy-efficiency upgrades that already exist in the structure, assuming the upgrades comply with the 2008 Building Energy Efficiency Standards.

4. New shell construction with minimally installed systems are required to attain the following energy requirements above Title 24, Part 6: Cold Shell (no HVAC and no lighting)—5% or Warm Shell (includes HVAC and no lighting)—7%.

SEC. 8.20.__. Subsection 101.10.2—Added.

Subsection 101.10.2 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.2 Alternate green building standards. If an applicant proposes to use an alternate green building standard not included in this code, they must demonstrate that the alternate standard is, at minimum, equivalent to the referenced standard in terms of criteria, scope and certification process. The chief building official must approve the alternate standard prior to issuing a building permit.

SEC. 8.20.__. Subsection 101.10.3—Added.

Subsection 101.10.3 is added to the 2010 California Green Building Standards Code to read as follows:

101.10.3 Certification. The city does not require projects to be certified by a third party green building organization unless certification is a condition of approval for a zoning permit. Applicants must demonstrate the project meets the intent of the required standard through documentation and verification consistent with the criteria and documentation process of the respective green building rating system. This

intent

includes meeting all mandatory prerequisites and minimum point totals of each category, if required by the rating system.

SEC. 8.20.__. Subsection 101.11—Amended.

Subsection 101.11 of the 2010 California Green Building Standards Code is amended to read as follows:

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

1. Establish the type of occupancy.

2. Verify which state agency has authority for the established occupancy by reviewing the authorities list in Sections 103 through 106.

3. Once the appropriate agency has been identified, find the chapter which covers the established occupancy.

4. The Matrix Adoption Tables at the beginning of Chapters 4 and 5 identify the mandatory green building measures necessary to meet the minimum requirements of this code for the established occupancy. Occupancies regulated by this code must also comply with the green building requirements included in Chapter 1.

5. Voluntary tier measures are contained in Appendix Chapters A4 and A5. A checklist containing each green building measure, both required and voluntary, is provided at the end of each appendix chapter. Each measure listed in the application checklist has a section number which correlates to a section where more information about the specific measure is available.

6. The application checklist identifies which measures are required by this code and allows users to check off which voluntary items have been selected to meet voluntary tier levels if desired or mandated by a city, county, or city and county.

SEC. 8.20.__. Subsection 102.1—Amended.

Subsection 102.1 of the 2010 California Green Building Standards Code is amended to read as follows:

102.1 Submittal documents. Construction documents and other data shall be submitted in one or more sets with each application for a permit. Where special conditions exist, the City is authorized to require additional construction documents to be prepared by the applicant or a licensed design professional, depending on the size of the project (see Section 102.4 for details), and may be submitted separately.

When submitting for building permits for a project regulated by this code, the applicant shall submit the following materials:

1. The appropriate completed green building checklist;

2. Project construction documentation (plans and specifications) that verifies incorporation of the design and construction-related credits;

3. A letter of acknowledgement from the applicant, licensed professional or qualified green building professional indicating that the project has been designed to achieve the sustainability standards defined in this code and in accordance with the approved green building checklist. The letter shall indicate the number of points the project has been designed to achieve. The letter shall also commit to compliance with Mountain View's energy requirements;

4. Any additional documentation such as maps, calculations or product information that would be required by U.S. Green Building Council's Green Building Certification Institute for LEED® certification or by Build It Green for GreenPoint Rated certification; and

5. Any additional information believed to be relevant by the city in determining that a good-faith effort has been made to comply with this code.

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

SEC. 8.20.__. Subsection 102.2—Amended.

Subsection 102.2 of the 2010 California Green Building Standards Code is amended to read as follows:

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

SEC. 8.20.__. Subsection 102.3—Amended.

Subsection 102.3 of the 2010 California Green Building Standards Code is amended to read as follows:

102.3 Hardship or infeasibility exemption. If an applicant believes circumstances exist that make it a hardship or infeasible to meet the requirements of this code, the applicant may request an exemption. The applicant must still comply with the mandatory measures of the California Green Building Code and can only receive an exemption from the Mountain View amendments to the code. In applying for an exemption, the burden is on the applicant to show hardship or infeasibility. An exemption will only be granted in unusual circumstances where, due to exceptional characteristics of the structure or property involved, a literal enforcement of this code will result in practical difficulties or unnecessary hardships, provided that no such exception will be contrary to the intent of this code.

SEC. 8.20.__. Subsection 102.3.1—Added.

Subsection 102.3.1 is added to the 2010 California Green Building Standards Code to read as follows:

102.3.1 Proof of hardship or infeasibility. The applicant shall submit a letter indicating the maximum threshold of compliance that is feasible for the project and the circumstances that create a hardship or make it infeasible to comply fully with this code.

SEC. 8.20.__. Subsection 102.3.2—Added.

Subsection 102.3.2 is added to the 2010 California Green Building Standards Code to read as follows:

102.3.2 Approval or denial of exemption. The chief building official will determine if it is infeasible for the project to comply fully with this code and approve an alternative requirement. This alternative requirement can be, but is not limited to, reducing the energy efficiency requirement or the amount of green building measures required. For all approved exemptions, the project must continue to comply with the minimum requirements of the 2008 Building Energy Efficiency Standards (Title 24, Part 6) and the mandatory measures of the 2010 California Green Building Standards Code. The applicant will be notified of the final decision by the chief building official.

SEC. 8.20.__. Subsection 102.4—Added.

Subsection 102.4 is added to the 2010 California Green Building Standards Code to read as follows:

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

SEC. 8.20.__. Subsection 102.4.1—Added.

Subsection 102.4.1 is added to the 2010 California Green Building Standards Code to read as follows:

102.4.1 Self-verification. The burden of proving compliance with this code is on the applicant. The verification professional must provide evidence of adequate green building compliance or documentation to the building division to satisfy the requirements of this code.

SEC. 8.20.__. Subsection 102.4.1.1—Added.

Subsection 102.4.1.1 is added to the 2010 California Green Building Standards Code to read as follows:

102.4.1.1 Verification professional. The applicant or industry professional filing on behalf of the applicant must be the individual who verifies the project complies with the requirements of this code.

1. For residential additions and nonresidential tenant improvements regulated by this code, this individual can be a licensed industry professional, an authorized tenant or the property owner.

2. For all nonresidential and residential new construction projects regulated by this code, this individual must be a qualified green building professional with an industry license, such as an architect or contractor, or a professional with similar qualifications acceptable to the chief building official.

SEC. 8.20.__. Subsection 102.4.2—Added.

Subsection 102.4.2 is added to the 2010 California Green Building Standards Code to read as follows:

102.4.2 Noncompliance. If, as a result of any inspection, the City determines that the project does not or is unlikely to comply with the approved plans or green building program, a stop work order shall be issued if the inspector determines that continuation of construction activities will lessen the project's ability to meet the required compliance threshold. The stop work order shall remain in effect until the chief building official determines the project will be brought into compliance with the approved plans and/or verification documents.

SEC. 8.20.__. Section 202—Amended.

Section 202 of the 2010 California Green Building Standards Code is amended to add the following definitions:

ADDITION. New construction square footage added to an existing structure.

ALTERNATE GREEN BUILDING STANDARD. A private, third-party green building rating system not explicitly referenced in this code that achieves green building goals through a comprehensive checklist of requirements. To use an alternate standard, the applicant must prove it is at least equivalent to the referenced green building standard.

APPLICANT. Any entity or any subsequent owner of the site that applies to the city for the applicable permits to undertake any project types regulated by this code.

AREA OF IMPROVEMENT. The area (in square feet) where interior building improvements are proposed. Such improvements can include, but are not limited to, painting, installing carpet or flooring, replacing or upgrading mechanical, electrical or plumbing systems.

CITY. City means the City of Mountain View.

ENFORCING AGENCY. The community development department in the City of Mountain View as specified by this code.

GREEN POINT RATED (GPR). Refers to a residential green building rating system developed by Build It Green. Projects can use any of the adopted GPR checklists that most appropriately apply to the project type proposed.

GREEN BUILDING CERTIFICATION INSTITUTE (GBCI™). Oversees and administers the building certifications and professional designations for the U.S. Green Building Council's LEED® Green Building Rating Systems™.

LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN (LEED®). Refers to a green building rating system developed by U.S. Green Building Council for residential and nonresidential projects. Projects can use any of the adopted LEED® checklists that most appropriately apply to the project type proposed.

MEET THE INTENT. To demonstrate compliance with the green building requirements of LEED® or GPR without formally submitting documentation to U.S. Green Building Council's Green Building Certification Institute or Build It Green for verification and certification. The applicant must follow the approaches and procedures in the guidebook or reference guides for respective rating systems and submit the required documentation and verification materials as outlined in Section 102 of this code to the community development department. This includes meeting all mandatory prerequisites and minimum point totals of each category, if required per the rating system.

MIXED-USE. The construction of a building or buildings that include both commercial and residential uses.

NONRESIDENTIAL BUILDING. Any building constructed or occupied for a use other than residential, which may include, but is not limited to, commercial or hotel uses.

PROJECT. Any proposed development that is regulated by this code.

QUALIFIED GREEN BUILDING PROFESSIONAL. A licensed professional, such as an architect or contractor, trained through the Green Building Certification Institute as a LEED AP® or through Build It Green as a certified green building professional, or similar qualifications if acceptable to the chief building official.

SELF-VERIFICATION. Verification by the applicant or a qualified green building professional that the project has met the standards as indicated for the project type set forth in this code.

SQUARE FEET (GROSS). The gross square footage of a structure includes all floor area enclosed within the walls of the structure (measured from the outside perimeter of the wall).

TENANT IMPROVEMENTS. Any owner or authorized agent who intends to enlarge, alter or change the occupancy of a building or structure, or to erect, enlarge, alter or convert any electrical, gas, mechanical or plumbing system, the installation of

which is regulated by the California Building Code, or to cause any such work to be done, shall obtain the required permit and must comply with the requirements included in this code.

ZONING PERMIT. Any discretionary permit approval from the planning division that includes conditions of approval.

SEC. 8.20.__. Subsection 303.1.1.—Amended.

Subsection 303.1.1 of the 2010 California Green Building Standards Code is amended to read as follows:

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

SEC. 8.20.__. Subsection 4.106.2—Amended.

Subsection 4.106.2 of the 2010 California Green Building Standards Code is amended to read as follows:

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 which in total disturbs one acre or more, shall manage storm water drainage during construction. In order to manage storm water drainage during construction, one or more of the following measures shall be implemented to prevent flooding of adjacent property, prevent erosion and retain soil runoff on the site.

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

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

3. Storm water pollutant control measures must be installed at construction sites year round, in compliance with Section 35.32.10.1(T) of the Mountain View city code. The storm water pollutant control measures listed in the ordinance include erosion control, run-on and runoff control, sediment control, active treatment (as appropriate), good site management and nonstorm water management through all phases of construction until the site is fully stabilized by landscaping or the installation of permanent erosion control measures.

SEC. 8.20.__. Subsection 4.304.1—Amended.

Subsection 4.304.1 of the 2010 California Green Building Standards Code is amended to read as follows:

4.304.1 Compliance with local water-efficient landscape ordinance. Projects with landscape areas of 1,000 square feet or greater must comply with the City of Mountain View's Water Conservation in Landscaping Regulations, pursuant to Chapter 36, Article XII-A, Division A36.32 of the City Code. Projects with landscape areas of less than 1,000 square feet must comply with the requirements of Section 4.304.2 of this code.

1. Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' needs as weather conditions change.

2. Weather- and soil moisture-based controllers without integral rain sensors or communication systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s).

Note: More information regarding irrigation controller function and specifications is available from the irrigation association.

SEC. 8.20.__. Subsection 4.408.1—Amended.

Subsection 4.408.1 of the 2010 California Green Building Standards Code is amended to read as follows:

4.408.1 Compliance with local construction and demolition debris diversion program. Projects adding or constructing 5,000 square feet or more of new floor area must comply with the City of Mountain View's Construction and Demolition Debris Ordinance, pursuant to Chapter 16, Article III of the city code. Projects adding or constructing 5,000 square feet or less of new floor area, if subject to this code, must comply with the requirements of Section 4.408 of this code.

SEC. 8.20.__. Subsection 4.408.1.1—Added.

Subsection 4.408.1.1 is added to the 2010 California Green Building Standards Code to read as follows:

4.408.1.1 Construction waste reduction of at least 50 percent. Recycle and/or salvage for reuse a minimum of 50 percent of the nonhazardous construction and demolition debris, or meet a local construction and demolition waste management ordinance, whichever is more stringent.

Exceptions:

1. Excavated soil and land-clearing debris.

2. Alternate waste reduction methods developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist or are not located reasonably close to the jobsite.

SEC. 8.20.__. Subsection 4.408.3—Added.

Subsection 4.408.3 is added to the 2010 California Green Building Standards Code to read as follows:

4.408.3 Excavated soil and land clearing debris. One hundred percent (100%) of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on-site until the storage site is developed.

SEC. 8.20.__. Subsection 4.410.2—Added.

Subsection 4.410.2 is added to the 2010 California Green Building Standards Code to read as follows:

4.410.2 Recycling by occupants. Provide readily accessible areas that serve the entire building and are identified for the depositing, storage and collection of nonhazardous materials for recycling, including (at a minimum) paper, corrugated cardboard, glass, plastics and metals.

SEC. 8.20.__. Subsection 4.410.2.1—Added.

Subsection 4.410.2.1 is added to the 2010 California Green Building Standards Code to read as follows:

4.410.2.1 Sample ordinance. Space allocation for recycling areas shall comply with Chapter 18, Part 3, Division 30 of the public resources code. Chapter 18 is known as the California Solid Waste Reuse and Recycling Access Act of 1991 (Act).

SEC. 8.20.__. Subsection 4.503.1—Amended.

Subsection 4.503.1 of the 2010 California Green Building Standards Code is amended to read as follows:

4.503.1 General. Any installed gas fireplace shall be a direct-vent sealed-combustion type. Any installed wood stove or pellet stove shall comply with U.S. EPA Phase II emission limits where applicable. Wood stoves, pellet stoves and fireplaces shall also comply with applicable local ordinances. Mountain View city code Chapter 8, Article 1, Division IV shall be referenced for wood-burning appliances.

SEC. 8.20.__. Subsection 4.504.2.4—Amended.

Subsection 4.504.2.4 of the 2010 California Green Building Standards Code is amended to read as follows:

4.504.2.4 Verification. Verification of compliance with this section shall be provided at the request of the City of Mountain View. Documentation may include, but is not limited to, the following:

1. Manufacturer's product specification.

2. Field verification of on-site product containers.

SEC. 8.20.__. Subsection 5.106.1—Amended.

Subsection 5.106.1 of the 2010 California Green Building Standards Code is amended to read as follows:

5.106.1 Storm water sediment and erosion control plan. For newly constructed projects of less than one acre, develop and implement a storm water sediment and erosion control plan that has been designed specific to its site. The storm water sediment and erosion control plan shall be developed to provide equivalent protection to projects regulated by the state storm water NPDES construction permit (greater than one acre of disturbed land), and Section 35.32.10.1(T) of the Mountain View city code. The storm water pollutant control measures that shall be included in the plan include erosion control, run-on and runoff control, sediment control, advanced treatment (as appropriate), good site management and nonstorm water management through all phases of construction until it is fully stabilized by landscaping or the installation of permanent erosion control measures.

Note: No state permit is required, but construction best management practices (BMPs) as approved by the City of Mountain View shall be followed. BMPs include, but are not limited to, the following:

1. Erosion and sediment control BMPs:

    a. Scheduling construction activity.

    b. Preservation of natural features, vegetation and soil.

    c. Drainage swales or lined ditches to control storm water flow.

    d. Mulching or hydroseeding to stabilize soils.

    e. Erosion control covers to protect slopes.

    f. Protection of storm drain inlets (gravel bags or catch basin inserts).

    g. Perimeter sediment control (perimeter silt fence, fiber rolls).

    h. Sediment trap or sediment basin to retain sediment on-site.

    i. Stabilized construction exits.

    j. Wind erosion control.

2. Housekeeping BMPs:

    a. Material handling and waste management.

    b. Building materials stockpile management.

    c. Management of washout areas (concrete, paints, stucco, etc.).

    d. Control of vehicle/equipment fueling to contractor's staging area.

    e. Vehicle and equipment cleaning performed off-site.

    f. Spill prevention and control.

SEC. 8.20.__. Subsection 5.302.1—Amended.

Subsection 5.302.1 of the 2010 California Green Building Standards Code is amended to add the following definition:

NEW WATER SERVICE. A site that has not been connected to the City's water distribution system as determined by the public works department.

SEC. 8.20.__. Subsection 5.304.1—Amended.

Subsection 5.304.1 of the 2010 California Green Building Standards Code is amended to read as follows:

5.304.1 Compliance with Local Water-Efficient Landscape Ordinance. Projects with landscape areas of 1,000 square feet or greater must comply with the City's Water Conservation in Landscaping Regulations, pursuant to Chapter 36, Article XII-A, Division A36.32 of the city code. Projects with landscape areas of less than 1,000 square feet must comply with the requirements of Section 5.304.

SEC. 8.20.__. Subsection 5.304.2—Amended.

Subsection 5.304.2 of the 2010 California Green Building Standards Code is amended to read as follows:

5.304.2 Water budget. A water budget shall be developed for landscape irrigation use that conforms to the Local Water-Efficient Landscape Ordinance or to the California Department of Water Resources Model Water-Efficient Landscape Ordinance where no local ordinance is applicable.

Note: Prescriptive measures to assist in compliance with the water budget are listed in Sections 492.5 through 492.8, 492.10 and 492.11 of the ordinance, which may be found at: *http://www.owue.water.ca.gov/landscape/ord/ord.cfm.*

SEC. 8.20.__. Subsection 5.304.3—Amended.

Subsection 5.304.3 of the 2010 California Green Building Standards Code is amended to read as follows:

5.304.3 Outdoor potable water use. For new water service for landscaped areas between 1,000 square feet and 5,000 square feet (the level at which Water Code §535 applies), separate meters or submeters shall be installed for indoor and outdoor potable water use.

SEC. 8.20.__. Subsection 5.304.4—Amended.

Subsection 5.304.4 of the 2010 California Green Building Standards Code is amended to read as follows:

5.304.4 Irrigation design. In new nonresidential construction with between 1,000 and 2,500 square feet of landscaped area (the level at which the MLO applies), install irrigation controllers and sensors which include the following criteria, and meet manufacturer's recommendations.

SEC. 8.20.__. Subsection 5.304.4.1—Amended.

Subsection 5.304.4.1 of the 2010 California Green Building Standards Code is amended to read as follows:

5.304.4.1 Irrigation controllers. Automatic irrigation system controllers installed at the time of final inspection shall comply with the following:

1. Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' needs as weather conditions change.

2. Weather- and soil moisture-based controllers without integral rain sensors or communication systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s). Soil moisture-based controllers are not required to have rain sensor input.

Note: More information regarding irrigation controller function and specifications is available from the Irrigation Association.

SEC. 8.20.__. Subsection 5.408.1—Amended.

Subsection 5.408.1 of the 2010 California Green Building Standards Code is amended to read as follows:

5.408.1 Compliance with local construction and demolition debris diversion program. Projects adding, constructing or renovating 5,000 square feet or more of floor area must comply with the City of Mountain View's Construction and Demolition Debris Diversion Ordinance, pursuant to Chapter 16, Article III of the city code. Projects adding or constructing 5,000 square feet or less of floor area, if subject to this code, must comply with the requirements of Section 5.408 of this code.

SEC. 8.20.__. Subsection 5.408.1.1—Added.

Subsection 5.408.1.1 is added to the 2010 California Green Building Standards Code to read as follows:

5.408.1.1 Construction waste diversion. Establish a construction waste management plan for the diverted materials, or meet local construction and demolition waste management ordinance, whichever is more stringent.

SEC. 8.20.__. Subsection 5.503.1—Amended.

Subsection 5.503.1 of the 2010 California Green Building Standards Code is amended to read as follows:

5.503.1 General. Install only a direct-vent sealed-combustion gas or sealed wood-burning fireplace, or a sealed wood stove or pellet stove, and refer to residential requirements in the California Energy Code, Title 24, Part 6, Subchapter 7, Section 150. Wood stoves, pellet stoves and fireplaces shall comply with applicable local ordinances. Mountain View city code Chapter 8, Article 1, Division IV shall be referenced for wood burning appliances.

SEC. 8.20.__. Subsection 5.504.4.3.2—Amended.

Subsection 5.504.4.3.2 of the 2010 California Green Building Standards Code is amended to read as follows:

5.504.4.3.2 Verification. Verification of compliance with this section shall be provided at the request of the City of Mountain View. Documentation may include, but is not limited to, the following:

1. Manufacturer's product specification.

2. Field verification of on-site product containers."

Section 2. The provisions of this ordinance shall be effective thirty (30) days from and after the date of its adoption.

Section 3. If any section, subsection, sentence, clause or phrase of this ordinance is for any reason held to be unconstitutional, such decision shall not affect the validity of the other remaining portions of this ordinance. The City Council hereby declares that it would have passed this ordinance and each section, subsection, sentence, clause or phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses or phrases be declared unconstitutional.

Section 4. Pursuant to Section 522 of the Mountain View City Charter, it is ordered that copies of the foregoing proposed ordinance be posted at least two (2) days prior to its adoption in three (3) prominent places in the City and that a single publication be made to the official newspaper of the City of a notice setting forth the title of the ordinance, the date of its introduction, and a list of the places where copies of the proposed ordinance are posted.

AG/7/ORD
807-03-22-11o-E^

Attachment 6

City of Mountain View

Energy Efficiency Reach Code
Cost Effectiveness Analysis

Prepared by:
Global Green USA
Farber Energy Associates

March 13, 2011

Background

Public Resources Code Section 25402.1(h)2 and Section 10-106 of the Building Energy Efficiency Standards (Standards) establish a process that allows local adoption of energy standards that are more stringent than the statewide Standards. This process allows local governments to adopt and enforce energy standards before the statewide Standards effective date, require additional energy conservation measures, and/or set more stringent energy budgets. Because these energy standards "reach" beyond the minimum requirements of Title 24, Part 6 of the California Building Code, they are commonly referred to as Reach Codes.

The process for adopting a Reach Code requires that local governments apply to the California Energy Commission (CEC) for approval. As part of the application the applicant jurisdiction must prepare a Cost Effectiveness Study that provides the basis of the local government's determination that the proposed Reach Code Standards are cost-effective. Once the CEC staff has verified that the local Reach Code Standards will require buildings to use no more energy than the current statewide Standards and that the documentation requirements in Section 10-106 are met, the application is brought before the full California Energy Commission for approval.

Energy Efficiency Analysis Methodology

This Cost Effectiveness Study consists of an analysis of the building types and performance thresholds listed in Table 1. The 2008 Building Energy Efficiency Standards (2008 Standards), which became effective January 1, 2010, have been used as the baseline for calculating the energy performance of efficiency measures summarized in this study.

Table 1: Efficiency Thresholds Used in Cost-Effectiveness Study

Building Type	***Percentage Better than 2008 Title 24, Part 6***
Low-Rise Residential (3 stories and below)	15%
High-Rise Residential (4 stories and greater)	15%
Hotel/Motel	5%
Non-Residential Cold Shell (no HVAC, no lighting)	5%
Non-Residential Warm Shell (HVAC, no lighting)	7%
Non-Residential Full Build Out	10%
Non-residential lighting only	10%

In collaboration with City staff, a series of prototypical buildings for residential and non-residential construction were identified that represent building types constructed in the past five years in the City and building types that are predicted to be constructed in future years. The prototypes are shown in Table 2.

Table 2: Prototype Buildings		
Building Type	**Square Footage**	**Title 24 Standard**
Single-Family Residential	1,800	Low-Rise Res
Single-Family Residential	3,600	Low-Rise Res
Multi-Family Townhouse (8-unit)	12,000	Low-Rise Res
Multi-Family Apartment (80-unit)	100,000	High-Rise Res
Hotel (80-unit)	100,000	Hotel/Motel
Small Retail	4,000	Non-Res
Medium Retail	20,000	Non-Res
Large Retail	140,000	Non-Res
Medium Office	60,000	Non-Res
Large Office	160,000	Non-Res
Tenant Improvement Non-residential lighting only	20,000	Non-Res Lighting

For each prototype building, a mix of common efficiency measures was selected for a baseline condition (building achieving Title 24 compliance) and for a proposed condition consistent with the values in Table 1. The efficiency levels were established in consideration of the following:

1. other cities reach code thresholds;
2. maintaining consistency with statewide energy efficiency rebate programs;
3. maintaining consistency with the approach taken by LEED®[1] and Green Point Rated green building rating programs;
4. having achievable efficiency standards for projects permitted in the City; and
5. input from the energy modeling consultant on the feasibility of thresholds based on the model outputs.

The design choices to meet established performance thresholds were made in consultation with City staff with the intent of selecting typical construction strategies.

All buildings are modeled as square in plan, except the townhouse building, which is modeled as an elongated row of units. All low-rise residential buildings are modeled with the *prescriptive* compliance baseline of 20% glazing to floor area ratio, glazing equally distributed in each cardinal orientation, except for the townhouse building which has the 20% glazing allowance distributed 45% on each of the long walls, and 5% on each of the short walls. The high-rise residential building, hotel/motel building, and the office buildings are modeled with the *prescriptive* baseline of 40% glazing to wall ratio for each of the four cardinal oriented walls. The retail buildings are modeled with a 40% glazing to wall ratio (as retail buildings often only have glazing facing the front). To represent a worst case scenario the glazing was placed on the South-facing elevation. Skylights were only modeled for the large retail building– at 5% of the roof area.

The following tables indicate the baseline building efficiency measures included to meet the 2008 Standards (column 2, "Baseline") and the energy features that were modeled to enable the proposed design to use less energy (on a TDV basis) than the 2008 Standards (column 3, "Proposed"), in accordance with the Ordinance thresholds shown in Table 1. In addition to analyzing the impact of an array of efficiency measures that

[1] LEED is a trademark owned by the U.S. Green Building Council.

may be utilized to exceed Title 24, the building calculations include utility energy costs for baseline and efficient buildings based on the appropriate utility rate schedule for each building prototype.

City of Mountain View Reach Code - BUILDING PROTOTYPE STUDIES 2-24-11

1,800 SF Single Family House 2008 Title 24 (one-story)						
Measure	Baseline	Proposed (15%)	Notes	Incremental Cost Est.		
				min	max	avg
Fenestration Area (% of CFA) [1]	20%	20%		$0	$0	$0
Fenestration (U/SHGC) [2]	.42/.42	.41/.41	insignificant savings	$0	$0	$0
Roof Insulation	R-30	R-30		$0	$0	$0
Radiant Barrier [3]	yes	yes		$0	$0	$0
Walls	R-13	R-13		$0	$0	$0
Forced Air Unit (AFUE) [4]	80%	90%	$0.10-0.15 /sf increase [5]	$180	$270	$225
Duct Insulation	6	6		$0	$0	$0
HERS Duct Leakage Test [6]	yes	yes		$0	$0	$0
Air Conditioner (SEER) [7]	13	13		$0	$0	$0
HERS AC Test	no	no		$0	$0	$0
Domestic Hot Water Heater	standard	tankless	1 unit: ($1000 or $1100)-(500) [8,16]	$500	$600	$550
Quality Insulation Installation	no	no		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$680	$870	$775
Estimated Labor Costs (40%)				$272	$348	$310
Estimated Incremental Cost of Energy Efficient Measures (total)				$952	$1,218	$1,085
Incremental Cost of Efficiency Measures (per SF)				$0.53	$0.48	$0.43
Annual Energy Cost	$ 610	$ 509				
Energy Savings (annual)		$ 101				
Simple Payback (years)		10.7				
Net Savings/Cost (15 year)		$430				
Return on Investment		40%				
Annual ROI		3%				
Percent of Estimated Construction Cost		0.22%				

3,600 SF Single Family House 2008 Title 24 (two-story)						
Measure	Baseline	Proposed (15%)	Notes	Incremental Cost Est.		
				min	max	avg
Fenestration Area (% of CFA)	20%	20%		$0	$0	$0
Fenestration (U/SHGC)	.41/.42	.40/.40	insignificant savings	$0	$0	$0
Roof Insulation	R-30	R-30		$0	$0	$0
Radiant Barrier	yes	yes		$0	$0	$0
Walls	R-13	R-13		$0	$0	$0
Forced Air Unit (AFUE)	80%	90%	$0.10-0.15 /sf cost [5]	$360	$540	$450
Duct Insulation	6	6		$0	$0	$0
HERS Duct Leakage Test	yes	yes		$0	$0	$0
Air Conditioner (SEER)	13	14	$0.10-0.12 /sf cost [5]	$360	$432	$396
HERS AC Test	no	no		$0	$0	$0
Domestic Hot Water Heater	standard	tankless	1 unit: ($1000 or $1100)-(500) [8,16]	$500	$600	$550
Quality Insulation Installation	no	no		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$1,220	$1,572	$1,396
Estimated Labor Costs (40%)				$488	$629	$558
Estimated Incremental Cost of Energy Efficient Measures (total)				$1,708	$2,201	$1,954
Incremental Cost of Efficiency Measures (per SF)				$0.47	$0.44	$0.39
Annual Energy Cost	$ 804	$ 673				
Energy Savings (annual)		$ 131				
Simple Payback (years)		14.9				
Net Savings (15 year)		$ 11				
Return on Investment		1%				
Annual ROI		0%				
Percent of Estimated Construction Cost		0.27%				

12,000 SF 8 Unit Townhouse (two-story)						
Measure	Baseline	Proposed (15%)	Notes	Incremental Cost Est.		
				min	max	avg
Fenestration Area (% of CFA)	20%	20%		$0	$0	$0
Fenestration (U/SHGC)	.40/.40	.39/.40	insignificant savings	$0	$0	$0
Roof Insulation	R-30	R-30		$0	$0	$0
Radiant Barrier	yes	yes		$0	$0	$0
Walls	R-13	R-13		$0	$0	$0
Forced Air Unit (AFUE)	95%	90%	$0.05-0.075 /sf savings [5]	-$600	-$900	-$750
Duct Insulation	6	6		$0	$0	$0
HERS Duct Leakage Test	yes	yes		$0	$0	$0
Air Conditioner (SEER)	16	14	$0.20-0.24 /sf savings [5]	-$2,400	-$2,880	-$2,640
HERS AC Test	no	no		$0	$0	$0
Domestic Hot Water Heater	standard	tankless	8 units: ($1000 or $1100)-(600)[8,16]	$3,200	$4,000	$3,600
Quality Insulation Installation	no	no		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$200	$220	$210
Estimated Labor Costs (40%)				$80	$88	$84
Estimated Incremental Cost of Energy Efficient Measures (total)				$280	$308	$294
Incremental Cost of Efficiency Measures (per SF)				$0.02	$0.02	$0.02
Annual Energy Cost	$ 3,227	$ 2,693				
Energy Savings (annual)		$ 534				
Simple Payback (years)		0.6				
Net Savings (15 year)		$7,716				
Return on Investment		2624%				
Annual ROI		175%				
Percent of Estimated Construction Cost		0.01%				

100,000 SF 80-Unit Apartment Building (four-story)						
Measure	**Baseline**	**Proposed (15%)**	**Notes**	**Incremental Cost Est.**		
Fenestration Area (% of CFA)	40%	40%		$0	$0	$0
Roof Insulation	R-35	R-35		$0	$0	$0
Cool Roof	yes	yes		$0	$0	$0
Frame Walls	R-13 batt+R-5	R-13 batt+R-5		$0	$0	$0
Exposed Floor	R-8	R-8		$0	$0	$0
Fenestration (U/SHGC)	.79/.38	.47/.37	$1.30-$1.95/sf of window area [15]	$5,200	$7,800	$6,500
Skylights	no	no		$0	$0	$0
Fenestration Shading	no	no		$0	$0	$0
Space Heat Boiler	80%	90%	$0.03-0.05 /sf increase - [5]	$3,000	$5,000	$4,000
Duct Insulation	4.2	no (not exposed)	$0.10-0.15/sf savings [7]	-$10,000	-$15,000	-$12,500
DHW Water Boiler	80%	90%	$0.03-0.05 /sf increase - [5]	$3,000	$5,000	$4,000
Solar Thermal (25% offset)	no	yes		$25,000	$50,000	$37,500
Air Conditioner (SEER)	13	16		$0	$0	$0
Lighting Power	default	default		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$26,200	$52,800	$39,500
Estimated Labor Costs (40%)				$10,480	$21,120	$15,800
Estimated Incremental Cost of Energy Efficient Measures (total)				$36,680	$73,920	$55,300
Incremental Cost of Efficiency Measures (per SF)				$0.37	$0.53	$0.40
Annual Energy Cost	$ 77,367	$ 67,795				
Energy Savings (annual)		$ 9,572				
Simple Packback (years)		5.8				
Net Savings (15 year)		$88,280				
Return on Investment		160%				
Annual ROI		11%				
Percent of Estimated Construction Cost		0.28%				

140,000 SF Non-Residential (Retail) Building 2008 Title 24						
Measure	**Baseline**	**Proposed (10%)**	**Notes**	**Incremental Cost Est.**		
				min	max	avg
Roof Insulation	R-30	R-30		$0	$0	$0
Cool Roof (prescriptive std.)	yes	yes		$0	$0	$0
CMU Walls	No furring	No furring		$0	$0	$0
Fixed Storefront: Solarban 60/Clear Low-E dual-pane, SHGC 0.38	yes	yes		$0	$0	$0
Storefront Area: 40% of south wall area	yes	yes		$0	$0	$0
Skylights: Tint dual-pane, standard metal frame	1.11/0.57	.82/.49	$2.50-$3.75/sf of skylight area (3,500 sf.) [16]	$8,750	$13,125	$10,938
Fenestration Shading	no	yes	projection, s&w façades: $100-106 /sf [13]	$9,476	$10,045	$9,761
Package AC units (EER/AFUE)	11.2/80%	13.0/80%	$.64-$1.06 /sf increase [5]	$89,600	$148,400	$119,000
Lighting Power: prescriptive allowance 1.5 watts/SF	.091 W/SF	.763 W/SF	$0.05-$0.1/sf savings [5]	-$7,000	-$14,000	-$10,500
Automatic Daylighting Controls [14]	yes	yes		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$100,826	$157,570	$129,198
Estimated Labor Costs (40%)				$40,331	$63,028	$51,679
Estimated Incremental Cost of Energy Efficient Measures (total)				$141,157	$220,598	$180,877
Incremental Cost of Efficiency Measures (per SF)				$1.01	$1.58	$1.29
Annual Energy Cost	$ 179,306	$ 160,675				
Energy Savings (annual)		$ 18,631				
Simple Packback (years)		9.7				
Net Savings (15 year)		$98,588				
Return on Investment		55%				
Annual ROI		4%				
Percent of Estimated Construction Cost		0.65%				

4,000 SF Non-Residential (Retail) Building 2008 Title 24						
Measure	**Baseline**	**Proposed (10%)**	**Notes**	**Incremental Cost Est.**		
				min	max	avg
Roof Insulation	R-30	R-30		$0	$0	$0
Cool Roof (prescriptive std.)	yes	yes		$0	$0	$0
Wall Insulation (wood frame)	R-19	R-19		$0	$0	$0
Fixed Storefront: Solarban 60/Clear Low-E dual-pane, SHGC 0.38	yes	yes		$0	$0	$0
Storefront Area: 40% of south wall area	yes	yes		$0	$0	$0
Skylights: Tint dual-pane, standard metal frame	no	no		$0	$0	$0
Fenestration Shading	no	yes	projection: s&w facades, $100-106 /sf [13]	$3,895	$4,130	$4,013
Package AC units (EER/AFUE)	11.2/80%	13.0/80%	$.64-$1.06 /sf increase [5]	$2,560	$4,240	$3,400
Lighting Power: prescriptive allowance 1.5 watts/SF	1.095 W/SF	1.050 W/SF	$0.05-$0.1/sf [5]	-$200	-$400	-$300
Automatic Daylighting Controls [14]	yes	yes		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$6,256	$7,970	$7,113
Estimated Labor Costs (40%)				$2,502	$3,188	$2,845
Estimated Incremental Cost of Energy Efficient Measures (total)				$8,758	$11,158	$9,958
Incremental Cost of Efficiency Measures (per SF)				$2.19	$2.79	$2.49
Annual Energy Cost	$ 6,856	$ 6,259				
Energy Savings (annual)		$ 597				
Simple Packback (years)		16.7				
Net Savings (15 year)		-$1,003				
Return on Investment		-10%				
Annual ROI		-1%				
Percent of Estimated Construction Cost		0.89%				

20,000 SF Non-Residential (Retail) Building 2008 Title 24						
Measure	**Baseline**	**Proposed (10%)**	**Notes**	**Incremental Cost Est.**		
				min	max	avg
Roof Insulation	R-24	R-24		$0	$0	$0
Cool Roof (prescriptive std.)	yes	yes		$0	$0	$0
Wall Insulation (metal frame)	R-19 plus R-5	R-19 plus R-5		$0	$0	$0
Fixed Storefront: Solarban 60/Clear Low-E dual-pane, SHGC 0.38	yes	yes		$0	$0	$0
Storefront Area: 40% of south wall area	yes	yes		$0	$0	$0
Skylights: Tint dual-pane, standard metal frame	no	no		$0	$0	$0
Fenestration Shading	no	yes	projection, s&w facades: $100-106 /sf [13]	$5,826	$6,175	$6,001
Package AC units (EER/AFUE)	11.2/80%	13.0/80%	$.64-$1.06 /sf increase [5]	$12,800	$21,200	$17,000
Lighting Power: prescriptive allowance 1.5 watts/SF	1.10 W/SF	1.025 W/SF	$0.05-$0.1/sf [5]	-$1,000	-$2,000	-$1,500
Automatic Daylighting Controls [14]	yes	yes		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$17,626	$25,375	$21,501
Estimated Labor Costs (40%)				$7,050	$10,150	$8,600
Estimated Incremental Cost of Energy Efficient Measures (total)				$24,676	$35,526	$30,101
Incremental Cost of Efficiency Measures (per SF)				$1.23	$1.78	$1.51
Annual Energy Cost	$ 27,858	$ 25,385				
Energy Savings (annual)		$ 2,473				
Simple Packback (years)		12.2				
Net Savings (15 year)		$6,994				
Return on Investment		23%				
Annual ROI		2%				
Percent of Estimated Construction Cost		0.75%				

100,000 SF 80-Room Hotel Building (four-story)						
Measure	Baseline	Proposed (5%)	Notes	Incremental Cost Est.		
Fenestration Area (% of CFA)	40%	40%		$0	$0	$0
Roof Insulation	R-35	R-35		$0	$0	$0
Cool Roof	yes	yes		$0	$0	$0
Frame Walls	R-13 batt	R-13 batt		$0	$0	$0
Exposed Floor	R-8	R-8		$0	$0	$0
Fenestration (U/SHGC)	.79/.40	.47/.38	insignificant cost	$0	$0	$0
Skylights	no	no		$0	$0	$0
Fenestration Shading	no	yes	projection: s&w facades, $100-106 /sf [13]	$8,712	$9,234	$8,973
Duct Insulation	standard	standard		$0	$0	$0
DHW Water Boiler	80%	90%	$0.03-0.05 /sf increase - [5]	$3,000	$5,000	$4,000
Solar Thermal (25% offset)	no	no		$0	$0	$0
Common Area space conditioning	13 SEER	15 SEER	$0.10-0.15 /sf cost [5]	$500	$2,500	
Room Heating and Cooling	11 EER, 2.89 COP	12 EER, 3.2 COP	$0.10-0.15 /sf cost [5]	$9,500	$14,250	$11,875
Lighting Power	default	default		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$21,712	$30,984	$24,848
Estimated Labor Costs (40%)				$8,685	$12,394	$9,939
Estimated Incremental Cost of Energy Efficient Measures (total)				$30,396	$43,378	$34,787
Incremental Cost of Efficiency Measures (per SF)				$0.30	$0.31	$0.25
Annual Energy Cost	$ 87,901	$ 83,372				
Energy Savings (annual)		$ 4,529				
Simple Packback (years)		7.7				
Net Savings (15 year)		$33,148				
Return on Investment		95%				
Annual ROI		6%				
Percent of Estimated Construction Cost		0.17%				

60,000 SF Non-Residential (Office) Building 2008 Title 24						
Measure	Baseline	Proposed (10%)	Notes	Incremental Cost Est.		
				min	max	avg
Roof Insulation	R-19	R-30	$0.50-$1.00/sq.ft. of roof area [16]	$15,000	$30,000	$22,500
Cool Roof (prescriptive std.)	yes	yes		$0	$0	$0
Walls Insulation (wood frame)	R-19	R-19		$0	$0	$0
Fenestration	.77/.41	.77/.27	$1.30-$1.95/sf of window area [15]	$1,274	$1,911	$1,592
Skylights: Tint dual-pane, standard metal frame	no	no		$0	$0	$0
Fenestration Shading	no	yes	projection, s&w sides $100-106 /sf [13]	$6,260	$6,636	$6,448
Package AC units (EER/AFUE)	11.2/80%	13.0/80%	$.64-$1.06 /sf increase [5]	$38,400	$63,600	$51,000
Lighting Power: prescriptive allowance 1.5 watts/SF	.83 W/SF	.69 W/SF	$0.05-$0.1/sf savings [5]	-$3,000	-$6,000	-$4,500
Automatic Daylighting Controls [14]	yes	yes		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$57,934	$96,147	$77,040
Estimated Labor Costs (40%)				$23,174	$38,459	$30,816
Estimated Incremental Cost of Energy Efficient Measures (total)				$81,108	$134,605	$107,856
Incremental Cost of Efficiency Measures (per SF)				$1.35	$2.24	$1.80
Annual Energy Cost	$ 63,988	$ 57,879				
Energy Savings (annual)		$ 6,109				
Simple Packback (years)		17.7				
Net Savings (15 year)		-$16,221				
Return on Investment		-15%				
Annual ROI		-1%				
Percent of Estimated Construction Cost		0.90%				

160,000 SF Non-Residential (Office) Building 2008 Title 24						
Measure	Baseline	Proposed (10%)	Notes	Incremental Cost Est.		
				min	max	avg
Roof Insulation	R-20	R-30	$0.50-$1.00/sq.ft. of roof area [16]	$20,000	$40,000	$30,000
Cool Roof (prescriptive std.)	yes	yes		$0	$0	$0
Wall Insulation (metal frame)	R-19	R-19		$0	$0	$0
Fenestration	.77/.41	.77/.38	$1.30-$1.95/sf of window area [15]	$2,080	$3,120	$2,600
Skylights: Tint dual-pane, standard metal frame	no	no		$0	$0	$0
Fenestration Shading	no	no		$0	$0	$0
Package AC units (EER/AFUE)	11.2/80%	85% boiler, .95 kW/ton chiller		$100,000	$150,000	$125,000
Lighting Power: prescriptive allowance 1.5 watts/SF	.86 W/SF	.80 W/SF	$0.025-$0.05/sf savings [5]	-$4,000	-$8,000	-$6,000
Automatic Daylighting Controls [14]	yes	yes		$0	$0	$0
Incremental Construction Cost of Efficiency Measures				$118,080	$185,120	$151,600
Estimated Labor Costs (40%)				$47,232	$74,048	$60,640
Estimated Incremental Cost of Energy Efficient Measures (total)				$165,312	$259,168	$212,240
Incremental Cost of Efficiency Measures (per SF)				$1.03	$1.62	$1.33
Annual Energy Cost	$ 168,952	$ 137,607				
Energy Savings (annual)		$ 31,345				
Simple Packback (years)		6.8				
Net Savings (15 year)		$257,935				
Return on Investment		122%				
Annual ROI		8%				
Percent of Estimated Construction Cost		0.66%				

60,000 SF Non-Residential (Office) Building - Lighting Only 2008 Title 24						
Measure	Baseline	Proposed (10%)	Notes	Incremental Cost Est.		
				min	max	avg
Lighting Power: prescriptive allowance watts/SF	0.849	0.764	$0.025-$0.05/sf [5]	$1,500	$3,000	$2,250
Lamp Types Modeled	F32 T8	F28 T5		$0	$0	$0
Number of Fixtures	548	509	$20 - $25/fixture savings	-$780	-$975	-$878
Incremental Construction Cost of Efficiency Measures				$720	$2,025	$1,373
Estimated Labor Costs (40%)				$288	$810	$549
Estimated Incremental Cost of Energy Efficient Measures (total)				$1,008	$2,835	$1,922
Incremental Cost of Efficiency Measures (per SF)				$0.02	$0.05	$0.03
Annual Energy Cost	$ 60,626	$ 58,921				
Energy Savings (annual)		$ 1,705				
Simple Packback (years)		1.1				
Net Savings (15 year)		$23,654				
Return on Investment		1231%				
Annual ROI		82%				
Percent of Estimated Construction Cost		0.02%				

Cost Effectiveness Analysis

Once the energy efficiency measures were identified and the annual savings determined, estimates of the incremental cost of the various energy efficiency measures were completed for each of the prototype buildings. The savings and cost results were then used to determine the simple payback and return on investment. The main purpose of the cost-effectiveness analysis is to demonstrate the economic implications

of a reach code, rather that to determine whether the cost and savings meet a definitive standard established by the CEC.

Simple payback is the approach used for this analysis, as energy costs increases have been fairly consistent with increases in inflation for the past 25 years and is expected to continue to do so in the foreseeable future. Therefore the introduction of a discount rate, or cost of capital assumption, combined with an assumption of increases in energy costs, has limited net value in the analysis and the overall results. The CEC has verified that this approach is acceptable for cost-effectiveness studies.

The CEC has provided some guidance on cost-effectiveness determinations, stating that ideally the payback period for reach code requirements should be 30 years or less. A second reference for cost-effectiveness, commonly used in the energy efficiency industry, is that the additional cost can be recovered within the lifetime of the efficiency feature (insulation, windows, overhangs) or equipment (HVAC, hot water, lighting). Fifteen years is commonly used to represent the average effective life of energy upgrades, with equipment typically having the shorter life span of these categories (with 5-10 year warranties).

Table 3 below summarizes the payback period (in years) and the 15-year return on investment for the energy efficiency strategies required for the prototype buildings. Payback is a calculation of time, in years, that is required for an investment to "pay for itself" or be returned to the investor. Shorter payback periods are preferable to longer payback periods. Return on investment (ROI) is a performance measure used to evaluate the efficiency of an investment or to compare the efficiency of a number of different investments. A positive ROI generally connotes that the investment will return more than the value of the initial investment, while a negative ROI indicates that the value of the initial investment will not fully be returned within the investment period.

Table 3: Cost-Benefit Analysis Results

Building Type	Annual Savings	Upgrade Incremental Cost	Simple Payback (years)	15-Year ROI
Single-Family Residential (1,800 sq.ft.)	$101	$1,085	10.7	40%
Single-Family Residential (3,600 sq.ft.)	$131	$1,954	14.9	1%
Multi-Family Townhouse (8-unit)	$534	$294	.6	2624%
Multi-Family Apartment (80-unit)	$9,572	$55,300	5.8	160%
Hotel (80-unit)	$4,529	$34,787	7.7	95%
Retail (4,000 sq.ft.)	$597	$9,958	16.7	-10%
Retail (20,000 sq.ft.)	$2,473	$30,101	12.2	23%
Retail (140,000 sq.ft.)	$18,631	$180,877	9.7	98%
Office (60,000 sq.ft.)	$8,691	$107,856	17.7	-15%
Office (160,000 sq.ft.)	$31,345	$212,240	6.8	122%
Tenant Improvement Non-residential lighting only	$1,705	$1,922	1.1	1231%

Summary

The proposed Mountain View Reach Code cost-benefit analysis shows that all of the prototype buildings, except the small retail and the medium size office, have a payback of less than 15 years and a positive return on investment over a 15-year period. For small retail and medium size office prototypes, there is a 16.7 and 17.7-year simple payback, respectively, and a negative return on investment when using a 15-year analysis period. The degree to which the identified payback periods are acceptable to different property owners or developers is dependant on a number of factors including the sources of equity, ownership time horizon and overall investment strategy. However, these results are well within the 30-year range recommended by the California Energy Commission and are consistent with the general objective of the energy investment being returned within the average life of the materials, systems, and equipment.

Attachment 7

City of Mountain View

Green Building Incremental Measure and Cost Analysis

Prepared by:
Global Green USA

March 13, 2011

Background

At the request of the City of Mountain View Community Development Department, Global Green conducted an analysis of two development projects that were approved by the City within the past five years, to determine what aspects of the project design would need to be altered for the projects to meet the proposed green building ordinance.

The proposed ordinance augments existing City planning and building codes (including the State of California Cal Green code that went into effect on January 1, 2011). The purpose of the green building ordinance is to reduce resource use, create healthier living and working environments, reduce greenhouse gas emissions, and foster a consistent regulatory approach between the City of Mountain View and other public agencies in Santa Clara County.

The proposed green building ordinance requires that new development projects and substantial additions and tenant improvements meet the intent of the LEED®[1] green building rating system or, for residential projects, the Green Point Rated system.

This analysis was conducted for two recently permitted projects that are considered to be representative of future development:

- 220 View Street, an approximately 30,600 sq.ft. 22-unit multi-family development
- 331 Fairchild Drive, an approximately 87,100 sq.ft. commercial office development

The LEED® rating system was used for the analysis. A non-residential project must meet all seven prerequisites and earn at least 40 points to be eligible for certification. A residential project must meet all 19 prerequisites and earn at least 50 points to be able to earn certification.

Methodology

Global Green received the set of building plans for each project that was used for final permitting. The plans included architectural, civil engineering, mechanical, electrical, plumbing and landscape architecture. Global Green reviewed the plans to assess two levels of building performance:

1) the level of LEED® certification (if any) that the projects would be able to achieve based on the current design and specifications
2) what would need to be changed for the projects to comply with the minimum proposed standard of meeting the intent of LEED® at the Certified level

In reviewing the plans, Global Green used the current versions of the rating systems: LEED® for Building Design and Construction™ (V 3.0) and Homes™ (V 2008). The LEED® for Building Design and Construction™ was use for 331 Fairchild Drive. The LEED® for Homes™ for low-rise residential projects was used for 220 View Street.

[1] LEED is a trademark owned by the U.S. Green Building Council.

Each of the prerequisites and credits in the respective LEED® rating systems were reviewed and a determination was made on whether the plans and specifications provided sufficient documentation to meet the prerequisite or earn the credit. Building code requirements that went into effect on January 1, 2011, most notably the Cal Green code, were taken into consideration when making determinations about prerequisites and credits. A current LEED BD&C™ and Homes™ checklist was used to conduct and document the analysis. The LEED BD&C™ and Homes™ Reference Manuals were used to clarify specific credit criteria and determine the application to the specific projects.

Based on the above credit-by-credit analysis, a determination was made about the ability of the project as currently design to earn LEED® certification. The outcomes of this analysis became the base case for building in Mountain View. The next step was to identify which LEED® credits could be expanded (several credits offer a tiered point structure) or new credits added, to either enable the project to earn certification or to increase the level of certification.

Findings

Analysis of Current Design

Based on the plans and specifications neither project, as currently designed, would be able to achieve certification at even the lowest level of LEED®. Both projects are not in compliance with LEED® prerequisites in the areas of energy performance, mechanical system design, and field verification of proper building envelope and HVAC system installation. Neither of the projects achieved sufficient credits to be able to reach the threshold for the lowest level of LEED® certification. The results of the analysis of the current project design are summarized in Table 1 (See Attachment 1: 331 Fairchild Drive Current Design and Attachment 3: 220 View Street Current Design for more details).

Table 1: LEED Compliance Summary – Current Project Design

	220 View Street Residential	**331 Fairchild Drive Non-Residential**
LEED® Rating System	Homes™	Building Design and Construction™
Prerequisites Required	19	8
Prerequisites Earned	*6*	*5*
Prerequisites Met	**No**	**No**
Points Required for Certification	44.5 (with home size adjustment)	40
Points Earned	*40.5*	*22*
Meets Intent of LEED	**No**	**No**

Modifications Needed to Meet Intent of LEED Certification

To be able to meet the intent of LEED® certification both projects would be required to improve energy performance to 15% better than the 2008 Building Energy Efficiency Standards in Title 24, Part 6. Energy performance better than code minimum is a LEED® prerequisite. This will require both additional design and the specification of a more energy efficient building envelope and systems. The landscape plans would also need to be modified to further reduce water use. Additional mechanical system design would also be required for both 220 View Street and 331 Fairchild Drive, in order to verify that LEED® Indoor Environmental Quality prerequisites are met.

To earn points for increased water efficiency, higher efficiency fixtures would need to be specified. Other upgrades that would be required are the specification of environmentally preferable building products, including recycled-content and locally manufactured materials and specifying mechanical equipment refrigerants that are free of HCFCs.

Both projects would also need to include stormwater management systems to capture and/or treat stormwater before it leaves the site. Increased construction and demolition waste diversion, an increase from 50% to 75% diversion, would also be required. The City currently has stormwater management and diversion requirements in place so achieving the LEED® prerequisites would be an augmentation of current practice, rather than the introduction of completely new requirements.

In construction, both projects would need to include additional construction verification measures. For 331 Fairchild Drive these would include additional commissioning, monitoring and verification of energy performance. For 220 View Street, the additional measures are the HERS (Home Energy Rating System) verifications that are included in the basic energy prerequisite: Quality Insulation Installation, Duct Leakage, and Refrigerant Charge. (See Attachment 2: 331 Fairchild Drive Certified Level and Attachment 4: 220 View Street Certified Level for more details).

Estimate Additional Costs

A summary of the estimated costs of the upgrades is provided in Table 2. The costs are based on assumptions for additional design time and field verification and the incremental cost of the energy system upgrades and environmentally preferable materials. Note that these costs are for design, construction, and field verification modifications only. The costs do not include the cost for preparing and submitting certification documentation to the U.S. Green Building Council, because the proposed ordinance does not require formal certification.

Table 2: Incremental Costs of Upgrades to Achieve Intent of LEED Certified

	220 View Street 30,600 sf. Residential	**331 Fairchild Drive 87,100 sf. Non-Residential**
Design[1]	$4,000	$10,000
Energy Systems[2]	$12,240	$100,165
Materials[3]	$15,600	$43,550
Construction Verification[4]	$1,000 (HERS)	$25,000 (Commissioning, M&V)

Verification[4]	(HERS)	(Commissioning, M&V)
Total Incremental Cost	**$32,840**	**$178,715**
Cost/Sq.Ft.[5]	**$1.07**	**$2.05**
Percent Cost Increase	**.5%**	**1%**

1. Assumes 40 and 100 hours at an average cost of $100/hr.
2. Based on Mountain View Energy Reach Code Cost-Effectiveness Study: $1.15/sf for non-res, $0.40/sf for residential
3. Assumes average incremental cost of $0.50/sq.ft.
4. Based on typical costs for current Global Green projects
5. Assumes $200 per square foot average cost of construction

Summary

It is feasible for both projects to meet the intent of LEED® certification through modifications to the current project design and additions to the construction monitoring and verification processes. The estimated incremental cost increases are consistent with incremental cost studies such as the Cost of Green Building Revisited (Davis Langdon, 2007) that determine that the incremental cost of achieving LEED® certification range from 0% to 5% of total construction costs, with most projects experiencing 3% or less of an increase in costs.

LEED 2009 for New Construction and Major Renovations

Project Checklist: 331 Fairchild Drive: Current Design

Project Name

Date

Sustainable Sites — Possible Points: 26

Y	?	N					Notes:
Y			Prereq 1	Construction Activity Pollution Prevention			Typical of SUSMP and SWPPP requirements in Bay Area
1			Credit 1	Site Selection	1		Site is infill
5			Credit 2	Development Density and Community Connectivity	5		Site meets density requirements
1			Credit 3	Brownfield Redevelopment	1		Site is a brownfield
3		3	Credit 4.1	Alternative Transportation—Public Transportation Access	6		Site is close to NASA LRT station but has poor bus service.
1			Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1		18 spaces required. 14 lockers are provided, plus several bike racks.
		3	Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3		No special striping shown on plans.
		2	Credit 4.4	Alternative Transportation—Parking Capacity	2		Parking meets code but no special striping shown for vanpool.
		1	Credit 5.1	Site Development—Protect or Restore Habitat	1		N/A
		1	Credit 5.2	Site Development—Maximize Open Space	1		N/A
1			Credit 6.1	Stormwater Design—Quantity Control	1		Site has suficient space to meet this credit.
1			Credit 6.2	Stormwater Design—Quality Control	1		Site has suficient space to meet this credit.
		1	Credit 7.1	Heat Island Effect—Non-roof	1		Surace parking precludes the project from earning this credit.
1			Credit 7.2	Heat Island Effect—Roof	1		Cool roof is typical for this type of construction.
	1		Credit 8	Light Pollution Reduction	1		Likely but no information in the plans.

Water Efficiency — Possible Points: 10

Y	?	N					Notes:
Y			Prereq 1	Water Use Reduction—20% Reduction			Would be met via Cal Green
2			Credit 1	Water Efficient Landscaping	2 to 4		50% reduction is typical with California landscape codes.
				Y Reduce by 50%	2		
				No Potable Water Use or Irrigation	4		
		2	Credit 2	Innovative Wastewater Technologies	2		No on-site water treatment shown in plans.
		4	Credit 3	Water Use Reduction	2 to 4		
				Reduce by 30%	2		
				Reduce by 35%	3		
				Reduce by 40%	4		

Energy and Atmosphere — Possible Points: 35

Y	?	N					Notes:
Y			Prereq 1	Fundamental Commissioning of Building Energy Systems			Would be met via Cal Green
		N	Prereq 2	Minimum Energy Performance			No indication that the project would perform better than code
		N	Prereq 3	Fundamental Refrigerant Management			No indicatio of refrigerants that will be used.
		19	Credit 1	Optimize Energy Performance	1 to 19		No indication that the project would perform better than code
				Improve by 12% for New Buildings or 8% for Existing Building Renovations	1		
				Improve by 14% for New Buildings or 10% for Existing Building Renovations	2		
				Improve by 16% for New Buildings or 12% for Existing Building Renovations	3		
				Improve by 18% for New Buildings or 14% for Existing Building Renovations	4		
				Improve by 20% for New Buildings or 16% for Existing Building Renovations	5		
				Improve by 22% for New Buildings or 18% for Existing Building Renovations	6		
				Improve by 24% for New Buildings or 20% for Existing Building Renovations	7		
				Improve by 26% for New Buildings or 22% for Existing Building Renovations	8		
				Improve by 28% for New Buildings or 24% for Existing Building Renovations	9		
				Improve by 30% for New Buildings or 26% for Existing Building Renovations	10		
				Improve by 32% for New Buildings or 28% for Existing Building Renovations	11		
				Improve by 34% for New Buildings or 30% for Existing Building Renovations	12		
				Improve by 36% for New Buildings or 32% for Existing Building Renovations	13		
				Improve by 38% for New Buildings or 34% for Existing Building Renovations	14		
				Improve by 40% for New Buildings or 36% for Existing Building Renovations	15		
				Improve by 42% for New Buildings or 38% for Existing Building Renovations	16		
				Improve by 44% for New Buildings or 40% for Existing Building Renovations	17		
				Improve by 46% for New Buildings or 42% for Existing Building Renovations	18		
				Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19		
		7	Credit 2	On-Site Renewable Energy	1 to 7		No renewable energy shown on roof plans.
				1% Renewable Energy	1		
				3% Renewable Energy	2		
				5% Renewable Energy	3		
				7% Renewable Energy	4		
				9% Renewable Energy	5		
				11% Renewable Energy	6		
				13% Renewable Energy	7		
		2	Credit 3	Enhanced Commissioning	2		No mention in plans or general section of specifications.
		2	Credit 4	Enhanced Refrigerant Management	2		No mention in plans or general section of specifications.
		3	Credit 5	Measurement and Verification	3		No mention in plans or general section of specifications.
		2	Credit 6	Green Power	2		N/A

Materials and Resources — Possible Points: 14

Y	?	N					Notes
Y			d	Prereq 1	Storage and Collection of Recyclables		Dumpster location shown on plans.
		3	c	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3	N/A
					Reuse 55%	1	
					Reuse 75%	2	
					Reuse 95%	3	
		1	c	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1	N/A
1		1	c	Credit 2	Construction Waste Management	1 to 2	
				Y	50% Recycled or Salvaged	1	Local code requirement.
					75% Recycled or Salvaged	2	
		2	c	Credit 3	Materials Reuse	1 to 2	No specifications address this subject.
					Reuse 5%	1	
					Reuse 10%	2	
		2	c	Credit 4	Recycled Content	1 to 2	No specifications address this subject.
					10% of Content	1	
					20% of Content	2	
		2	c	Credit 5	Regional Materials	1 to 2	No specifications address this subject.
					10% of Materials	1	
					20% of Materials	2	
		1	c	Credit 6	Rapidly Renewable Materials	1	No specifications address this subject.
		1	c	Credit 7	Certified Wood	1	No specifications address this subject.

Indoor Environmental Quality — Possible Points: 15

Y	?	N					Notes
	Y		d	Prereq 1	Minimum Indoor Air Quality Performance		Likely but no reference to ASHRAE standards and no calcs provided.
Y			o	Prereq 2	Environmental Tobacco Smoke (ETS) Control		State Law
		1	d	Credit 1	Outdoor Air Delivery Monitoring	1	No mention in plans or specifications.
		1	d	Credit 2	Increased Ventilation	1	No mention in plans or specifications.
	1		c	Credit 3.1	Construction IAQ Management Plan—During Construction	1	Likely but no reference in plans or specs.
		1	c	Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1	No mention in plans or specifications.
1			c	Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1	Per Cal Green
1			c	Credit 4.2	Low-Emitting Materials—Paints and Coatings	1	Per Cal Green
1			c	Credit 4.3	Low-Emitting Materials—Flooring Systems	1	Per Cal Green
1			c	Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1	Per Cal Green
		1	d	Credit 5	Indoor Chemical and Pollutant Source Control	1	No mention in mechanical plans or specifications.
	1		d	Credit 6.1	Controllability of Systems—Lighting	1	Possible but analysis consistemt with LEED not provided.
	1		o	Credit 6.2	Controllability of Systems—Thermal Comfort	1	Possible but analysis consistemt with LEED not provided.
		1	o	Credit 7.1	Thermal Comfort—Design	1	No mention of ASHRAE 55 standard in plans or specs.
		1	d	Credit 7.2	Thermal Comfort—Verification	1	No mention in mechanical plans or specifications.
		1	d	Credit 8.1	Daylight and Views—Daylight	1	No mention and no calculation provided.
	1		d	Credit 8.2	Daylight and Views—Views	1	Likely but no reference in plans or specs and no calcs provided.

Innovation and Design Process — Possible Points: 6

Y	?	N					Notes
		1	d/C	Credit 1.1	Innovation in Design: Specific Title	1	No mention in plans or specs. No innovative aspects to project.
		1	d/C	Credit 1.2	Innovation in Design: Specific Title	1	
		1	d/C	Credit 1.3	Innovation in Design: Specific Title	1	
		1	d/C	Credit 1.4	Innovation in Design: Specific Title	1	
		1	d/C	Credit 1.5	Innovation in Design: Specific Title	1	
1			d/C	Credit 2	LEED Accredited Professional	1	Member of architecture firm is LEED AP

Regional Priority Credits — Possible Points: 4

Y	?	N					Notes
		1	d/C	Credit 1.1	Regional Priority: Specific Credit	1	No mention in plans or specs. No regionally unique aspects.
		1	d/C	Credit 1.2	Regional Priority: Specific Credit	1	
		1	d/C	Credit 1.3	Regional Priority: Specific Credit	1	
		1	d/C	Credit 1.4	Regional Priority: Specific Credit	1	

Total — Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Attachment 2

LEED 2009 for New Construction and Major Renovations

Project Checklist: 331 Fairchild Drive Certified

Project Name

Date

Sustainable Sites — Possible Points: 26

Y	?	N					Notes:
Y			C	Prereq 1	Construction Activity Pollution Prevention		Typical of SUSMP and SWIPPP requirements in Bay Area
1			d	Credit 1	Site Selection	1	Site is infill
5			d	Credit 2	Development Density and Community Connectivity	5	Site meets density requirements
1			d	Credit 3	Brownfield Redevelopment	1	Site is a brownfield
3		3	d	Credit 4.1	Alternative Transportation—Public Transportation Access	6	Site is close to NASA LRT station but has poor bus service.
1			d	Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms	1	18 spaces required. 14 lockers are provided, plus several bike racks.
		3	d	Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles	3	No special striping shown on plans.
2			d	Credit 4.4	Alternative Transportation—Parking Capacity	2	Can be accomplished through parking lot striping.
		1	C	Credit 5.1	Site Development—Protect or Restore Habitat	1	N/A
		1	d	Credit 5.2	Site Development—Maximize Open Space	1	N/A
1			d	Credit 6.1	Stormwater Design—Quantity Control	1	Site has suficient space to meet this credit.
1			d	Credit 6.2	Stormwater Design—Quality Control	1	Site has suficient space to meet this credit.
		1	C	Credit 7.1	Heat Island Effect—Non-roof	1	Surface parking precludes the project from earning this credit.
1			d	Credit 7.2	Heat Island Effect—Roof	1	Cool roof is typical for this type of construction.
1			d	Credit 8	Light Pollution Reduction	1	Can be accomplished by specifying cut-of fixtures.

Water Efficiency — Possible Points: 10

Y	?	N					Notes:
Y			d	Prereq 1	Water Use Reduction—20% Reduction		Would be met via Cal Green
2		2	d	Credit 1	Water Efficient Landscaping	2 to 4	
				Y	Reduce by 50%	2	
					No Potable Water Use or Irrigation	4	
		2	d	Credit 2	Innovative Wastewater Technologies	2	No on-site water treatment shown in plans.
2		2	d	Credit 3	Water Use Reduction	2 to 4	
				Y	Reduce by 30%	2	Provide waterless urinals
					Reduce by 35%	3	
					Reduce by 40%	4	

Energy and Atmosphere — Possible Points: 35

Y	?	N					Notes:
N			C	Prereq 1	Fundamental Commissioning of Building Energy Systems		
Y			a	Prereq 2	Minimum Energy Performance		Upgrade envelope and systems to be 10% better than 2005 T24.
Y			d	Prereq 3	Fundamental Refrigerant Management		Use only HCFC-free refrigerants.
5		14	d	Credit 1	Optimize Energy Performance	1 to 19	Upgrade envelope and systems to be 16% better than 2005 T24.
					Improve by 12% for New Buildings or 8% for Existing Building Renovations	1	
					Improve by 14% for New Buildings or 10% for Existing Building Renovations	2	
					Improve by 16% for New Buildings or 12% for Existing Building Renovations	3	
					Improve by 18% for New Buildings or 14% for Existing Building Renovations	4	
				Y	Improve by 20% for New Buildings or 16% for Existing Building Renovations	5	
					Improve by 22% for New Buildings or 18% for Existing Building Renovations	6	
					Improve by 24% for New Buildings or 20% for Existing Building Renovations	7	
					Improve by 26% for New Buildings or 22% for Existing Building Renovations	8	
					Improve by 28% for New Buildings or 24% for Existing Building Renovations	9	
					Improve by 30% for New Buildings or 26% for Existing Building Renovations	10	
					Improve by 32% for New Buildings or 28% for Existing Building Renovations	11	
					Improve by 34% for New Buildings or 30% for Existing Building Renovations	12	
					Improve by 36% for New Buildings or 32% for Existing Building Renovations	13	
					Improve by 38% for New Buildings or 34% for Existing Building Renovations	14	
					Improve by 40% for New Buildings or 36% for Existing Building Renovations	15	
					Improve by 42% for New Buildings or 38% for Existing Building Renovations	16	
					Improve by 44% for New Buildings or 40% for Existing Building Renovations	17	
					Improve by 46% for New Buildings or 42% for Existing Building Renovations	18	
					Improve by 48%+ for New Buildings or 44%+ for Existing Building Renovations	19	
		7	a	Credit 2	On-Site Renewable Energy	1 to 7	
					1% Renewable Energy	1	
					3% Renewable Energy	2	
					5% Renewable Energy	3	
					7% Renewable Energy	4	
					9% Renewable Energy	5	
					11% Renewable Energy	6	
					13% Renewable Energy	7	
2			C	Credit 3	Enhanced Commissioning	2	Could be added to Cal Green required commissioning
2			d	Credit 4	Enhanced Refrigerant Management	2	Use HCFC-free refrigerants
	3		C	Credit 5	Measurement and Verification	3	Could be added to commissioning agents scope.
		2	C	Credit 6	Green Power	2	N/A

Materials and Resources — Possible Points: 14

Y	?	N					Notes:
Y			d	Prereq 1	Storage and Collection of Recyclables		
		3	c	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3	
					Reuse 55%	1	
					Reuse 75%	2	
					Reuse 95%	3	
		1	c	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1	
2			c	Credit 2	Construction Waste Management	1 to 2	
					50% Recycled or Salvaged	1	
				Y	75% Recycled or Salvaged	2	Of site sorting of mixed bin results in approx. 85% diversion.
		2	c	Credit 3	Materials Reuse	1 to 2	No specifications address this subject.
					Reuse 5%	1	
					Reuse 10%	2	
1		1	c	Credit 4	Recycled Content	1 to 2	Modify specifications to meet LEED criteria.
				1	10% of Content	1	
					20% of Content	2	
1		1	c	Credit 5	Regional Materials	1 to 2	Modify specifications to meet LEED criteria.
				1	10% of Materials	1	
					20% of Materials	2	
	1		c	Credit 6	Rapidly Renewable Materials	1	Specifications could be modified to address this subject.
	1		c	Credit 7	Certified Wood	1	Specifications could be modified to address this subject.

Indoor Environmental Quality — Possible Points: 15

Y	?	N					Notes:
	Y		d	Prereq 1	Minimum Indoor Air Quality Performance		Likely but no reference to ASHRAE standards and no calcs provided.
Y			d	Prereq 2	Environmental Tobacco Smoke (ETS) Control		State Law
		1	d	Credit 1	Outdoor Air Delivery Monitoring	1	No mention in plans or specifications.
		1	d	Credit 2	Increased Ventilation	1	No mention in plans or specifications.
1			c	Credit 3.1	Construction IAQ Management Plan—During Construction	1	Can be added to contractor requirements
1			c	Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1	Can be added to contractor requirements
1			c	Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1	Per Cal Green
1			c	Credit 4.2	Low-Emitting Materials—Paints and Coatings	1	Per Cal Green
1			c	Credit 4.3	Low-Emitting Materials—Flooring Systems	1	Per Cal Green
1			c	Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1	Per Cal Green
	1		d	Credit 5	Indoor Chemical and Pollutant Source Control	1	No mention in mechanical plans or specifications.
	1		d	Credit 6.1	Controllability of Systems—Lighting	1	Possible but would require modification of electrical plans.
	1		d	Credit 6.2	Controllability of Systems—Thermal Comfort	1	Possible but would require modification of mechanical plans.
		1	d	Credit 7.1	Thermal Comfort—Design	1	No mention of ASHRAE 55 standard in plans or specs.
		1	d	Credit 7.2	Thermal Comfort—Verification	1	No mention in mechanical plans or specifications.
		1	d	Credit 8.1	Daylight and Views—Daylight	1	No mention and no calculation provided.
	1		d	Credit 8.2	Daylight and Views—Views	1	Likely but no reference in plans or specs and no calcs provided.

Innovation and Design Process — Possible Points: 6

Y	?	N					Notes:
		1	d/C	Credit 1.1	Innovation in Design: Specific Title	1	No mention in plans or specs. No innovative aspects to project.
		1	d/C	Credit 1.2	Innovation in Design: Specific Title	1	
		1	d/C	Credit 1.3	Innovation in Design: Specific Title	1	
		1	d/C	Credit 1.4	Innovation in Design: Specific Title	1	
		1	d/C	Credit 1.5	Innovation in Design: Specific Title	1	
1			d/C	Credit 2	LEED Accredited Professional	1	Member of architecture firm is LEED AP

Regional Priority Credits — Possible Points: 4

Y	?	N					Notes:
		1	d/C	Credit 1.1	Regional Priority: Specific Credit	1	No mention in plans or specs. No regionally unique aspects.
		1	d/C	Credit 1.2	Regional Priority: Specific Credit	1	
		1	d/C	Credit 1.3	Regional Priority: Specific Credit	1	
		1	d/C	Credit 1.4	Regional Priority: Specific Credit	1	

41	9	60		Total	Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

Attachment 3

LEED for Homes Simplified Project Checklist for California

for Homes

Builder Name:	220 View Street - Current Design
Project Team Leader (If different):	
Home Address (Street/City/State):	, Mountain View, CA

Project Description:

Building type: Multi-family | Project type: Custom | # of units: 22 | Avg. Home Size Adjustment: -0.5

Adjusted Certification Thresholds

Certified: 44.5 | Gold: 74.5 | Silver: 59.5 | Platinum: 89.5

Project Point Total

Prelim: 40.5 + 0 maybe pts | Final: 6.5

Certification Level

Prelim: Not Certified | Final: Not Certified

Final Credit Category Total Points

ID: 0 | SS: 5 | EA: 0 | EQ: 0 | LL: 0 | WE: 0 | MR: 1.5 | AE: 0

Min. Point Thresholds Not Met for Prelim. OR Final Rating

date last updated :
last updated by :

				Max Points	Project Points Preliminary Y/Pts	Maybe	No	Final Y/Pts
Innovation and Design Process (ID)			(No Minimum Points Required)	Max	Y/Pts	Maybe	No	Y/Pts
1. Integrated Project Planning		1.1	Preliminary Rating	Prereq	Y			
		1.2	Integrated Project Team	1	1	0		0
		1.3	Professional Credentialed with Respect to LEED for Homes	1	0	0		0
		1.4	Design Charrette	1	0	0		0
		1.5	Building Orientation for Solar Design	1	0	0		0
2. Durability Management Process		2.1	Durability Planning	Prereq			N	
		2.2	Durability Manegement	Prereq			N	
		2.3	Third-Party Durability Management Verification	3	0	0		
3.Innovative or Regional Design	a	3.1	Innovation #1 _____	1	0	0		0
	a	3.2	Innovation #2 _____	1	0	0		0
	a	3.3	Innovation #3 _____	1	0	0		0
	a	3.4	Innovation #4 _____	1	0	0		0
			Sub-Total for ID Category:	**11**	1	0		0
Location and Linkages (LL)			(No Minimum Points Required) OR	Max	Y/Pts	Maybe	No	Y/Pts
1. LEED ND		1	LEED for Neighborhood Development LL2-6	10	0	0		0
2. Site Selection	a	2	Site Selection	2	2	0		0
3. Preferred Locations		3.1	Edge Development LL 3.2	1	0	0		0
		3.2	Infill	2	2	0		0
		3.3	Previously Developed	1	1	0		0
4. Infrastructure		4	Existing Infrastructure	1	1	0		0
5. Community Resources/ Transit		5.1	Basic Community Resources / Transit LL 5.2, 5.3	1	0	0		0
		5.2	Extensive Community Resources / Transit LL 5.3	2	0	0		0
		5.3	Outstanding Community Resources / Transit	3	3	0		0
6. Access to Open Space		6	Access to Open Space	1	1	0		0
			Sub-Total for LL Category:	**10**	10	0		0
Sustainable Sites (SS)			(Minimum of 5 SS Points Required) OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Site Stewardship		1.1	Erosion Controls During Construction	Prereq	Y			
		1.2	Minimize Disturbed Area of Site	1	1	0		0
2. Landscaping	a	2.1	No Invasive Plants	Prereq		M		
	a	2.2	Basic Landscape Design SS 2.5	2	2	0		0
	a	2.3	Limit Conventional Turf SS 2.5	3	3	0		3
	a	2.4	Drought Tolerant Plants SS 2.5	2	2	0		2
	a	2.5	Reduce Overall Irrigation Demand by at Least 20%	6	0	0		0
3. Local Heat Island Effects	a	3	Reduce Local Heat Island Effects	1	0	0		0
4. Surface Water Management	a	4.1	Permeable Lot	4	0	0		0
		4.2	Permanent Erosion Controls	1	0	0		0
	a	4.3	Management of Run-off from Roof	2	0	0		0
5. Nontoxic Pest Control		5	Pest Control Alternatives	2	1	0		0
6. Compact Development		6.1	Moderate Density SS 6.2, 6.3	2	0	0		0
		6.2	High Density SS 6.3	3	0	0		0
		6.3	Very High Density	4	4	0		0
			Sub-Total for SS Category:	**22**	13	0		5

LEED for Homes Simplified Project Checklist for California (continued)

					Max Points	Project Points Preliminary			Final
Water Efficiency (WE)			(Minimum of 3 WE Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Water Reuse		1.1	Rainwater Harvesting System	WE 1.3	4	0	0		0
		1.2	Graywater Reuse System	WE 1.3	1	0	0		0
		1.3	Use of Municipal Recycled Water System		3	0	0		0
2. Irrigation System	☒	2.1	High Efficiency Irrigation System	WE 2.3	3	3	0		0
		2.2	Third Party Inspection	WE 2.3	1	0	0		0
	☒	2.3	Reduce Overall Irrigation Demand by at Least 45%		4	0	0		0
3. Indoor Water Use		3.1	High-Efficiency Fixtures and Fittings		3	3	0		0
		3.2	Very High Efficiency Fixtures and Fittings		6	0	0		0
				Sub-Total for WE Category:	*15*	*6*	*0*		*0*
Energy and Atmosphere (EA)			(Minimum of 0 EA Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Optimize Energy Performance in California		1.1	Performance of ENERGY STAR for Homes		Prereq			N	
		1.2	Exceptional Energy Performance		19	0	0		0
7. Water Heating	☒	7	Efficient Hot Water Distribution		2	0	0		0
8. Lighting		8.1	Title-24 Lighting		Prereq	Y			
		8.2	Improved Lighting	EA 8.3	1	0	0		0
		8.3	Advanced Lighting		3	0	0		0
9. Appliances		9.1	High-Efficiency Appliances		2	1	0		0
		9.2	Water-Efficient Clothes Washer		1	1	0		0
10. Renewable Energy in CA	☒	10	Renewable Energy System		10	0	0		0
11. Residential Refrigerant Management		11.1	Refrigerant Charge Test		Prereq			N	
		11.2	Appropriate HVAC Refrigerants		1	0	0		0
				Sub-Total for EA Category:	*38*	*2*	*0*		*0*
Materials and Resources (MR)			(Minimum of 2 MR Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Material-Efficient Framing		1.1	Framing Order Waste Factor Limit		Prereq		M		
		1.2	Detailed Framing Documents	MR 1.5	1	1	0		0
		1.3	Detailed Cut List and Lumber Order	MR 1.5	1	1	0		0
		1.4	Framing Efficiencies	MR 1.5	3	0	0		0
		1.5	Off-site Fabrication		4	0	0		0
2. Environmentally Preferable Products	☒	2.1	FSC Certified Tropical Wood		Prereq		M		
	☒	2.2	Environmentally Preferable Products		8	0	0		0
3. Waste Management		3.1	Construction Waste Management Planning		Prereq	Y			
		3.2	Construction Waste Reduction		3	1.5	0		1.5
				Sub-Total for MR Category:	*16*	*3.5*	*0*		*1.5*

LEED for Homes Simplified Project Checklist for California (continued)

					Max Points	Project Points Preliminary			Final
Indoor Environmental Quality (EQ)			(Minimum of 6 EQ Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. ENERGY STAR with IAP		1	ENERGY STAR with Indoor Air Package		13	0	0		0
2. Combustion Venting		2.1	Basic Combustion Venting Measures	EQ 1	Prereq	Y			
		2.2	Enhanced Combustion Venting Measures	EQ 1	2	2	0		0
3. Moisture Control		3	Moisture Load Control	EQ 1	1	0	0		0
4. Outdoor Air Ventilation	☒	4.1	Basic Outdoor Air Ventilation	EQ 1	Prereq			N	
	☒	4.2	Enhanced Outdoor Air Ventilation		2	0	0		0
		4.3	Third-Party Performance Testing	EQ 1	1	0	0		0
5. Local Exhaust	☒	5.1	Basic Local Exhaust	EQ 1	Prereq			N	
		5.2	Enhanced Local Exhaust		1	0	0		0
		5.3	Third-Party Performance Testing		1	0	0		0
6. Distribution of Space Heating and Cooling	☒	6.1	Room-by-Room Load Calculations	EQ 1	Prereq		M		
		6.2	Return Air Flow / Room by Room Controls	EQ 1	1	0	0		0
		6.3	Third-Party Performance Test / Multiple Zones	EQ 1	2	0	0		0
7. Air Filtering		7.1	Good Filters	EQ 1	Prereq		M		
		7.2	Better Filters	EQ 7.3	1	0	0		0
		7.3	Best Filters		2	0	0		0
8. Contaminant Control	☒	8.1	Indoor Contaminant Control during Construction	EQ 1	1	1	0		0
		8.2	Indoor Contaminant Control		2	0	0		0
	☒	8.3	Preoccupancy Flush	EQ 1	1	0	0		0
9. Radon Protection	☒	9.1	Radon-Resistant Construction In High-Risk Areas	EQ 1	Prereq	N/A			
	☒	9.2	Radon-Resistant Construction In Moderate-Risk Areas	EQ 1	1	0	0		0
10. Garage Pollutant Protection		10.1	No HVAC in Garage	EQ 1	Prereq	Y			
		10.2	Minimize Pollutants from Garage	EQ 1, 10.4	2	2	0		0
		10.3	Exhaust Fan in Garage	EQ 1, 10.4	1	0	0		0
		10.4	Detached Garage or No Garage	EQ 1	3	0	0		0
				Sub-Total for EQ Category:	*21*	*5*	*0*		*0*
Awareness and Education (AE)			(Minimum of 0 AE Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Education of the Homeowner or Tenant	☒	1.1	Basic Operations Training		Prereq		M		
	☒	1.2	Enhanced Training		1	0	0		0
		1.3	Public Awareness		1	0	0		0
2. Education of Building Manager	☒	2	Education of Building Manager		1	0	0		0
				Sub-Total for AE Category:	*3*	*0*	*0*		*0*

Attachment 4

LEED for Homes Simplified Project Checklist for California

for Homes

Builder Name:	220 View Street - Certified
Project Team Leader (If different):	
Home Address (Street/City/State):	, Mountain View, CA

Project Description:

Building type: *Multi-family* | Project type: *Custom*

# of units: *22* | Avg. Home Size Adjustment: *-0.5*

Adjusted Certification Thresholds

Certified: *44.5* | Gold: *74.5*

Silver: *59.5* | Platinum: *89.5*

Project Point Total

Prelim: *53 + 0 maybe pts* | Final: *75*

Certification Level

Prelim: *Certified* | Final: *Not Certified*

Final Credit Category Total Points

ID: *0* | SS: *5* | EA: *0* | EQ: *0*

LL: *0* | WE: *0* | MR: *2.5* | AE: *0*

Minimum Point Thresholds Not Met for Final Rating

date last updated :
last updated by :

				Max Points	Project Points Preliminary		Final
Innovation and Design Process (ID)			(No Minimum Points Required)	Max	Y/Pts	Maybe	No	Y/Pts
1. Integrated Project Planning		1.1	Preliminary Rating	Prereq	Y			
		1.2	Integrated Project Team	1	1	0		0
		1.3	Professional Credentialed with Respect to LEED for Homes	1	0	0		0
		1.4	Design Charrette	1	0	0		0
		1.5	Building Orientation for Solar Design	1	0	0		0
2. Durability Management Process		2.1	Durability Planning	Prereq	Y			
		2.2	Durability Management	Prereq	Y			
		2.3	Third-Party Durability Management Verification	3	0	0		
3.Innovative or Regional Design	a	3.1	Innovation #1 _____	1	0	0		0
	a	3.2	Innovation #2 _____	1	0	0		0
	a	3.3	Innovation #3 _____	1	0	0		0
	a	3.4	Innovation #4 _____	1	0	0		0
			Sub-Total for ID Category:	*11*	*1*	*0*		*0*
Location and Linkages (LL)			(No Minimum Points Required) OR	Max	Y/Pts	Maybe	No	Y/Pts
1. LEED ND		1	LEED for Neighborhood Development **LL2-6**	10	0	0		0
2. Site Selection	a	2	Site Selection	2	2	0		0
3. Preferred Locations		3.1	Edge Development **LL 3.2**	1	0	0		0
		3.2	Infill	2	2	0		0
		3.3	Previously Developed	1	1	0		0
4. Infrastructure		4	Existing Infrastructure	1	1	0		0
5. Community Resources/ Transit		5.1	Basic Community Resources / Transit **LL 5.2, 5.3**	1	0	0		0
		5.2	Extensive Community Resources / Transit **LL 5.3**	2	0	0		0
		5.3	Outstanding Community Resources / Transit	3	3	0		0
6. Access to Open Space		6	Access to Open Space	1	1	0		0
			Sub-Total for LL Category:	*10*	*10*	*0*		*0*
Sustainable Sites (SS)			(Minimum of 5 SS Points Required) OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Site Stewardship		1.1	Erosion Controls During Construction	Prereq	Y			
		1.2	Minimize Disturbed Area of Site	1	1	0		0
2. Landscaping	a	2.1	No Invasive Plants	Prereq	Y			
	a	2.2	Basic Landscape Design **SS 2.5**	2	2	0		0
	a	2.3	Limit Conventional Turf **SS 2.5**	3	3	0		3
	a	2.4	Drought Tolerant Plants **SS 2.5**	2	2	0		2
	a	2.5	Reduce Overall Irrigation Demand by at Least 20%	6	0	0		0
3. Local Heat Island Effects	a	3	Reduce Local Heat Island Effects	1	0	0		0
4. Surface Water Management	a	4.1	Permeable Lot	4	0	0		0
		4.2	Permanent Erosion Controls	1	0	0		0
	a	4.3	Management of Run-off from Roof	2	1	0		0
5. Nontoxic Pest Control		5	Pest Control Alternatives	2	1.5	0		0
6. Compact Development		6.1	Moderate Density **SS 6.2, 6.3**	2	0	0		0
		6.2	High Density **SS 6.3**	3	0	0		0
		6.3	Very High Density	4	4	0		0
			Sub-Total for SS Category:	*22*	*14.5*	*0*		*5*

LEED for Homes Simplified Project Checklist for California (continued)

					Max Points	Project Points Preliminary		Final
Water Efficiency (WE)			(Minimum of 3 WE Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Water Reuse		1.1	Rainwater Harvesting System	WE 1.3	4	0	0		0
		1.2	Graywater Reuse System	WE 1.3	1	0	0		0
		1.3	Use of Municipal Recycled Water System		3	0	0		0
2. Irrigation System	a	2.1	High Efficiency Irrigation System	WE 2.3	3	3	0		0
		2.2	Third Party Inspection	WE 2.3	1	0	0		0
	a	2.3	Reduce Overall Irrigation Demand by at Least 45%		4	0	0		0
3. Indoor Water Use		3.1	High-Efficiency Fixtures and Fittings		3	1	0		0
		3.2	Very High Efficiency Fixtures and Fittings		6	4	0		0
				Sub-Total for WE Category:	**15**	8	0		0
Energy and Atmosphere (EA)			(Minimum of 0 EA Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Optimize Energy Performance in California		1.1	Performance of ENERGY STAR for Homes		Prereq	Y			
		1.2	Exceptional Energy Performance		19	0	0		0
7. Water Heating	a	7	Efficient Hot Water Distribution		2	0	0		0
8. Lighting		8.1	Title-24 Lighting		Prereq	Y			
		8.2	Improved Lighting	EA 8.3	1	0	0		0
		8.3	Advanced Lighting		3	3	0		0
9. Appliances		9.1	High-Efficiency Appliances		2	1	0		0
		9.2	Water-Efficient Clothes Washer		1	0	0		0
10. Renewable Energy in CA	a	10	Renewable Energy System		10	0	0		0
11. Residential Refrigerant Management		11.1	Refrigerant Charge Test		Prereq	Y			
		11.2	Appropriate HVAC Refrigerants		1	1	0		0
				Sub-Total for EA Category:	**38**	5	0		0
Materials and Resources (MR)			(Minimum of 2 MR Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. Material-Efficient Framing		1.1	Framing Order Waste Factor Limit		Prereq	Y			
		1.2	Detailed Framing Documents	MR 1.5	1	1	0		0
		1.3	Detailed Cut List and Lumber Order	MR 1.5	1	1	0		0
		1.4	Framing Efficiencies	MR 1.5	3	0	0		0
		1.5	Off-site Fabrication		4	0	0		0
2. Environmentally Preferable Products	a	2.1	FSC Certified Tropical Wood		Prereq	Y			
	a	2.2	Environmentally Preferable Products		8	3	0		0
3. Waste Management		3.1	Construction Waste Management Planning		Prereq	Y			
		3.2	Construction Waste Reduction		3	2.5	0		2.5
				Sub-Total for MR Category:	**16**	7.5	0		2.5

LEED for Homes Simplified Project Checklist for California (continued)

					Max Points	Project Points Preliminary		Final
Indoor Environmental Quality (EQ)			(Minimum of 6 EQ Points Required)	OR	Max	Y/Pts	Maybe	No	Y/Pts
1. ENERGY STAR with IAP		1	ENERGY STAR with Indoor Air Package		13	0	0		0
2. Combustion Venting		2.1	Basic Combustion Venting Measures	EQ 1	Prereq	Y			
		2.2	Enhanced Combustion Venting Measures	EQ 1	2	2	0		0
3. Moisture Control		3	Moisture Load Control	EQ 1	1	0	0		0
4. Outdoor Air Ventilation	a	4.1	Basic Outdoor Air Ventilation	EQ 1	Prereq	Y			
	a	4.2	Enhanced Outdoor Air Ventilation		2	0	0		0
		4.3	Third-Party Performance Testing	EQ 1	1	0	0		0
5. Local Exhaust	a	5.1	Basic Local Exhaust	EQ 1	Prereq	Y			
		5.2	Enhanced Local Exhaust		1	1	0		0
		5.3	Third-Party Performance Testing		1	0	0		0
6. Distribution of Space Heating and Cooling	a	6.1	Room-by-Room Load Calculations	EQ 1	Prereq	Y			
		6.2	Return Air Flow / Room by Room Controls	EQ 1	1	0	0		0
		6.3	Third-Party Performance Test / Multiple Zones	EQ 1	2	0	0		0
7. Air Filtering		7.1	Good Filters	EQ 1	Prereq	Y			
		7.2	Better Filters	EQ 7.3	1	0	0		0
		7.3	Best Filters		2	0	0		0
8. Contaminant Control	a	8.1	Indoor Contaminant Control during Construction	EQ 1	1	1	0		0
		8.2	Indoor Contaminant Control		2	0	0		0
	a	8.3	Preoccupancy Flush	EQ 1	1	1	0		0
9. Radon Protection	a	9.1	Radon-Resistant Construction in High-Risk Areas	EQ 1	Prereq	N/A			
	a	9.2	Radon-Resistant Construction in Moderate-Risk Areas	EQ 1	1	0	0		0
10. Garage Pollutant Protection		10.1	No HVAC in Garage	EQ 1	Prereq	Y			
		10.2	Minimize Pollutants from Garage	EQ 1, 10.4	2	2	0		0
		10.3	Exhaust Fan in Garage	EQ 1, 10.4	1	0	0		0
		10.4	Detached Garage or No Garage	EQ 1	3	0	0		0
				Sub-Total for EQ Category:	**21**	7	0		0
Awareness and Education (AE)			(Minimum of 0 AE Points Required)		Max	Y/Pts	Maybe	No	Y/Pts
1. Education of the Homeowner or Tenant	a	1.1	Basic Operations Training		Prereq	Y			
	a	1.2	Enhanced Training		1	0	0		0
		1.3	Public Awareness		1	0	0		0
2. Education of Building Manager	a	2	Education of Building Manager		1	0	0		0
				Sub-Total for AE Category:	**3**	0	0		0