

## **Belmont Village LEED for Homes Gold Strategies**

The Belmont Village, Albany, project is targeting a LEED for Homes Mid-rise Gold rating. Although the project cannot achieve LEED certification until completion of the project, the project team has identified the LEED design and construction strategies that the project will pursue. A minimum of 65 points are required for Gold certification; however, the project team has identified 70 points on the LEED checklist. Please refer to the LEED Checklist in Attachment 1 for the complete list of prerequisites and credits.

Although the project does not achieve certification until after substantial completion, the US Green Building Council (USGBC) has approved or approval is pending for the following two credits:

- **SS2.5 Reduce Over Irrigation Demand/WE2.2 Reduce Overall Irrigation Demand:** The landscape design uses 65% less water than the baseline allowance. The LEED for Homes outdoor use budget calculator has been pre-approved by the US Green Building Council. The water budget calculator is attached hereto for reference as Attachment 2. This earns the project five points under the SS and WE categories, and one additional point under the Innovation in Design category for a total of six approved LEED points.
- **EA1.3 Optimize Energy Performance:** The LEED for Homes EA Calculator has undergone a preliminary review by USGBC and is currently under its second review; additional comments or revisions to the Energy Calculator are not anticipated after this second review. When entered into the LEED for Homes Energy Calculator, the project is earning 10.5 points under EAc1.3, which equated to a 21.5% energy savings. The EA Calculator has also been attached hereto for reference as Attachment 3.

Additionally, because several credits are based on the project's location, many additional points can be considered finalized. The project has a total of seven site-based points.

- **LL 3.2 Infill:** the project is located on a previously developed site, and the adjacent perimeter of the project is at least 75% previously developed.
- **LL4 Existing Infrastructure:** because the site was previously developed, existing infrastructure services connected to the project's site.
- **LL5 Community Resources/Transit / LL6 Access to Open Space / SS7.1 Public Transit:** the project is located to existing basic services, transit lines, and parks.

**The total finalized points are 23.5 points; which is one-third of the points needed to reach a LEED Gold rating.**

Other highlighted LEED Gold strategies that the project is pursuing are provided below. These points will be verified in the field by the LEED for Homes Green Rater and submitted to the US Green Building Council for final approval at the completion of the project.

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- **WE3 Indoor Water Use:** The project will include low-flow and –flush plumbing fixtures reduces indoor water within the residential units, and the common areas. (5 points)
- **EA8.2 Advanced In-Unit Lighting:** the project will install EnergyStar labeled lamps (3 points)
- **MR2.2 Environmentally Preferable Products:** materials with recycled content, regionally produced and low-emitting have been specified. (4.5 points)
- **MR3.2 Construction Waste Reduction:** at a minimum 75% of the generated construction waste will be diverted from landfills. (2.5 points)

**ATTACHMENT 1:  
BELMONT VILLAGE  
LEED FOR HOMES MID-RISE CHECKLIST**



for Homes

## LEED for Homes Mid-rise Project Checklist for California

Builder Name:	DATE: 09/14/2015
Project Team Leader:	Stephen Broiler, Belmont Village Albany, LLC
Home Address (Street/City/State):	, Albany, California

**Project Description**

Building Type: **Mid-rise multi-family**  
 # of Units: 0

# of stories:  
 Avg. Home Size Adjustment: -10.0

**Adjusted Certification Thresholds**

Certified: 35.0 Gold: 65.0  
 Silver: 50.0 Platinum: 80.0

<b>Project Point Total</b>		<b>Final Credit Category Point Totals</b>			
Prelim: 70 + 12 maybe pts	Final: 22.5	ID: 2	SS: 3	EA: 10.5	EQ: 0
<b>Certification Level</b>		LL: 5	WE: 2	MR: 0	AE: 0
Prelim: Not Certified	Final: Not Certified	Minimum Point Thresholds Not Met for Prelim. OR Final Rating			
Date Most Recently Updated:		Updated by:			

*⚡ Indicates that an Accountability Form is required.*

	Max Pts. Available	Preliminary Rating				Project Points
		Y / Pts	Maybe	No		
<b>Innovation &amp; Design Process (ID)</b> (Minimum 0 ID Points Required)	<b>Max: 11</b>	<b>Y:9</b>	<b>M:1</b>		<b>Notes</b>	<b>Final: 2</b>
<b>1. Integrated Project Planning</b>						
1.1 Preliminary Rating	Prereq.	Y				Y
Target performance tier:		Gold				
1.2 Energy Expertise for MID-RISE	Prereq.	Y				Y
1.3 Professional Credentialed with Respect to LEED for Homes	1	0	0	N	please see ID 01-06 for details	0
1.4 Design Charrette	1	1	0			1
1.5 Building Orientation for Solar Design (meet all of the following)	1	0	0	N		0
<input type="checkbox"/> a) Glazing area on north/south walls 50% greater than on east/west walls					<input type="checkbox"/> c) At least 450 sq. ft. of south-facing roof area, oriented for solar applications	
<input type="checkbox"/> b) East-west axis is within 15 degrees of due east-west					<input type="checkbox"/> d) 90% of south-facing glazing is shaded in summer, unshaded in winter	
1.6 Trades Training for MID-RISE	1	1	0			0
<b>2. Quality Management for Durability</b>						
2.1 Durability Planning (meet all of the following)	Prereq.	Y				
<input checked="" type="checkbox"/> a) Durability evaluation completed					<input checked="" type="checkbox"/> d) Durability strategies incorporated into project documentation	
<input checked="" type="checkbox"/> b) Strategies developed to address durability issues					<input checked="" type="checkbox"/> e) Durability measures listed in durability inspection checklist	
<input checked="" type="checkbox"/> c) Moisture control measures from Table 1 incorporated						
2.2 Durability Management (meet one of the following)	Prereq.	Y				
<input checked="" type="checkbox"/> Builder has a quality management process in place					<input checked="" type="checkbox"/> Builder conducted inspection using durability inspection checklist	
2.3 Third-Party Durability Management Verification	3	3	0			0

<b>3. Innovative or Regional Design</b>						
3.1	≅ Innovation 1 (ruling #):	<b>WEc2.2 65% Water reduction</b>	<b>1</b>	<b>1</b>	<b>1</b>	65% Approved by USGBC 11/7/14 <b>1</b>
3.2	≅ Innovation 2 (ruling #):		<b>1</b>	<b>1</b>	<b>0</b>	Hold exemplary <b>0</b>
3.3	≅ Innovation 3 (ruling #):		<b>1</b>	<b>1</b>	<b>0</b>	Hold exemplary <b>0</b>
3.4	≅ Innovation 4 (ruling #):		<b>1</b>	<b>1</b>	<b>0</b>	Hold exemplary <b>0</b>
<b>Location &amp; Linkages (LL)</b> (Minimum 0 LL Points Required)			<b>Max: 10</b>	<b>Y:5</b>	<b>M:2</b>	<b>Notes</b>
<b>1. LEED for Neighborhood Development</b>						
1	LEED for Neighborhood Development		<b>10</b>	<b>0</b>	<b>0</b>	<b>N</b> <b>0</b>
<b>2. Site Selection</b>						
2	≅ Site Selection ( <i>meet all of the following</i> )		<b>2</b>	<b>0</b>	<b>0</b>	<b>N</b> <b>0</b>
	<input checked="" type="checkbox"/> a) Built above 100-year floodplain defined by FEMA					<input checked="" type="checkbox"/> d) Not built on land that was public parkland prior to acquisition
	<input checked="" type="checkbox"/> b) Not built on habitat for threatened or endangered species					<input checked="" type="checkbox"/> e) Not built on land with prime soils, unique soils, or soils of state significance
	<input type="checkbox"/> c) Not built within 100 ft of water, including wetlands					
<b>3. Preferred Locations</b>						
3.1	Edge Development		<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
OR	3.2	Infill	<b>2</b>	<b>2</b>	<b>0</b>	<b>2</b>
AND/OR	3.3	Brownfield Redevelopment for MID-RISE	<b>1</b>	<b>0</b>	<b>0</b>	<b>N</b> <b>0</b>
	<input type="checkbox"/> a) Site meets criteria as "contaminated" by ASTM E1903-97 Phase II					<input type="checkbox"/> b) Site defined as "brownfield" by local, state, or federal government agency
<b>4. Infrastructure</b>						
4	Existing Infrastructure		<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>
<b>5. Community Resources / Transit</b>						
5.1	Basic Community Resources for MID-RISE (meet one of the following)		<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>
	<input type="checkbox"/> a) Within 1/4 mile of 4 basic community resources					<input checked="" type="checkbox"/> b) Within 1/2 mile of 7 basic community resources
OR	5.2	Extensive Community Resources for MID-RISE (meet one of the following)	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>
	<input type="checkbox"/> a) Within 1/4 mile of 7 basic community resources					<input checked="" type="checkbox"/> b) Within 1/2 mile of 11 basic community resources
OR	5.3	Outstanding Community Resources for MID-RISE (meet one of the following)	<b>3</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<input type="checkbox"/> a) Within 1/4 mile of 11 basic community resources					<input type="checkbox"/> b) Within 1/2 mile of 14 basic community resource
<b>6. Access to Open Space</b>						
6	Access to Open Space		<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>

**1. Site Stewardship**

<b>1.1</b>	<b>Erosion Controls During Construction</b> ( <i>meet all of the following</i> )	<b>Prereq.</b>	<b>Y</b>		
	<input checked="" type="checkbox"/> a) Stockpile and protect disturbed topsoil from erosion.			<input checked="" type="checkbox"/> d) Provide swales to divert surface water from hillsides	
	<input checked="" type="checkbox"/> b) Control the path and velocity of runoff with silt fencing or equivalent.			<input checked="" type="checkbox"/> e) Use tiers, erosion blankets, compost blankets, etc. on sloped areas.	
	<input checked="" type="checkbox"/> c) Protect sewer inlets, streams, and lakes with straw bales, silt fencing, etc.				
<b>1.2</b>	<b>Minimize Disturbed Area for MID-RISE</b> (meet appropriate requirements)	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
	Where the site is not previously developed, meet all the following:				
	<input type="checkbox"/> a) Develop tree / plant preservation plan with "no-disturbance" zones				
	<input type="checkbox"/> b) Leave 40% of buildable lot area, not including area under roof, undisturbed				
	<b>OR</b> Where the site is previously developed, meet all the following:				
	<input type="checkbox"/> c) Develop tree / plant preservation plan with "no-disturbance" zones AND				
	<input type="checkbox"/> Rehabilitate lot; undo soil compaction and remove invasive plants AND				
	<input type="checkbox"/> Meet the requirements of SS 2.2				
	<b>OR</b> <input checked="" type="checkbox"/> d) Build on a lot to achieve a density of 40 units per acre.				

**2. Landscaping**

<b>2.1</b>	<b>No Invasive Plants</b>	<b>Prereq.</b>	<b>Y</b>		
<b>2.2</b>	<b>Basic Landscaping Design</b> ( <i>meet all of the following</i> )	<b>1</b>	<b>1</b>	<b>0</b>	<i>Will meet landscape Bay Fiendly</i>
	<input checked="" type="checkbox"/> a) Any turf must be drought-tolerant.			<input checked="" type="checkbox"/> d) Add mulch or soil amendments as appropriate.	
	<input checked="" type="checkbox"/> b) Do not use turf in densely shaded areas.			<input checked="" type="checkbox"/> e) All compacted soil must be filled to at least 6 inches.	
	<input checked="" type="checkbox"/> c) Do not use turf in areas with slope of 25%				
<b>AND/OR</b>	<b>2.3</b> <b>Limit Conventional Turf for MID-RISE</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<input type="text" value=""/> Percentage of designed landscape softscape area that is turf				
<b>AND/OR</b>	<b>2.4</b> <b>Drought-Tolerant Plants for MID-RISE</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>
	<input type="text" value=""/> Percentage of installed plants that are drought-tolerant			<input type="checkbox"/> Both points in SS 2.3 are met ( ≤ 20% turf)	
<b>OR</b>	<b>2.5</b> <b>Reduce Overall Irrigation Demand by at Least 20% for MID-RISE</b>	<b>3</b>	<b>3</b>	<b>0</b>	<i>65% Approved by USGBC 11/7/14</i>
	<input type="text" value="65%"/> Percentage reduction in estimated irrigation water demand			<i>(calculate)</i>	

**3. Reduce Local Heat Island Effects**

<b>3.1</b>	<b>Reduce Site Heat Island Effects for MID-RISE</b> (meet one)	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>
	<input type="checkbox"/> a) Locate trees / plantings to provide shade for 50% of hardscapes			<input type="checkbox"/> b) Install light-colored, high-albedo materials for 50% of sidewalks, patios, and driveways	
<b>3.2</b>	<b>Reduce Roof Heat Island Effects for MID-RISE</b> (meet one)	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>
	<input checked="" type="checkbox"/> a) Install roof with high albedo materials on 75% of roof area			<input type="checkbox"/> c) Install combination of high albedo and vegetated roof	
	<input type="checkbox"/> b) Install a vegetated roof for at least 50% of roof area				

4. Surface Water Management						
4.1	Permeable Lot for MID-RISE	2	0	0	N	0
	<input type="checkbox"/> vegetative landscape					
	<input type="checkbox"/> permeable paving					
	<input type="checkbox"/> impermeable surfaces directed to on-site infiltration features					
	<input type="checkbox"/> other impermeable surfaces					
4.2	Permanent Erosion Controls ( <i>meet one of the following</i> )	1	0	0	N	0
	<input type="checkbox"/> a) For portions of lot on steep slope, use terracing and retaining walls					
	<input type="checkbox"/> b) Plant trees, shrubs, or groundcover					
4.3	Stormwater Quality Control for MID-RISE ( <i>meet one of the following</i> )	2	2	0		0
	<input checked="" type="checkbox"/> a) Stormwater mgmt plan designed in accordance with state or local program					
	<input type="checkbox"/> b) In-field performance monitoring data to demonstrate compliance					
5. Nontoxic Pest Control						
5	Pest Control Alternatives ( <i>meet any of the following, 1/2 pt each</i> )	2	2	0		0
	<input checked="" type="checkbox"/> a) Keep all exterior wood at least 12" above soil					
	<input checked="" type="checkbox"/> b) Seal external cracks, joints, etc. with caulking and install pest-proof screens					
	<input checked="" type="checkbox"/> c) Include no wood-to-concrete connections, or separate connections with dividers					
	<input checked="" type="checkbox"/> d) Install landscaping so mature plants are 24" from home					
	e) In 'moderate' to 'very heavy' termite risk areas:					
	<input type="checkbox"/> i) Treat all cellulosic material with borate product to 3' above foundation					
	<input type="checkbox"/> ii) Install sand or diatomaceous earth barrier					
	<input type="checkbox"/> iii) Install steel mesh barrier termite control system					
	<input type="checkbox"/> iv) Install non-toxic termite bait system					
	<input type="checkbox"/> v) Use noncellulosic wall structure					
	<input type="checkbox"/> vi) Use solid concrete foundation walls or pest-proof masonry wall design					
6. Compact Development						
6.1	Moderate Density for MID-RISE	2	0	0		0
	<input type="checkbox"/> # of total units on the lot <input type="checkbox"/> lot size (acres)				<input type="checkbox"/> density (units/acre)	
OR	6.2 High Density for MID-RISE	3	0	0		0
OR	6.3 Very High Density for MID-RISE	4	4	0		0
7. Alternative Transportation						
7.1	Public Transit for MID-RISE ( <i>meet one of the following</i> )	2	2	0		0
	<input checked="" type="checkbox"/> a) Within 1/2 mile of transit services providing 30 rides per weekday					
	<input checked="" type="checkbox"/> b) Within 1/2 mile of transit services providing 60 rides per weekday					
7.2	Bicycle Storage for MID-RISE	1	1	0	<i>Will use 4th St - 5% bike storage</i>	0
	<input type="checkbox"/> 27 secure, covered storage capacity (# of bicycles)					
7.3	Parking Capacity/Low-Emitting Vehicles for MID-RISE ( <i>meet one</i> )	1	1	0		0
	<input type="checkbox"/> a) Provide low-emitting, fuel-efficient vehicles for 3% of the total parking capacity					
	<input type="checkbox"/> b) 5% of total capacity is preferred parking spots for low-emitting vehicles					
	<input type="checkbox"/> c) Alternative-fuel refueling stations for 3% of total vehicle capacity					
	<input checked="" type="checkbox"/> d) Size parking to not exceed min zoning req'ts, AND					
	<input checked="" type="checkbox"/> Provide infrastructure to facilitate shared vehicle usage					
	<input type="checkbox"/> e) Provide no new parking					

Water Efficiency (WE) (Minimum 3 WE Points Required)		Max: 15	Y:7	M:0	Notes	Final: 2
<b>1. Water Reuse</b>						
1	Water Reuse for MID-RISE	5	0	0	N	0
	<input type="text"/> of total water demand offset by water reuse strategies (mark any/all strategies adopted)					
					<input type="checkbox"/> Rainwater harvesting	
					<input type="checkbox"/> Graywater reuse	
					<input type="checkbox"/> Municipal recycled water	
<b>2. Irrigation System</b>						
2.1	High-Efficiency Irrigation System for MID-RISE (meet any, 0.5 pt each)	2	0	0	N	0
	<input type="checkbox"/> a) Irrigation system designed by EPA Water Sense certified professional				<input type="checkbox"/> g) Install timer or controller for each watering zone	
	<input type="checkbox"/> b) Irrigation system with head-to-head coverage				<input type="checkbox"/> h) Install pressure-regulating devices	
	<input type="checkbox"/> c) Install central shut-off valve				<input type="checkbox"/> i) High-efficiency nozzles with distribution uniformity of at least 0.70.	
	<input type="checkbox"/> d) Install submeter for the irrigation system				<input type="checkbox"/> j) Install check valves in heads	
	<input type="checkbox"/> e) Use drip irrigation for 50% of planting beds				<input type="checkbox"/> k) Install moisture sensor or rain delay controller	
	<input type="checkbox"/> f) Create separate zones for each type of bedding				<input type="checkbox"/> l) Third-party inspection of irrigation system	
OR	2.2 Reduce Overall Irrigation Demand by at Least 45% for MID-RISE	2	2	0		2
	<input type="text"/> 65% Percentage reduction in estimated irrigation water demand (see SS 2.5)					
<b>3. Indoor Water Use</b>						
3.1	High-Efficiency Fixtures and Fittings (meet any of the following, 1 pt each)	3	1	0	WC 1.1gpf common areas, in-unit: 1.6/0.8gpf	0
	<input type="checkbox"/> a) Average flow rate of lavatory faucets is ≤ 2.00 gpm				<input type="checkbox"/> c) Average flow rate for all toilets is ≤ 1.30 gpf; OR	
	<input type="checkbox"/> b) Average flow rate for all showers is ≤ 2.00 gpm per stall				<input checked="" type="checkbox"/> Toilets are dual-flush; OR	
					<input type="checkbox"/> Toilets meet the EPA Water Sense specification	
3.2	Very High-Efficiency Fixtures and Fittings (meet any, 2 pts each)	6	4	0	Faucet at 1.5, Shower at 1.5	0
	<input checked="" type="checkbox"/> a) Average flow rate of lavatory faucets is ≤ 1.50 gpm; OR				<input checked="" type="checkbox"/> b) Average flow rate for all showers ≤ 1.75 gpm per stall	
	<input type="checkbox"/> Lavatory faucets meet the EPA Water Sense specification				<input type="checkbox"/> c) Average flow rate for all toilets is ≤ 1.10 gpf	
3.3	Water Efficient Appliances for MID-RISE (meet any of following, 1 pt each)	2	0	0	Rvw at final	0
	<input type="checkbox"/> a) Water-efficient clothes washers with MEF ≥ 2.0 and WF < 5.5				<input type="checkbox"/> b) ENERGY STAR dishwasher(s) that use ≤ 6.0 gallons per cycle	
<b>Energy &amp; Atmosphere (EA) (Minimum 0 EA Points Required)</b>						
		Max: 38	Y:14.5	M:0	Notes	Final: 10.5
<b>1. Optimize Energy Performance in Mid-rise Buildings</b>						
1.1	Minimum Energy Performance for MID-RISE in CA (meet all of the following)	Prereq.	Y			
	<input checked="" type="checkbox"/> Energy performance exceeds Title-24 2008 by 15% or more				<input checked="" type="checkbox"/> Energy modeling conducted by current CEPE or CEA	
	<input checked="" type="checkbox"/> Energy improvements verified by HERS Rater				<input checked="" type="checkbox"/> Energy model submitted and reviewed by USGBC	
1.2	Testing and Verification for MID-RISE	Prereq.	Y			
1.3	Optimize Energy Performance for MID-RISE in CA	24	10.5	0		10.5
	<input type="text"/> 21.5% % savings compared with Title-24 2008				(calculate)	



<b>8. Lighting</b>									
8.1	Basic Lighting	Prereq.	Y						
8.2	Advanced In-Unit Lighting ( <i>meeting one of the following</i> )	3	3	0					0
	<input type="checkbox"/> a) Meet Title-24 w/ high-efficacy lighting throughout								
	<input checked="" type="checkbox"/> b) Meet Title-24 w/ controls AND use 60% ENERGY STAR fixtures								
									<input checked="" type="checkbox"/> c) Meet Title-24 w/ controls AND use 90% ENERGY STAR lamps
<b>10. Renewable Energy</b>									
10	Renewable Energy System	10	0	0					0.0
	<input type="text"/> Percentage of annual reference energy load supplied by renewable system								
	( <i>calculate</i> )								
<b>11. Residential Refrigerant Management</b>									
11.1	Refrigerant Charge Test	Prereq.	Y						
11.2	Appropriate HVAC Refrigerants ( <i>meet one of the following</i> )	1	1	0					0
	<input type="checkbox"/> a) Use no refrigerants								
	<input checked="" type="checkbox"/> b) Use non-HCFC refrigerants								
									<input type="checkbox"/> c) Use refrigerants that complies with global warming potential equation
<b>Materials &amp; Resources (MR)</b> (Minimum 2 MR Points Required)		<b>Max: 16</b>	<b>Y:9</b>	<b>M:5</b>	<b>Notes</b>			<b>Final: 0</b>	
<b>1. Material-Efficient Framing</b>									
1.1	Framing Order Waste Factor	Prereq.	Y						
1.2	Detailed Framing Documents	1	1	0					0
AND/OR	1.3 Detailed Cut List and Lumber Order	1	1	0					0
	<input checked="" type="checkbox"/> Requirements of MR 1.2 have been met								
									<input checked="" type="checkbox"/> Detailed cut list and lumber order corresponding to framing plans or scopes
AND/OR	1.4 Framing Efficiencies ( <i>meet any of the following, see Rating System for pts</i> )	3	0	0	N		<i>Rvw for 16" OC at rough</i>		0
	<input type="checkbox"/> Precut framing packages								<input type="checkbox"/> Stud spacing greater than 16" on center
	<input type="checkbox"/> Open-web floor trusses								<input type="checkbox"/> Ceiling joist spacing greater than 16" on center
	<input type="checkbox"/> Structural insulated panel walls								<input type="checkbox"/> Floor joist spacing greater than 16" on center
	<input type="checkbox"/> Structural insulated panel roof								<input type="checkbox"/> Roof rafter spacing greater than 16" on center
	<input type="checkbox"/> Structural insulated panel floors								<input type="checkbox"/> Two of the following: Size headers for loads; ladder blocking; drywall clips; 2-stud corners
OR	1.5 Off-site Fabrication ( <i>meet one of the following</i> )	4	0	0	N				0
	<input type="checkbox"/> a) Panelized construction								
									<input type="checkbox"/> b) Modular, prefabricated construction

## 2. Environmentally Preferable Products

2.1  FSC Certified Tropical Wood (meet all of the following)

Prereq. Y

- a) Provide suppliers with a notice of preference for FSC products; AND  
 Request country of manufacture for each wood product

- b) No tropical wood installed (exceptions for FSC-certified or reclaimed wood)

2.2  Environmentally Preferable Products (meet any, 1/2 pt each)

8

4.5

5

0

### Assembly : component

### (a) EPP

### (b) Low emission

### (c) Local production

Exterior wall: framing	<input type="checkbox"/>	type: No - local will be difficult	<input type="checkbox"/>
Exterior wall: siding or masonry	<input checked="" type="checkbox"/>	type: Maybe Regional - Siding - Fiber and Stone at 25% min	<input type="checkbox"/>
Floor: flooring	<input type="checkbox"/> (45%)	type: _____	<input type="checkbox"/> (45%)
Floor: flooring	<input type="checkbox"/> (90%)	type: _____	<input checked="" type="checkbox"/> (90%)
Floor: flooring	<input type="checkbox"/>	type: _____	<input checked="" type="checkbox"/>
Floor: flooring	<input type="checkbox"/>	type: _____	<input type="checkbox"/>
Floor: framing	<input type="checkbox"/>	type: local production	<input type="checkbox"/>
Foundation: aggregate	<input type="checkbox"/>	type: recycled content	<input checked="" type="checkbox"/>
Foundation: cement	<input checked="" type="checkbox"/>	type: Yes - Fly Ash 30%	<input checked="" type="checkbox"/>
Interior wall: framing	<input type="checkbox"/>	type: _____	<input checked="" type="checkbox"/>
Interior wall, ceiling: gypsum board	<input type="checkbox"/>	type: _____	<input checked="" type="checkbox"/>
Interior wall, ceiling, millwork: paint	<input type="checkbox"/>	type: _____	<input checked="" type="checkbox"/>
Landscape: decking and patio	<input type="checkbox"/>	type: _____	<input type="checkbox"/>
Other: cabinet	<input type="checkbox"/>	type: Maybe - millwork	<input checked="" type="checkbox"/>
Other: counter	<input type="checkbox"/>	type: Maybe - millwork	<input type="checkbox"/>
Other: door	<input checked="" type="checkbox"/>	type: Maybe - Recycled content, FSC-certified, or reclaimed	<input type="checkbox"/>
Other : interior trim	<input checked="" type="checkbox"/>	type: FSC or recycled content	<input type="checkbox"/>
Other : adhesive, sealant	<input type="checkbox"/>	type: _____	<input type="checkbox"/>
Other : window frame	<input checked="" type="checkbox"/>	type: Maybe - frame is Aluminum	<input type="checkbox"/>
Roof: framing	<input type="checkbox"/>	type: _____	<input type="checkbox"/>
Roof: roofing	<input type="checkbox"/>	type: TPO, manu. In LV	<input type="checkbox"/>
Roof, floor, wall: cavity insulation	<input type="checkbox"/>	type: Maybe - recycleed content	<input checked="" type="checkbox"/>
Roof, floor, wall (2 of 3): sheathing	<input type="checkbox"/>	type: _____	<input type="checkbox"/>
Other: water supply piping	<input type="checkbox"/>	type: _____	<input type="checkbox"/>
Other: driveway	<input type="checkbox"/>	type: _____	<input type="checkbox"/>

## 3. Waste Management

3.1 Construction Waste Management Planning (meet both of the following)

Prereq. Y

- a) Investigate local options for waste diversion

- b) Document diversion rate for construction waste

3.2 Construction Waste Reduction (use one of the following methods)

3

2.5

0

Est 75%

0

a) pounds waste / square foot

cubic yards waste / 1,000 square feet

b) percentage of waste diverted

Indoor Environmental Quality (EQ) (Minimum 6 EQ Points Required)		Max: 21	Y:4.5	M:3	Notes	Final: 0
<b>2. Combustion Venting</b>						
2	Basic Combustion Venting Measures for MID-RISE (meet all the following)	Prereq.	Y			
	<input checked="" type="checkbox"/> a) no unvented combustion appliances			<input type="checkbox"/> d) space, water heating equipment designed with closed combustion; OR		
	<input checked="" type="checkbox"/> b) carbon monoxide monitors on each floor of each unit			<input type="checkbox"/> space and water heating equipment has power-vented exhaust; OR		
	<input type="checkbox"/> c) no fireplace installed, OR			<input type="checkbox"/> space and water heating equipment located in detached or open-air facility; OR		
	<input checked="" type="checkbox"/> all fireplaces and woodstoves have doors			<input type="checkbox"/> no space- or water-heating equipment with combustion		
<b>3. Moisture Control</b>						
3	Moisture Load Control (meet one of the following)	1	0	0	N	0
	<input type="checkbox"/> a) Additional dehumidification system					<input type="checkbox"/> b) HVAC system equipped with additional dehumidification mode
<b>4. Outdoor Air Ventilation</b>						
4.1	Basic Outdoor Air Ventilation for MID-RISE (meet all of the following)	Prereq.	Y			
	<input checked="" type="checkbox"/> a) ASHRAE 62.2-2007 met for all in-unit spaces			<input checked="" type="checkbox"/> b) ASHRAE 62.1-2007, Sections 4 through 7 met for residential-associated spaces		
4.2	Enhanced Outdoor Air Ventilation for MID-RISE	2	0	0		0
4.3	Third-Party Performance Testing for MID-RISE	1	1	0	GC will use testing and balancer	0
<b>5. Local Exhaust</b>						
5.1	Basic Local Exhaust for MID-RISE (meet all of the following)	Prereq.	Y			
	<input checked="" type="checkbox"/> a) In-unit bathrooms and kitchens meet ASHRAE 62.2-2007 air flow requirements			<input checked="" type="checkbox"/> d) ENERGY STAR labeled bathroom exhaust fans OR		
	<input checked="" type="checkbox"/> b) Fans and ducts designed and installed to ASHRAE Std. 62.2			<input type="checkbox"/> Multi-port bathroom exhaust systems installed		
	<input checked="" type="checkbox"/> c) Air exhausted to outdoors through roof or outside wall			<input checked="" type="checkbox"/> e) Common bathrooms and kitchens meet ASHRAE 62.1-2007 air flow requirements		
5.2	Enhanced Local Exhaust (meet one of the following)	1	1	0		0
	<input checked="" type="checkbox"/> a) Occupancy sensor			<input type="checkbox"/> c) Automatic timer tied to switch to operate fan for 20+ minutes post-occupancy		
	<input type="checkbox"/> b) Automatic humidistat controller			<input checked="" type="checkbox"/> d) Continuously operating exhaust fan		
5.3	Third-Party Performance Testing for MID-RISE	1	0	0		0

<b>6. Distribution of Space Heating and Cooling</b>					
6.1	⚡ Room-by-Room Load Calculations	Prereq.	Y		
6.2	Return Air Flow / Room-by-Room Controls ( <i>meet one of the following</i> )	1	0	1	0
	A. Forced-Air Systems	B. Nonducted HVAC Systems			
	<input checked="" type="checkbox"/> a) Return air opening of 1 sq. inch per cfm of supply	<input type="checkbox"/> Flow control valves on every radiator			
	<input type="checkbox"/> b) Limited pressure differential between closed room and adjacent spaces	<input type="checkbox"/> Radiant floor system with thermostatic controls in every room			
6.3	Third-Party Performance Test / Multiple Zones ( <i>meet one of the following</i> )	2	0	0	N
	A. Forced-Air Systems	B. Nonducted HVAC Systems			
	<input type="checkbox"/> Have supply air flow rates in each room tested and confirmed	<input type="checkbox"/> Install at least two distinct zones with independent thermostat control			
<b>7. Air Filtering</b>					
7.1	Good Filters	Prereq.	Y		
7.2	Better Filters	1	0	0	0
OR	7.3 Best Filters	2	0	0	0
<b>8. Contaminant Control</b>					
8.1	⚡ Indoor Contaminant Control during Construction	1	1	0	0
8.2	Indoor Contaminant Control for MID-RISE (meet any of following, 1 pt each)	2	0	0	N
	<input type="checkbox"/> a) Install permanent walk-off mats for each unit	<input type="checkbox"/> b) In each unit, design shoe removal and storage space near primary entryway			
	<input type="checkbox"/> Install central entryway system	<input type="checkbox"/> c) In each unit, install central vacuum system with exhaust to outdoors			
8.3	⚡ Preoccupancy Flush	1	1	0	0
<b>9. Radon Protection</b>					
9.1	⚡ Radon-Resistant Construction in High-Risk Areas	Prereq.	Y		
9.2	⚡ Radon-Resistant Construction in Moderate-Risk Areas	1	0	0	0
<b>10. Garage Pollutant Protection</b>					
10.1	No HVAC in Garage	Prereq.	Y		
10.2	Minimize Pollutants from Garage for MID-RISE (meet all of the following)	2	0	2	Will rvw at final
	a) In conditioned spaces above garage:	<input checked="" type="checkbox"/> c) Vestibule to provide airlock between garage and adjacent spaces; OR			
	<input checked="" type="checkbox"/> Seal all penetrations and connecting floor and ceiling joist bays	<input type="checkbox"/> Provide self-closing doors and deck-to-deck partitions			
	b) In conditioned spaces next to garage	<input checked="" type="checkbox"/> d) Continuous exhaust in garage			
	<input type="checkbox"/> Weather-strip all doors				
	<input type="checkbox"/> Carbon monoxide detectors in rooms that share a door with garage				
	<input type="checkbox"/> Seal all penetrations and cracks at the base of walls				
OR	10.3 Detached Garage or No Garage	3	0	0	N

<b>11. Environmental Tobacco Smoke Control</b>						
<b>11</b>	<b>Env. Tobacco Smoke Reduction for MID-RISE (meet part (a) or (b) below)</b>	<b>1</b>	<b>0.5</b>	<b>0</b>	<i>Allowed in living units</i>	<b>0</b>
	a) Reduce smoke exposure and transfer (1/2 point)				b) Prohibit smoking throughout the building (1 points)	
	<input checked="" type="checkbox"/> Prohibit smoking in all common areas				<input type="checkbox"/> Prohibit smoking within living units	
	<input checked="" type="checkbox"/> Any exterior smoking areas are > 25 ft from entries, air intakes, windows				<input type="checkbox"/> Prohibit smoking in all common areas of the building	
	<input checked="" type="checkbox"/> Prohibit on-property smoking within 25 feet of entries, intakes, windows				<input type="checkbox"/> Any exterior smoking areas are > 25 ft from entries, air intakes, windows	
	<input checked="" type="checkbox"/> Prohibitions communicated through lease agreements, CC&Rs, signage				<input type="checkbox"/> Prohibitions communicated through lease agreements, CC&Rs, signage	
<b>12. Compartmentalization of Units</b>						
<b>12.1</b>	<b>Compartmentalization of Units (meet both of the following)</b>	<b>Prereq.</b>	<b>Y</b>			
	<input checked="" type="checkbox"/> a) Air-seal and/or weather-strip all walls, chases, doors, windows, etc.				<input checked="" type="checkbox"/> b) Demonstrate minimal leakage of 0.30 CFM50 per square foot of enclosure	
<b>12.2</b>	<b>Enhanced Compartmentalization of Units</b>	<b>1</b>	<b>0</b>	<b>0</b>		<b>0</b>
<b>Awareness &amp; Education (AE)</b> (Minimum 0 AE Points Required)		<b>Max: 3</b>	<b>Y:3</b>	<b>M:0</b>	<b>Notes</b>	<b>Final: 0</b>
<b>1. Education of the Homeowner or Tenant</b>						
<b>1.1</b>	<b>Basic Operations Training (meet both of the following)</b>	<b>Prereq.</b>	<b>Y</b>			
	<input checked="" type="checkbox"/> a) Operations and training manual				<input checked="" type="checkbox"/> b) One-hour walkthrough with occupant(s)	
<b>1.2</b>	<b>Enhanced Training</b>	<b>1</b>	<b>1</b>	<b>0</b>		<b>0</b>
<b>1.3</b>	<b>Public Awareness (meet three of the following)</b>	<b>1</b>	<b>1</b>	<b>0</b>		<b>0</b>
	<input checked="" type="checkbox"/> a) Open house on at least four weekends				<input checked="" type="checkbox"/> c) Newspaper article on the project	
	<input type="checkbox"/> b) Website about features and benefits of LEED homes				<input checked="" type="checkbox"/> d) Display LEED signage on the exterior of the home	
<b>2. Education of the Building Manager</b>						
<b>2</b>	<b>Education of the Building Manager (meet both of the following)</b>	<b>1</b>	<b>1</b>	<b>0</b>		<b>0</b>
	<input checked="" type="checkbox"/> a) Operations and training manual				<input checked="" type="checkbox"/> b) One-hour walkthrough with building manager	

**ATTACHMENT 2:  
BELMONT VILLAGE  
APPROVED OUTDOOR WATER USE CALCULATOR**



### Step 2b: Calculate the outdoor water use for each zone in the design case

Enter the area for each landscape zone in square feet.

Zone	Area of zone (sq ft)	K <sub>s</sub>	K <sub>Mc</sub>	IE	CF	Water demand (gal/mo)	Water demand (% of total)
1	7,630	0.5	1	0.9	0.7	10449	52
2	1,412	0.5	1	0.9	0.7	1934	10
3	3,669	0.5	0.8	0.9	0.7	4020	20
4	3,388	0.5	0.8	0.9	0.7	3712	18
5		0	0		0	0	0
6		0	0		0	0	0
7		0	0		0	0	0
8		0	0		0	0	0
<b>Total</b>	<b>16,099</b>						

### Step 2c: Calculate the total outdoor water use for the design case

This step is completed automatically. If an error is indicated, the sum of the zone areas does not equal the Total Landscaped Area. Please address this error.

Sum of zone areas = Tot Landscaped Area?

Total outdoor water demand (gal/mo): 20115

### Step 3: Calculate the percentage reduction in water demand

This step is completed automatically to calculate the reduction in water demand between the design case and baseline case.

Reduction in water demand: 65%

### Step 4: Calculate LEED points

This step is completed automatically to calculate the number of points awarded in SS 2.5, WE 2.2, and ID 3.

SS 2.5 points 3

WE 2.2 points 2

ID 3 points (for exemplary performance) 0



**ATTACHMENT 3:  
BELMONT VILLAGE  
ENERGY CALCULATOR (UNDER 2<sup>ND</sup> ROUND REVIEW W/ USGBC)**

# LEED for Homes Energy Model Information Form & Energy Performance Calculator for California Mid-rise Buildings


**August 2013**

- Who:** Energy modeler, with input from design team to confirm the energy model matches the building design.  
**When:** Complete and submit at the end of design. Re-submit after construction if there are changes to design or construction.  
**How:** Follow Title-24 2008 modeling guidelines.  
**Submittal:** Deliver to USGBC (homescertification@usgbc.org). Include the following elements:

- this Energy Model Information Form, completed & signed
- Full Title-24 model reports, including PERF, ENV, MECH, and Heating & Cooling Loads Summary
- narrative explanation of unique or unusual features or other concerns (optional but encouraged)
- if the building includes separate residential and non-res models, please submit the Title-24 reports for both

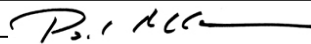
**Sign-off by energy modeler**

I hereby verify that the information provided below is accurate and complete, to the best of my knowledge.

Name: Alea German  
 Date: 8/18/15  
 Signature: 

**Sign-off by project design team leader**

I hereby verify that the information provided below is accurate and complete, to the best of my knowledge.

Name: Paul McElwee  
 Date: 8/31/15  
 Signature: 

**Table 1. Building Information**

For projects with non-residential spaces, were two separate models (residential and non-res) created?	No	Conditioned sqft, res model:	139,489
		Conditioned sqft, non-res model:	

**Residential model**

**Non-residential model (if applicable)**

Conditioned sqft, in-unit:	86,516	Conditioned sqft, offices:	
Conditioned sqft, res-associated:	51,311	Conditioned sqft, retail:	
Conditioned sqft, offices:	1,662	Conditioned sqft, all other:	
Conditioned sqft, other non-res:	0		

Describe construction type: <i>(e.g. wood-framed)</i>	Four levels of type V one hour fire rated wood construction over a concrete podium and a one level concrete parking garage.
Describe building layout: <i>(e.g. double-loaded corridor)</i>	Spaces around atriums with double-loaded corridors
Describe unit ventilation design: <i>(e.g. air-cycler w/ fresh air to AHU returns)</i>	Thru Wall PTAC units with air dampers for ventilations in combination with continuously operating exhaust fans
Describe heating & cooling systems: <i>(e.g. individual heat pumps in-unit, PTACs &amp; hydronic heating in corridors)</i>	Mini split systems, Thru wall PTAC units and Roof top units including VRF systems
Describe water heating: <i>(e.g. central gas boilers)</i>	Large storage condensing 95% EF

**Table 2. Dwelling Unit Summary**

apartment type	studio	1-BR	2-BR	3-BR	4-BR	5-BR	6-BR	Total
# of dwelling units	102	70	3					175

avg BR	tot BR
1.01714	178

**Table 3a. Residential Title-24 Model Results**

	Standard Design (TDV kBtu/sqft-yr)	Proposed Design (TDV kBtu/sqft-yr)
Space heating	4.30	2.22
Space cooling	20.78	20.57
Fans	21.58	21.20
Heat rejection	12.52	0.00
Pumps & Misc.	3.18	0.37
DHW	27.30	23.50
Lighting	37.73	37.73
Receptacle	28.64	28.64
Process	0.00	0.00
<b>Total</b>	<b>156.03</b>	<b>134.23</b>

**Table 3b. Nonresidential Title-24 Model Results\***

	Standard Design (TDV kBtu/sqft-yr)	Proposed Design (TDV kBtu/sqft-yr)
Space heating		
Space cooling		
Fans		
Heat rejection		
Pumps & Misc.		
DHW		
Lighting		
Receptacle		
Process		
<b>Total</b>	<b>0.00</b>	<b>0.00</b>

\* as applicable; projects may choose to separate the res- and non-res portions; if they are combined, leave Table 1b blank

**Table 4. Appliance & Fixture Information**

% of units with dishwashers:	0%	are clothes washers in-unit or shared?	In-unit
dishwashers Energy Star labeled?	No	clothes washers Energy Star labeled?	Yes - Energy Star
% of units with refrigerators:	100%	total # of clothes washers in the building:	43
refrigerators Energy Star labeled?	Yes - Energy Star	type of clothes dryers:	electric
showerhead flow rate (GPM):	1.75	lavatory faucet flow rate (GPM):	1.50

**Table 5a. Adjusted Residential Title-24 Model Results**

	Standard Design (TDV kBtu/sqft-yr)	Proposed Design (TDV kBtu/sqft-yr)
Space heating	4.30	2.22
Space cooling	20.78	20.57
Fans	21.58	21.20
Heat rejection	12.52	0.00
Pumps & Misc.	3.18	0.37
DHW	27.30	21.15
Lighting	0.00	0.00
Receptacle	28.64	27.45
Process	0.00	0.00
<b>Total</b>	<b>118.30</b>	<b>92.96</b>

Adjusted energy performance  
(% savings compared to Title-24 2008)

**21.4%**

**Table 5b. Adjusted Residential & Non-Residential Combined Title-24 Model Results**

	Standard Design (TDV kBtu/sqft-yr)	Proposed Design (TDV kBtu/sqft-yr)
Space heating	N/A	N/A
Space cooling	N/A	N/A
Fans	N/A	N/A
Heat rejection	N/A	N/A
Pumps & Misc.	N/A	N/A
DHW	N/A	N/A
Lighting	N/A	N/A
Receptacle	N/A	N/A
Process	N/A	N/A
<b>Total</b>	<b>N/A</b>	<b>N/A</b>

Adjusted energy performance  
(% savings compared to Title-24 2008)

**N/A**

**Adjustments to DHW**

	Standard Design	Proposed Design	
Showerhead	2.5	1.8	gallons per minute
Faucets	2.2	1.5	gallons per minute
Clotheswasher	426,265	370,004	tot gallons / year
Dishwasher	225,750	225,750	tot gallons / year
Fixture multiplier		0.806	
Appl. multiplier		0.914	
DHW multiplier		0.900	

**Adjustments to Receptacles**

	Standard	Proposed	
Refrigerator	529	423	kWh/unit/yr
Dishwasher	206	206	kWh/unit/yr
Clothes washer	81	75.1029	kWh/unit/yr
Clothes dryer (elec)	559.4	559.4	kWh/unit/yr
Clothes dryer (gas)	0	0	therms/unit/yr
Stove / range	604	604	kWh/unit/yr
Misc. plug loads	126760	126760	Kwh total
Totals:	473,152	453,570	kWh/yr
	0	0	therms/yr
	11.72	11.23	kBTU/ft <sup>2</sup>
Recept. multiplier	0.959		



## LEED Photovoltaic Calculations for EAc2

**Key:**

user input
result
result (user can override)

Building Type	Other	select from menu
State	California	select from menu
Building Square Footage	139,489	s.f.

Electricity Cost	\$0.1800	\$/kWh
Natural Gas Cost	\$0.0083	\$/kBtu
Electricity Demand Charge?	no	y/n

Building Median Electrical Intensity	13.8 kWh/sf-yr
Building Median Non-Electrical Fuel Intensity	52.5 kBtu/sf-yr
Total Energy Intensity	99.6 kBtu/sf-yr

Default Electrical Consumption	776,165 kWh
Default Non-Electrical Fuel Consumption	2,102,900 kBtu

### Energy Costs

Electricity Cost	\$139,710 / yr
Natural Gas Fuel Cost	\$17,406 / yr
Electricity Demand Charge	\$0 / yr
Default Energy Cost	\$157,116 / yr

### CO2 Emissions

	lbs CO2 / year	tons CO2 / year
Annual CO2 Emissions from Electricity Consumption	543,626	272
Annual CO2 Emissions from Natural Gas Combustion	244,746	122
Total Annual CO2 Emissions	788,372	394

Targeted % Use Reduction	0%
Design Electrical Consumption	776,165 kWh
Design Non-Electrical Fuel Consumption	2,102,900 kBtu
Design Case Electrical Intensity	5.564345576 kWh/sf-yr
Design Case Non-Electrical Fuel Intensity	15.07574074 kBtu/sf-yr
Total Energy Intensity	34.1 kBtu/sf-yr

### Energy Costs

Electricity Cost	\$139,710 / yr
Natural Gas Fuel Cost	\$17,406 / yr
Electricity Demand Charge	\$0 / yr
Total Annual Energy Cost	\$157,116 / yr

### CO2 Emissions

	lbs CO2 / year	tons CO2 / year
Annual CO2 Emissions from Electricity Consumption	543,626	272
Annual CO2 Emissions from Natural Gas Combustion	244,746	122
Total Annual CO2 Emissions	788,372	394
CO2 Emissions Reductions	0.0%	



## LEED Photovoltaic Calculations for EAc2

**Key:**

user input
result
result (user can override)

Building Type	Other	select from menu
State	California	select from menu
Building Square Footage	139,489	s.f.

Electricity Cost	\$0.1800	\$/kWh
Natural Gas Cost	\$0.0083	\$/kBtu
Electricity Demand Charge?	no	y/n

Building Median Electrical Intensity	13.8 kWh/sf-yr
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Total Energy Intensity	99.6 kBtu/sf-yr

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Annual CO2 Emissions from Electricity Consumption	543,626	272
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Design Electrical Consumption	776,165 kWh
Design Non-Electrical Fuel Consumption	2,102,900 kBtu
Design Case Electrical Intensity	5.564345576 kWh/sf-yr
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Total Energy Intensity	34.1 kBtu/sf-yr

### Energy Costs

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Natural Gas Fuel Cost	\$17,406 / yr
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Total Annual Energy Cost	\$157,116 / yr

### CO2 Emissions

	lbs CO2 / year	tons CO2 / year
Annual CO2 Emissions from Electricity Consumption	543,626	272
Annual CO2 Emissions from Natural Gas Combustion	244,746	122
Total Annual CO2 Emissions	788,372	394
CO2 Emissions Reductions	0.0%	

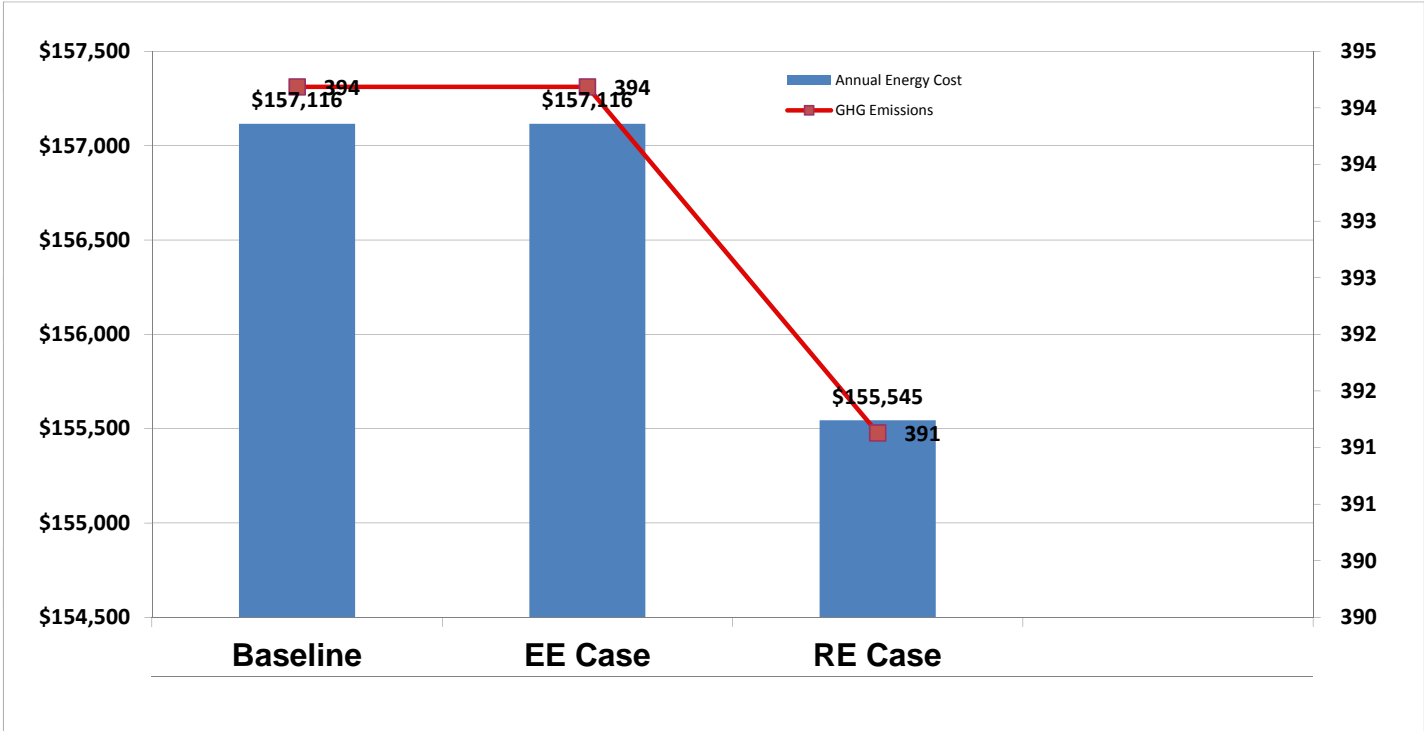
Annual Energy Costs Before PV	\$157,116
% Annual Energy Cost Supplied by Renewables Target	1.0%
kWh of production to meet % RE Target	8,729 kWh
<a href="#">kWh production from 1 kW of PV (source from PVWatts)</a>	1,450 kWh
Estimated PV System Size (assuming South Facing, 45%)	6.0 kW
Annual Cost Savings from PV	\$1,571
Associated Square Footage of PV system	602 SF

Annual Energy Costs After PV	\$155,545 / yr
EAc1 % Reduction	1%

Raw Cost of PV System per Watt Installed		per watt
Rebate/ Cost offset		per watt
Federal Tax Incentive		
Net Cost per Watt	\$0.00	per watt
Net System Cost	\$0	
Simple Payback	-	years

	lbs CO2 / year	tons CO2 / year
Annual CO2 Emissions from Electricity Consumption	537,512	269
Annual CO2 Emissions from Natural Gas Combustion	244,746	122
Total Annual CO2 Emissions	782,259	391
CO2 Emissions Reductions	0.8%	

	Baseline	EE Case	RE Case
Annual Energy Cost	\$157,116	\$157,116	\$155,545
% Reduction		0%	1%
GHG Emissions	394	394	391
% Reduction		0%	1%



**Electrical Demand Charge Worksheet**

	Demand Charge \$/kW	Demand kW	Monthly Costs \$
Jan			\$ -
Feb			\$ -
Mar			\$ -
Apr			\$ -
May			\$ -
Jun			\$ -
Jul			\$ -
Aug			\$ -
Sep			\$ -
Oct			\$ -
Nov			\$ -
Dec			\$ -
Total			\$ -
Ave	#DIV/0!	#DIV/0!	\$ -

**Natural Gas Demand Charge Worksheet**

	Demand Charge \$/kBtu	Demand kBtu	Monthly Costs \$
Jan			\$ -
Feb			\$ -
Mar			\$ -
Jun			\$ -
Jul			\$ -
Aug			\$ -
Sep			\$ -
Oct			\$ -
Dec			\$ -
Total			\$ -
Ave	#DIV/0!	#DIV/0!	\$ -

[Return To Main Calculator](#)



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[To Energy & CO2 Calculator](#)

**Energy & CO2 Tables**

**Default Energy Consumption by Building Type**

Building Type	Median Electrical Intensity (kWh/sf-yr)	Median Non-Electrical Fuel Intensity (kBtu/sf-yr)
Education	6.6	52.5
Food Sales	58.9	143.3
Food Service	28.7	137.8
Health Care Inpatient	21.5	50.2
Health Care Outpatient	9.7	56.5
Lodging	12.6	39.2
Retail (Other than Mall)	8	18
Enclosed and Strip Malls	14.5	50.6
Office	11.7	58.5
Public Assembly	6.8	72.9
Public Order and Safety	4.1	23.7
Religious Worship	2.5	103.6
Service	6.1	33.8
Warehouse and Storage	3	96.9
Other	13.8	52.5

**Default Energy Cost by State**

**CO2 Grid Emission Factors by State**

State	Electricity (\$/kWh)	Natural Gas (\$/kBtu)	(lbs CO2/Mwh)	(lbs CO2/kwh)
Alabama	\$0.06820	\$0.00938	1298.65	1.30
Alaska	\$0.01646	\$0.00355	1106.48	1.11
Arizona	\$0.06700	\$0.00758	1218.86	1.22
Arkansas	\$0.05260	\$0.00668	1280.25	1.28
California	\$0.11710	\$0.00843	700.40	0.70
Colorado	\$0.05970	\$0.00476	1986.09	1.99
Connecticut	\$0.09000	\$0.01101	754.19	0.75
Delaware	\$0.06930	\$0.00840	1803.73	1.80
District of Columbia	\$0.06450	\$0.01266	3614.25	3.61
Florida	\$0.06780	\$0.00108	1348.03	1.35
Georgia	\$0.06690	\$0.00957	1388.33	1.39
Hawaii	\$0.15020	\$0.00193	1654.74	1.65
Idaho	\$0.06010	\$0.00612	143.95	0.14
Illinois	\$0.07580	\$0.00794	1154.75	1.15
Indiana	\$0.05850	\$0.00844	2098.03	2.10
Iowa	\$0.06020	\$0.00750	1943.28	1.94
Kansas	\$0.06110	\$0.00753	1870.58	1.87
Kentucky	\$0.05200	\$0.00760	2051.06	2.05
Louisiana	\$0.06640	\$0.00861	1201.21	1.20
Maine	\$0.10190	\$0.01086	771.83	0.77
Maryland	\$0.06590	\$0.00807	1293.05	1.29
Massachusetts	\$0.08480	\$0.01071	1226.15	1.23
Michigan	\$0.07010	\$0.00631	1412.67	1.41
Minnesota	\$0.05460	\$0.00778	1587.52	1.59
Mississippi	\$0.07210	NA	1408.98	1.41
Missouri	\$0.05050	\$0.00796	1881.39	1.88
Montana	\$0.06010	\$0.00623	1572.93	1.57
Nebraska	\$0.05000	\$0.00698	1503.08	1.50
Nevada	\$0.09550	\$0.00723	1572.72	1.57
New Hampshire	\$0.09730	\$0.00917	779.27	0.78
New Jersey	\$0.08350	\$0.00835	712.79	0.71
New Mexico	\$0.07370	\$0.00659	1991.98	1.99
New York	\$0.11130	\$0.00895	907.16	0.91
North Carolina	\$0.06410	\$0.00863	1217.82	1.22
North Dakota	\$0.05470	\$0.00682	2386.31	2.39
Ohio	\$0.07230	\$0.00789	1778.97	1.78
Oklahoma	\$0.05710	\$0.00755	1726.04	1.73

Oregon	\$0.06570	\$0.00775	455.79	0.46
Pennsylvania	\$0.08190	\$0.00898	1216.21	1.22
Rhode Island	\$0.08340	\$0.00964	1071.00	1.07
South Carolina	\$0.06520	\$0.00992	914.82	0.91
South Dakota	\$0.06050	\$0.00693	1215.37	1.22
Tennessee	\$0.06310	\$0.00832	1266.01	1.27
Texas	\$0.06950	\$0.00757	1471.64	1.47
Utah	\$0.05380	\$0.00539	2120.81	2.12
Vermont	\$0.10870	\$0.00778	6.94	0.01
Virginia	\$0.05720	\$0.00920	1210.54	1.21
Washington	\$0.06240	\$0.00669	359.93	0.36
West Virginia	\$0.05450	\$0.00734	1988.03	1.99
Wisconsin	\$0.06450	\$0.00822	1712.92	1.71
Wyoming	\$0.05480	\$0.00469	2277.50	2.28

**Natural Gas Emissions Factor**

52.791 kg CO<sub>2</sub> / MMBtu

0.053 kg CO<sub>2</sub> / kBtu

0.116 lbs CO<sub>2</sub> / kBtu