14. LEED

Overview

The U.S. Green Building Council's (USGBC) LEED-EB checklist was completed to determine whether achieving LEED-EB silver certification is feasible for the BOE headquarters building. It is estimated that the minimum number of 43 points can be attained for silver certification. The majority of feasible points for the building pertain to Energy & Atmosphere, Materials & Resources, and Indoor Environmental Quality.

Completing the LEED-EB checklist is a preliminary and cursory step to determine if a project can feasibly attain LEED certification. The LEED certification process requires project registration, registration fee payment, and the completion of templates and calculations in order to fulfill credit requirements.

It is unlikely that a significant amount of points for the Sustainable Sites category will be achieved. To achieve Water Efficiency points "low-flow" plumbing fixtures, water control devices and sub-metering should be installed. The cost of these items for the entire building can be significant.

In order to achieve silver certification, metering devices will most likely need to be installed on ventilation equipment and main water lines. The most difficult prerequisite to meet will be Energy & Atmosphere Prerequisite 2 for Minimum Energy Efficiency Performance. Per this prerequisite, the building must achieve an EPA energy performance rating of at least 69 or demonstrate energy efficiency at least 19% better than the national average for similar office buildings using ENERGY STAR Portfolio Manager software.

Several upgrades to improve energy efficiency are recommended in the Mechanical section of this report. Also, it was reported to Stantec that the building is currently participating in an ENERGY STAR program to reduce energy costs. The proposed upgrades and current participation in the ENERGY STAR program will help to attain LEED points.

Solar Energy Analysis

Stantec performed a cursory review of the possibility of providing an array of photovoltaic panels on the 4th level of the parking garage. A 4500 sq.ft. array with a southern exposure would generate 33.8 kilowatts of electric power. The estimated cost for the array is $253,800. The estimated payback without SMUD rebates is over 30 years.

LEED for Existing Buildings: Operations & Maintenance
Registered Project Checklist

Project Name: BOE Headquarters

Project Address: 450 N Street, Sacramento, CA

Yes	?	No		
43	2		**Project Totals** (Pre-Certification Estimates)	92 Points
SILVER			**Certified**: 34-42 points **Silver**: 43-50 points **Gold**: 51-67 points **Platinum**: 68-92 points	

Yes	?	No			
3			**Sustainable Sites**		12 Points
			Credit 1	**LEED Certified Design and Construction**	1
			Credit 2	**Building Exterior and Hardscape Management Plan**	1
			Credit 3	**Integrated Pest Mgmt, Erosion Control, and Landscape Mgmt Plan**	1
2			Credit 4	**Alternative Commuting Transportation**	1 to 4
				Credit 4.1 10% Reduction	1
			-->	Credit 4.2 25% Reduction	2
				Credit 4.3 50% Reduction	3
				Credit 4.4 75% Reduction or greater	4
			Credit 5	**Reduced Site Disturbance**, Protect or Restore Open Space	1
			Credit 6	**Stormwater Management**	1
			Credit 7.1	**Heat Island Reduction**, Non-Roof	1
			Credit 7.2	**Heat Island Reduction**, Roof	1
1			Credit 8	**Light Pollution Reduction**	1

LEED for Existing Buildings: Operations & Maintenance
Registered Project Checklist

Yes	?	No			
5			**Water Efficiency**		**10 Points**
Yes			Prereq 1	**Minimum Indoor Plumbing Fixture & Fitting Efficiency**	Required
1			Credit 1.1	**Water Performance Measurement**, Whole Building Metering	1
1			Credit 1.2	**Water Performance Measurement**, Submetering	1
1			Credit 2	**Additional Indoor Plumbing Fixture and Fitting Efficiency**	1 to 3
			--> Credit 2.1	10% Reduction	1
			Credit 2.2	20% Reduction	2
			Credit 2.3	30% Reduction	3
1			Credit 3	**Water Efficient Landscaping**	1 to 3
			--> Credit 3.1	50% Reduction	1
			Credit 3.2	75% Reduction	2
			Credit 3.3	100% Reduction	3
1			Credit 4.1	**Cooling Tower Water Mgmt**, Chemical Management	1
			Credit 4.2	**Cooling Tower Water Mgmt**, Non-Potable Water Source Use	1

LEED for Existing Buildings: Operations & Maintenance
Registered Project Checklist

Yes	?	No			
12			Energy & Atmosphere		30 Points
Yes			Prereq 1	**Energy Efficiency Best Management Practices**	Required
Yes			Prereq 1	**Minimum Energy Efficiency Performance**	Required
Yes			Prereq 1	**Refrigerant Management,** Ozone Protection	Required

***NOTE for EAc1:** All LEED for Existing Building projects registered after June 26th, 2007 are required to achieve at least two (2) points under EAc1.

2			Credit 1	**Optimize Energy Efficiency Performance**	1 to 15
				ENERGY STAR Rating: 65 / Alternative Score: 15% Above Nat'l Average	Required
			Credit 1.1	ENERGY STAR 67 / Alternative Score: 17% Above Average	1
			--> Credit 1.2	ENERGY STAR 69 / Alternative Score: 19% Above Average	2
			Credit 1.3	ENERGY STAR 71 / Alternative Score: 21% Above Average	3
			Credit 1.4	ENERGY STAR 73 / Alternative Score: 23% Above Average	4
			Credit 1.5	ENERGY STAR 75 / Alternative Score: 25% Above Average	5
			Credit 1.6	ENERGY STAR 77 / Alternative Score: 27% Above Average	6
			Credit 1.7	ENERGY STAR 79 / Alternative Score: 29% Above Average	7
			Credit 1.8	ENERGY STAR 81 / Alternative Score: 31% Above Average	8
			Credit 1.9	ENERGY STAR 83 / Alternative Score: 33% Above Average	9
			Credit 1.10	ENERGY STAR 85 / Alternative Score: 35% Above Average	10
			Credit 1.11	ENERGY STAR 87 / Alternative Score: 37% Above Average	11
			Credit 1.12	ENERGY STAR 89 / Alternative Score: 39% Above Average	12
			Credit 1.13	ENERGY STAR 91 / Alternative Score: 41% Above Average	13
			Credit 1.14	ENERGY STAR 93 / Alternative Score: 43% Above Average	14
			Credit 1.15	ENERGY STAR 95+ / Alternative Score: 45%+ Above Average	15

10			Energy & Atmosphere, continued		
6			**Existing Building Commissioning**		
2			Credit 2.1	**Investigation and Analysis**	2
2			Credit 2.2	**Implementation**	2
2			Credit 2.3	**Ongoing Commissioning**	2
2			**Performance Measurement**		
1			Credit 3.1	**Building Automation System**	1
1			Credit 3.2-3.3	**System Level Metering**	1 to 2
			--> Credit 3.2	40% Metered	1
			Credit 3.3	80% Metered	2
2			**Other**		
			Credit 4	**Renewable Energy**	1 to 4
			Credit 4.1	On-site 3% / Off-site 25%	1
			Credit 4.2	On-site 6% / Off-site 50%	2
			Credit 4.3	On-site 9% / Off-site 75%	3
			Credit 4.4	On-site 12% / Off-site 100%	4
1			Credit 5	**Refrigerant Management**	1
1			Credit 6	**Emissions Reduction Reporting**	1

LEED for Existing Buildings: Operations & Maintenance
Registered Project Checklist

Yes	?	No				
10			Materials & Resources			14 Points
Yes			Prereq 1	**Sustainable Puchasing Policy**		Required
Yes			Prereq 2	**Solid Waste Management Policy**		Required
6			**Sustainable Purchasing**			
2			Credit 1	**Ongoing Consumables**		1 to 3
				Credit 1.1	40% of Purchases	1
			-->	Credit 1.2	60% of Purchases	2
				Credit 1.3	80% of Purchases	3
1			Credit 2.1	**Durable Goods,** Electric		1
			Credit 2.2	**Durable Goods,** Furniture		1
1			Credit 3	**Facility Alterations and Additions**		1
1			Credit 4	**Reduced Mercury in Lamps**		1 to 2
			-->	Credit 4.1	90 pg/lum-hr	1
				Credit 4.2	70 pg/lum-hr	2
1			Credit 5	**Food**		1
4			**Solid Waste Management**			
1			Credit 6	**Waste Stream Audit**		1
1			Credit 7	**Ongoing Consumables**		1 to 2
			-->	Credit 7.1	50% Waste Diversion	1
				Credit 7.2	70% Waste Diversion	2
1			Credit 8	**Durable Goods**		1
1			Credit 9	**Facility Alterations and Additions**		1

LEED for Existing Buildings: Operations & Maintenance
Registered Project Checklist

Yes	?	No			
12			**Indoor Environmental Quality**		**19 Points**
Yes			Prereq 1	**Outdoor Air Introduction and Exhaust Systems**	Required
Yes			Prereq 2	**Environmental Tobacco Smoke (ETS) Control**	Required
Yes			Prereq 3	**Green Cleaning Policy**	Required
4			**IAQ Best Management Practices**		
1			Credit 1.1	**IAQ Management Program**	1
1			Credit 1.2	**Outdoor Air Delivery Monitoring**	1
			Credit 1.3	**Increased Ventilation**	1
1			Credit 1.4	**Reduce Particulates in Air Distribution**	1
1			Credit 1.5	**Facility Alterations and Additions**	1
4			**Occupant Comfort**		
1			Credit 2.1	**Occupant Survey**	1
1			Credit 2.2	**Occupant Controlled Lighting**	1
1			Credit 2.3	**Thermal Comfort Monitoring**	1
1			Credit 2.4-2.5	**Daylight and Views**	1 to 2
			--> Credit 2.4	50% Daylight / 45% Views	1
			Credit 2.5	75% Daylight / 90% Views	2
5			**Green Cleaning**		
1			Credit 3.1	**High Performance Cleaning Program**	1
1			Credit 3.2-3.3	**Custodial Effectiveness Assessment**	1 to 2
			--> Credit 3.2	Score of ≤ 3	1
			Credit 3.3	Score of ≤ 2	2
1			Credit 3.4 -3.6	**Sustainable Cleaning Products and Materials**	1 to 3
			--> Credit 3.4	30% of Purchases	1
			Credit 3.5	60% of Purchases	2
			Credit 3.6	90% of Purchases	3
			Credit 3.7	**Sustainable Cleaning Equipment**	1
			Credit 3.8	**Entryway Systems**	1
1			Credit 3.9	**Indoor Integrated Pest Management**	1

Yes	?	No			
1	2		**Innovation in Operations**		**7 Points**
			Credit 1.1	**Innovation in Operations:** Provide Specific Title	1
			Credit 1.2	**Innovation in Operations:** Provide Specific Title	1
			Credit 1.3	**Innovation in Operations:** Provide Specific Title	1
			Credit 1.4	**Innovation in Operations:** Provide Specific Title	1
1			Credit 2	**LEED® Accredited Professional**	1
	2		Credit 3	**Documenting Sustainable Building Cost Impacts**	2