

Agnews Campus Sustainability Options Part 2

September 28, 2017

Larry Adams, Director School Bond Projects

Michal Healy, Director Facility Development and Planning

Rosiella Defensor, Agnews Campus Project Manager

Background

The Agnews Campus project will have a significant impact on the environment over its lifecycle: construction, operation, maintenance, de-commissioning. How do we manage that impact?

Critical Questions:

- What are the goals?
- What guides decisions and actions?
- How are results verified and validated?
- How are achievements communicated?

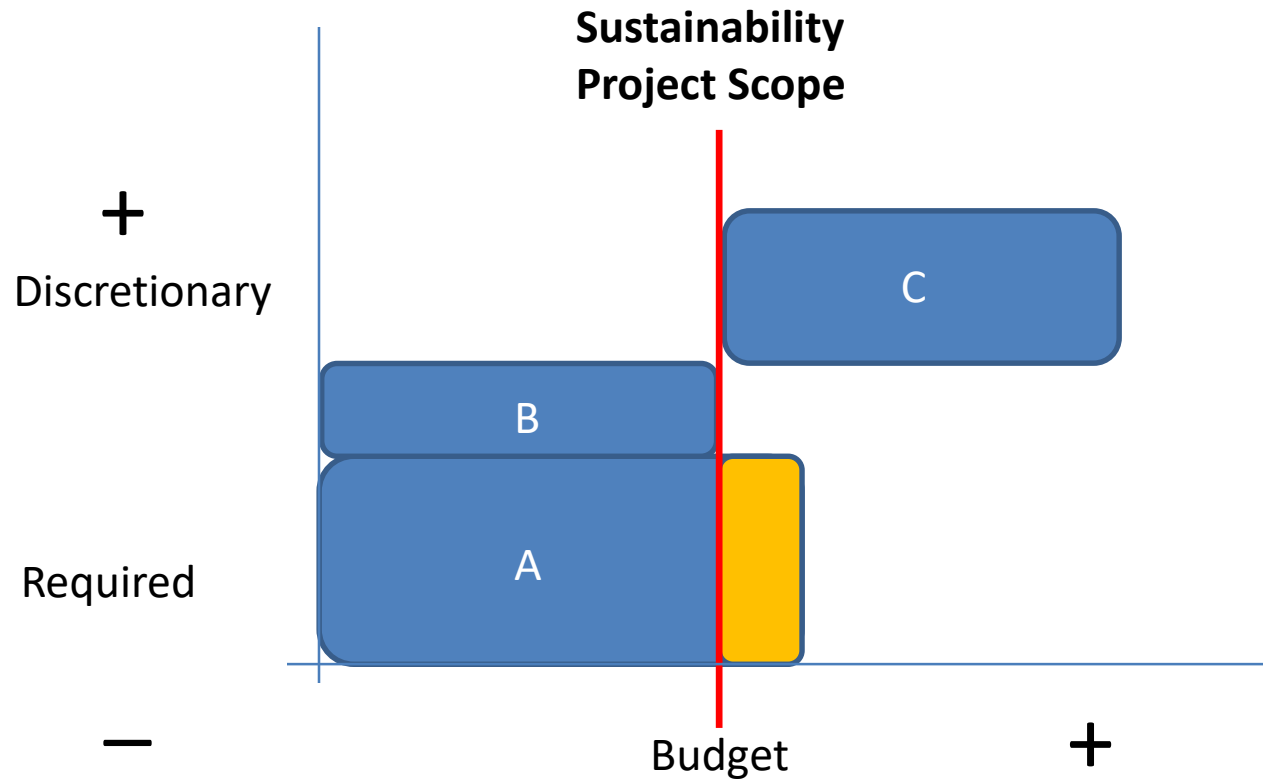
Background

The Agnews Campus project will have a significant impact on the environment over its lifecycle: construction, operation, maintenance, de-commissioning.

Perspectives:

- Global
- Regional
- Local
- Organizational (District)
- Personal

Background



A = Code Compliance
B = Beyond Code, within Budget
C = Beyond Code, above Budget

Regulating Agencies

- Division of the State Architect (DSA)
 - California Building Code – Title 24
 - Uniform Plumbing Code
 - Uniform Mechanical Code
 - California Energy Code
 - California Green Code (CAL Green)
- Department of Toxic Substances Control (DTSC)
- City of San Jose
- Santa Clara Valley Water District
- California State Water Resources Control Board
- Bay Area Air Quality Management District

Rating Organizations

- International Living Future Institute
Living Building Challenge, Zero Net Energy
- U.S. Green Building Council
LEED Leadership in Energy and Environmental
Design: v.4 Building Design and Construction
- Collaborative for High Performance Schools
2014 CA-CHPS



Living Building Challenge (LBC)

- A PHILOSOPHY, CERTIFICATION AND ADVOCACY TOOL FOR PROJECTS TO MOVE BEYOND MERELY BEING LESS BAD AND TO BECOME TRULY REGENERATIVE.
- Seven Imperatives - “Petals”
 - Place
 - Water
 - Energy
 - Health & Happiness
 - Materials
 - Equity
 - Beauty



LBC: Three Levels of Certification

- Full Living Certified
 - Meet requirements in all 20 imperative categories
- Petal Certified
 - Meet requirements in at least 6 categories
- Net Zero Energy Certified
 - Meet some requirements and produce 100% of energy needs by on-site renewable energy (no combustion).
 - Certification is granted after 12 months of occupancy to verify design goals are met.

Living Building Challenge Costs

- LBC Certification: \$2,900
- Additional soft costs: unknown
- Construction Costs: unknown
- Net Zero Energy – design the campuses to be very energy efficient – then add renewable energy sources.

LEED®

Leadership in Energy and Environmental Design

The most widely used and recognized green building rating system in the world. Available for virtually all building, community and home project types, LEED provides a framework to create healthy, highly efficient and cost-saving green buildings.



CERTIFIED
40 - 49 POINTS



SILVER
50 - 59 POINTS



GOLD
60 - 79 POINTS



PLATINUM
80+ POINTS

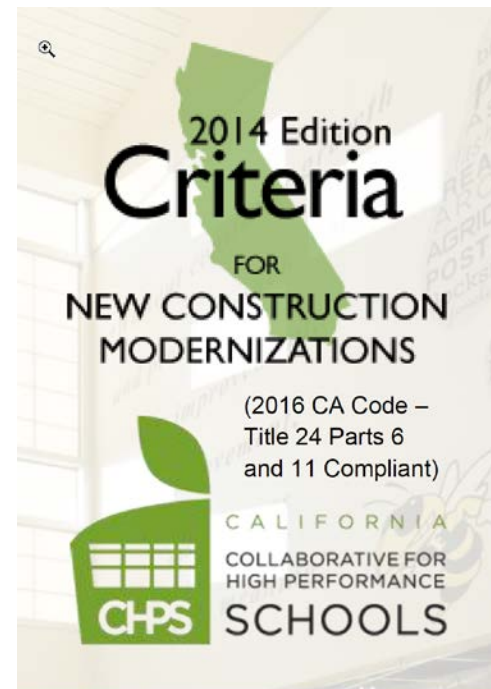
CHPS

Collaborative for High Performance Schools

A national movement to improve student performance and the entire educational experience by building the best possible schools. To achieve this goal, CHPS maintains the nation's most authoritative criteria for building energy efficient, cost effective schools.

Three priority outcomes, in order of importance:

1. Maximize the health and performance of students and staff;
2. Conserve energy, water and other resources in order to save precious operating dollars;
3. Minimize material waste, pollution and environmental degradation created by a school.



CHPS

Collaborative for High Performance Schools

Points based system.

250 total possible points.

110 minimum required for new school - including prerequisite points.



Self Certification



3rd Party Certification
110 – 159 points



160 + points

Current Sustainability Strategy

LPA believes strongly that every project can be sustainable regardless of budget and regardless of whether the District desires to pursue formal certification of the project through a Leadership in Energy and Environmental Design (LEED) or Collaborative for High Performance Schools (CHPS) program. Following is a list of sustainable design strategies that we plan to implement into the project as “best practices” including some that are appropriate and may be implemented within the District-established budget and upon District agreement, based upon our understanding of the project programmatic and functional needs. We have formatted the list following the CHPS New Project Scorecard 2014 format.

Current Sustainability Strategy

1. Integration and Innovation

- Implement an Educational Display and/or Demonstration Area to inform students, staff and visitors about the sustainable design features of the campus

2. Indoor Environmental Quality (IEQ)

- Provide appropriate ventilation and outdoor air circulation / fresh air throughout.
- Control pollutants and chemicals inside the buildings by using walk off mats at entrances, ventilating/flushing the building prior to occupancy, and installing carbon monoxide monitors throughout.
- Preventing mold growth by using mold-resistant building materials, and providing positive drainage away from buildings.
- Use low-VOC emitting materials.
- Provide appropriate air conditioning and heating systems with individualized controls.
- Incorporate operable windows for additional individualized control and ventilation.
- Design windows and skylights to provide views and daylighting with shades for individualized control of glare.
- Provide high-performance lighting systems and dimming controls.
- Design spaces for proper acoustics to control reverberation (echo) and ensure speech intelligibility.

3. Energy

- Design for superior energy efficiency (typically 25% better than Title 24 code baseline) utilizing high- performance HVAC and lighting systems with Energy Management System controls, greater than minimum insulation values in exterior walls and roofs and high-performance glass at windows.
- Provide infrastructure for future solar / PV systems; make solar-ready.
- Evaluate the use of Building Monitoring Systems to automatically shed loads (shut down systems) based upon demand at peak energy usage times.
- Install electric vehicle charging stations.

Current Sustainability Strategy

4. Water

- Reduce potable water consumption utilizing low-flow plumbing fixtures.
- Reduce irrigation water consumption by providing synthetic turf play fields, and drought-tolerant plant material in ornamental locations.

5. Sites

- Collect and treat storm water before it is discharged offsite.
- Provide bicycle parking for staff and students.
- Reduce heat islands utilizing “cool” roofs, and shading parking lots and other hard surface areas.

6. Materials and Waste Management

- Store and collect recyclables throughout the campus.
- Divert waste during construction from landfills.
- Utilize materials with recycled content, certified wood, or rapidly-renewable content.

7. Operations and Metrics

- Train all appropriate staff on the operation and maintenance of building systems.
- Monitor and track the performance of buildings for energy and water use.

Current Sustainability Strategy

Collaborative for High Performance Schools (CHPS)

New Project Scorecard: 2014 CA-CHPS Criteria™

School Name: AGNEWS K12 CAMPUS

Project # 17035.10

Expected Completion: Aug. 2020 (ES+MS); Aug. 2021 (HS P1); Aug. 2022 (HS All)

Current Phase: Schematic Design

School District: Santa Clara Unified School District

Website:

School Address: 3600 Zanker Road

City: San Jose

State: CA

Zip: 95134

School Contact: Rosiella Defensor, SCUSD

Phone: (408) 423-3244

E-mail: rdefensor@scusd.net

Student Capacity: 3200

Notes:

Approximate Square Feet: 434,704

Verification

Is this the final CHPS Scorecard? No

Registered Principal Architect (Signature)

Project Manager (Signature)

David A. Eaves, AIA, Associate/Managing Director

Name, Title, Date (Please print)

Name, Title, Date (Please print)

128 points targeted of
250 points possible

Use this scorecard to track expected scores. Note that prerequisites have points associated with them even though they are required. This enables project teams to talk more meaningfully about the effort being put into each section of the Criteria. Prerequisite point columns are also highlighted for reference. Mark each credit as ready for review by using the appropriate column for each phase of the review.

Key: C - CAL Green Mandatory Measures; T - Title 24 Energy Standards; P - Prerequisite; PS - CHPS Plan Sheet Required; CD - Construction Documents Required; A - Attachment Required

Criteria	Title	Prerequisite	Possible Pts	CAL Green / Title 24	Points Targeted	Points Claimed	Responsible Team Member	Design Review Requirements	Ready for Design Review	Construction Review Requirements	Ready for Construction Review	Performance Review Requirements	Ready for Performance Review	Annotation
Total			250		128	0								
Integration and Innovation Subtotal			20		5	0								
II 1.0	Integrated Design	P	1		1		team	CD			A			Conduct 2 Integrated Design team meetings (2nd meeting at start of CD's)
II 1.1	Enhanced Integrated Design		1		1		team		A					Use BIM for project design
II 2.1	District Level Commitment		2		1		SCUSD		A					District to pass board resolution
II 3.1	School Master Plan		1		0		-		A					
II 4.1	High Performance Transition Plan		2		0		-		A		A			
II 5.0	Educational Display	P	1		1		A	CD			A			Permanent display describing high perform. features of the project design. Must be in prominent location-lobby?
II 6.1	Educational Integration		2		0		SCUSD				A			District provide letter stating CHPS outreach or CHPS program in School, 15 students identified as "CHPS champions"
II 7.1	Demonstration Area		1		1		team/SCUSD	CD			A			Create demonstration areas for 3/5 major CHPS categories. Interactive kiosk, meters, illustrations, murals, videos

Current Sustainability Strategy

Criteria	Title	Prerequisite	Possible Pts	CAL Green / Title 24	Points Targeted	Points Claimed	Responsible Team Member	Design Review Requirements	Ready for Design Review	Construction Review Requirements	Ready for Construction Review	Performance Review Requirements	Ready for Performance Review	Annotation
II 8.1	Climate Change Action / Carbon Footprint Reporting		3		0		-		A		A			Develop Greenhouse gas inventory and reduction strategies (1). Develop Climate Action Plan (1)
II 9.1	Crime Prevention Through Environmental Design		1		0		team/SCUSD		A		A			Crime Prevention workshop at SD with CPTED professional
II 10.1	Innovation (CHPS Verified Projects only)		4		0		-	VARIES		VARIES				Possible if this is a CHPS verified project
II 11.1	District-Wide Sustainability Planning		1		0		-							Requires claiming of credits II2.1 and II8.1.2
Indoor Environmental Quality Subtotal			82		57	0								
EQ 1.0	HVAC Design - ASHRAE 62.1	P	10	C	10		M	PS1		X				
EQ 1.1	Enhanced Filtration		2		0		-	PS1	CD	X		A		LPA does not recommend MERV-15 filters.
EQ 1.2	Dedicated Outdoor Air System		3		0		-	PS1	CD			A		
EQ 2.1	Pollutant and Chemical Source Control		2		2		A/M		CD	A		A		2 points = 3 strategies listed
EQ 3.0	Outdoor Moisture Management	P	1	C	1		C/A/M/I							CAL Green 5.407 - drain away from building; irrigation does not spray on building
EQ 3.1	Outdoor Moisture Management		0		0		-		CD			A		
EQ 4.1	Ducted Returns		2		0		-	PS1	CD	X				Current conceptual design approach uses plenum return; ducted return is costly
EQ 5.0	Construction Indoor Air Quality Management	P	3	C	3		A/CM	PS1	CD			A		specifications
EQ 5.1	Enhanced Construction Indoor Air Quality Management		3		1		A/CM							specifications
EQ 6.1	Post Construction Indoor Air Quality		1		1		A/CM		CD			A		specifications
EQ 7.0	Low Emitting Materials	P	2	C	2		A/I	PS	CD		PS	A		
EQ 7.1	Additional Low Emitting Materials		6		5		A/I	PS	CD		PS	A		1 pt. per category: adhesives + sealants, flooring, composite wood, furniture, paints + coatings, ceiling and wall systems
EQ 8.1	Low Radon		1		1		SCUSD	PS1	CD			A		Assess school site and measure radon
EQ 9.0	Thermal Comfort - ASHRAE 55	P	4		4		M	PS1	CD	X				Comply with ASHRAE 55.
EQ 10.1	Individual Controllability		2		2		M		CD	X		A		Independent thermostat in each CR. See sheet M3.01-M3.04.
EQ 10.2	Controllability of Systems		2		2		SCUSD		CD			A		min. (1) t-stat + (1) operable window in each CR
EQ 11.0	Daylighting: Glare Protection	P	4	T	4		A/I		CD	A		A		blinds
EQ 11.1	Daylight Availability		7		2		Ltg.	PS	CD	A		A		photosensor based lighting systems; 2 points represents >20fc avg. for 75% of CR's
EQ 12.1	Views		3		1		A	PS	CD					views for 70% (1) or 80%-90% (2) of combined floor area of CR's
EQ 13.1	Electric Lighting Performance		2		2		Ltg.		CD	A				
EQ 13.2	Superior Electric Lighting Performance		7		7		Ltg.		CD			A		
EQ 14.0	Acoustical Performance	P	5	C	5		A/I/M	PS	CD	A		A		
EQ 14.1	Enhanced Acoustical Performance		4		0		-	PS	CD	A		A		A
EQ 15.1	Low-EMF Wiring		1		1		E		CD			A		correct wiring to avoid ELF/EMF
EQ 15.2	Low-EMF Best Practices		2		0		SCUSD		CD	A		A		district resolution required
EQ 16.1	Thermal Displacement Ventilation		2		0		-		CD			A		
EQ 17.1	Mercury Reduction		1		1		Ltg.							low mercury fluorescent or mercury-free LED

Current Sustainability Strategy

Criteria	Title	Prerequisite	Possible Pts	CAL Green / Title 24	Points Targeted	Points Claimed	Responsible Team Member	Design Review Requirements	Ready for Design Review	Construction Review Requirements	Ready for Construction Review	Performance Review Requirements	Ready for Performance Review	Annotation
Energy Subtotal			69		30	0								
EE 1.0	Energy Performance	P	8	T	8		M/E	CD	A	X				energy must be 5% less than standard 2013 T24 compliant baseline.
EE 1.1	Superior Energy Performance		40		12		A/M/E	CD	A					target 25% better than T24 total; 12 points reflects add'l 20% better than T24 over EE1.0
EE 2.0	Zero Net Energy Ready	P	0	T	0		A/M	CD						solar-ready roof per T24 requirement
EE 2.1	Zero Net Energy Capable		2		0		SCUSD							requires solar system design to offset 100% of annual energy use; LPA to perform net zero study
EE 3.0	Commissioning	P	4	C	4		A/M/SCUSD	CD	A		A			specifications; District CxA
EE 3.1	Additional Commissioning Qualifications		1		1		SCUSD	CD	A		A			CxA required to be CA licensed architect or engineer
EE 3.2	Building Envelope Commissioning		2		0		-	CD	A		A			commission building envelope
EE 4.0	Environmentally Preferable Refrigerants	P	0	C	0		M	CD		X				no CFC containing HVAC refrigerant.
EE 4.1	Environmentally Preferable Refrigerants		1		1		M			X				restricted HCFC use; prefer GWP refrigerants.
EE 5.0	Energy Management System	P	0	T	0		M			X				BMS must comply with T24.
EE 5.1	Energy Management System		2		2		M	CD		X				BMS must meet add'l requirements.
EE 5.2	Advanced Energy Management System and Sub metering		2		2		M	CD		X				BMS must support Automated Demand Mgt. + sub-metering.
EE 6.1	Natural Ventilation		3	T	0		-	PS	CD			A		meet T24, Section 120.1 requirements for natural ventilation in 90% of CR or 2 of 6 spaces
EE 6.2	Energy Conservation Interlocks		2		0		-			X				HVAC interlocks with exterior windows + doors.
EE 7.1	Low Carbon School		1		0		-	CD						do not use on-site natural gas consumption for space heating and water heating
EE 8.1	Electric Vehicle Charging		1		0		SCUSD							install charging stations for 2% of vehicles
Water Subtotal			22		19	0								
WE 1.0	Indoor Water Use	P	0	C	0		P	PS	CD			A		comply with CAL Green
WE 1.1	Minimum Reduction in Indoor Potable Water Use		4		4		P							meet more stringent plumbing fixture requirements
WE 2.0	Waste Water Reduction	P	2	C	2		P	PS	CD			A		comply with CAL Green
WE 2.1	Reduce Potable Water Use for Sewage Conveyance		2		2		P							reduce potable water use for sewage conveyance by additional 20% or 40%
WE 3.0	Irrigation and Exterior Water Budget	P	1		1		Irrig.							develop landscape water use budget
WE 3.1	Irrigation and Exterior Water Budget - Use Reduction		2		2		Irrig.	CD			A			for recreation fields only; do synthetic fields comply?
WE 4.1	Reduce Potable Water Use for Non-Recreational Landscaping		3		3		Irrig.	CD	A		A			reduce water use by additional 20% or 35% over baseline
WE 5.1	Reduce Potable Water Use for Recreational Landscaping		2		2		Irrig.	CD			A			for recreation fields only; do synthetic fields comply?
WE 6.1	Irrigation Systems Commissioning		3		3		Irrig.		A		A			create irrigation commissioning plan
WE 7.1	Water Management System		2		0		SCUSD	PS	CD					sub-metering + water management system (WMS) to monitor water use of all indoor and outdoor water uses
WE 8.1	Demonstration Rainwater Catchment		1		0		-	CD			A			

Current Sustainability Strategy

Criteria	Title	Prerequisite	Possible Pts	CAL Green / Title 24	Points Targeted	Points Claimed	Responsible Team Member	Design Review Requirements	Ready for Design Review	Construction Review Requirements	Ready for Construction Review	Performance Review Requirements	Ready for Performance Review	Annotation
Sites			Subtotal	23	8	0								
SS 1.0	Site Selection	P	2		2		SCUSD		A					meet CDE/Title 5 standards
SS 2.1	Environmentally Sensitive Land		2		1		SCUSD	PS	CD	A				review habitat issue for possible add'l point
SS 3.1	Minimize Site Disturbance		1		1		A/SCUSD	PS	CD					FAR 1.4 gross SF/building footprint; provide signage/stripping for carpools/vanpools/low-emitting vehicles for 5% of total spaces
SS 4.0	Construction Site Runoff Control and Sedimentation	P	1		1		CM		CD		A			construction credit
SS 5.1	Post Construction Stormwater Management		2		0		-	PS	CD		A			
SS 6.1	Central location		2		0		-	PS	A					within 1/2 mile of 8 basic services
SS 7.1	Located Near Public Transportation		1		1		A		A					within 1/8 mile of bus line
SS 8.1	Joint-Use of Facilities		1		0		SCUSD		CD	A				
SS 9.0	Bicycle Parking	P	0	C	0		L							comply with CAL Green
SS 9.1	Human-Powered Transportation		2		1		SCUSD	PS	CD		A			secure bicycle parking for 15% of students (1), work with city to provide safe bike lanes (1); safe routes to school
SS 10.1	Reduce Heat Islands - Landscaping and Sites		2		0		-		CD					credit applies to the entire school site
SS 11.1	Reduce Heat Islands - Cool Roofs and Green Roofs/Walls		2		1		A		CD		A			cool roof SRI 78 (1), green roof (1), green wall (1)
SS 12.0	Light Pollution Reduction	P	0	C	0		Ltg.							comply with CAL Green
SS 12.1	Avoid Light Pollution and Unnecessary Lighting		2		0		-		CD		A			must be calc'd for the entire school site
SS 13.1	School Gardens		2		0		SCUSD		CD	A	X	A		district to provide maintenance plan.
SS 14.1	Use Locally Native Plants for Landscape		1		0		-	PS	CD					
Materials and Waste Management			Subtotal	17	5	0								
MW 1.0	Storage and Collection of Recyclables	P	2	C	2		A/I		CD		A			provide means of recycling within each classroom and 1 per 20 employees in admin area
MW 2.0	Construction Site Waste Management	P	2	C	2		A/CM		CD		A			specifications; recycle/reuse/salvage 75% of non-hazardous materials
MW 2.1	Construction Site Waste Management		2		0		-		CD		A			specifications; recycle/reuse/salvage 90% of non-hazardous materials
MW 3.1	Single Attribute - Recycled Content		2		1		A/I		CD		PS	A		(1) specify 4 major materials from table 23, or (2) specify 8 major materials
MW 4.1	Single Attribute - Rapidly Renewable Materials		1		0		-		CD		PS	A		specify renewable materials for 50% by area for one of the following: flooring, casework, ceiling tile, wall covering
MW 5.1	Single Attribute - Certified Wood		1		0		-		CD		PS	A		50% of wood based materials by cost to be FSC - doors, casework, ?
MW 6.1	Single Attribute - Materials Reuse		1		0		-		CD		PS	A		salvage materials
MW 7.1	Multi-Attribute Materials Selection		2		0		-	PS	CD		PS	A		environmental product declarations for 10 products, refer to database
MW 8.1	Building Reuse - Exterior		2		0		-		CD		PS	A		maintain 50% of existing structure and shell
MW 9.1	Building Reuse - Interior		1		0		-		CD		PS	A		maintain 50% of existing non-structural elements
MW 10.1	Health Product Related Information Reporting		1		0		-		CD		PS	A		provide health product declaration for 20 permanently installed products from 5 manufacturers min.

Current Sustainability Strategy

Criteria	Title	Prerequisite	Possible Pts	CAL Green / Title 24	Points Targeted	Points Claimed	Responsible Team Member	Design Review Requirements	Ready for Design Review	Construction Review Requirements	Ready for Construction Review	Performance Review Requirements	Ready for Performance Review	Annotation
Operations & Metrics Subtotal			17		4	0								
OM 1.0	Facility Staff and Occupant Training	P	2		2		CM/CxA		CD			A		O&M training on all commissioned systems
OM 2.1	Post-Occupancy Transition		1		0		SCUSD		A			A		post occupancy survey, transition meeting and action items
OM 3.0	Performance Benchmarking	P	2		2		SCUSD		A			A		school to track energy use over time
OM 4.1	High Performance Operations		6		0		SCUSD		A			A		district to provide designate advocate, resource manager or operations report card.
OM 5.1	Systems Maintenance Plan		1		0		SCUSD					A		District to create school systems maintenance plan
OM 6.1	Indoor Environmental Management Plan		1		0		SCUSD					A		district to utilize US EPA's tools for schools program or equivalent indoor health and safety program
OM 7.1	Green Cleaning		1		0		SCUSD					A		green cleaning and maintenance
OM 8.1	Integrated Pest Management		1		0		SCUSD	PS				A		district to develop integrated pest management plan - least toxic approach to pests
OM 9.0	Anti-Idling Measures	P	0		0		SCUSD		CD			A		district to adopt no idling policy for school buses
OM 9.1	Additional Anti-Idling Measures		1		0		SCUSD		A					additional no idling policies and enforcement
OM 10.1	Green Power		1		0		SCUSD	PS				A		commit to purchase renewable energy certs

Current Sustainability Strategy

Specific Design Criteria (Requirements):

- Basis of Design
- Owner Requirements

Commissioning (required *):

- Requirements
- Design
- Construction
- Turn Over

Design Review:

- Schematic
- Design Development
- Construction Documents
- Post DSA Submittal

Procurement Strategy

Contractor Submittals

Inspection and Testing

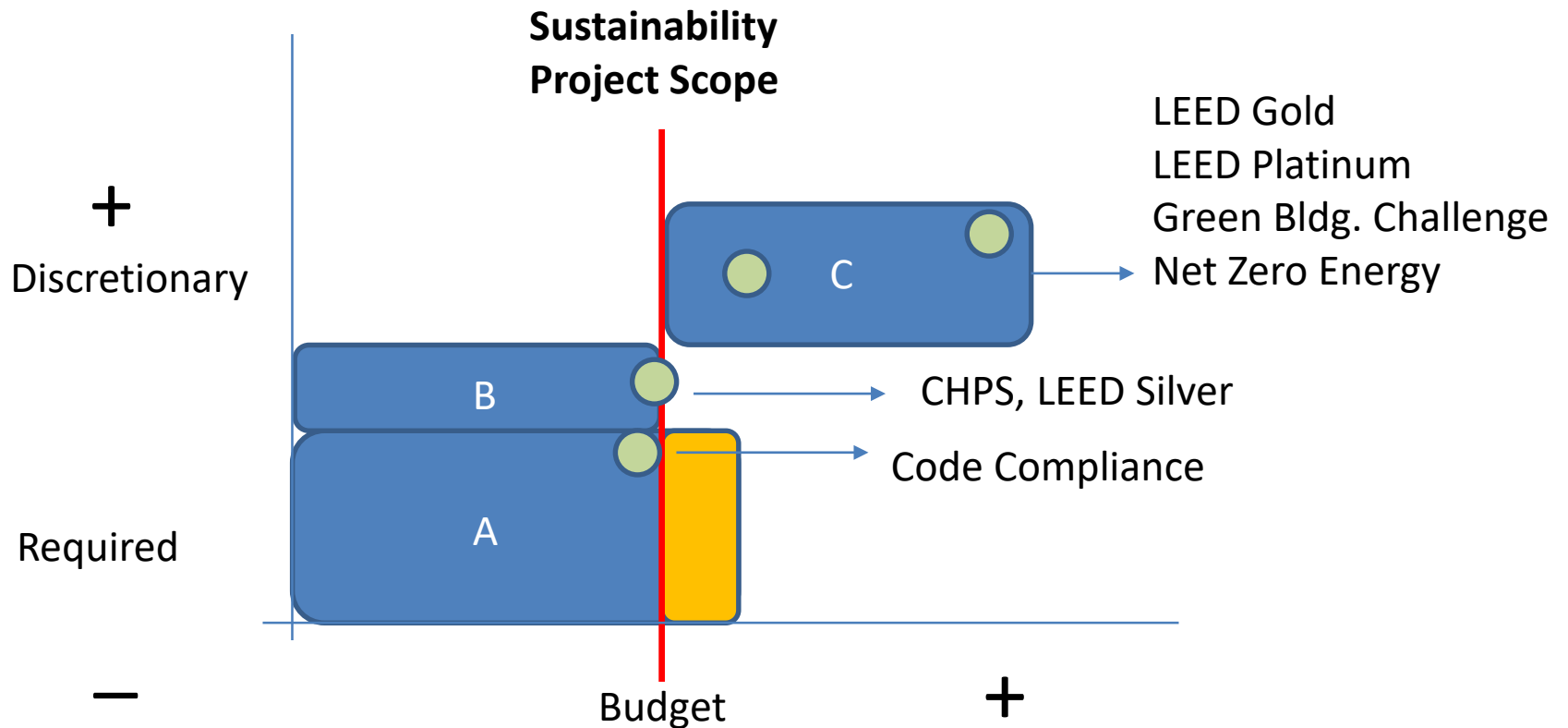
Final Inspection

Demonstration and Training

Turnover

Warranty Review

“A quality-oriented processes for achieving, verifying and documenting that the performance of facilities, systems and assemblies meets defined objectives and criteria.” ASHRAE, 2005



A = Code Compliance
 B = Beyond Code, within Budget
 C = Beyond Code, above Budget