

# CSU Program for Environmental Responsibility

June 22, 2009

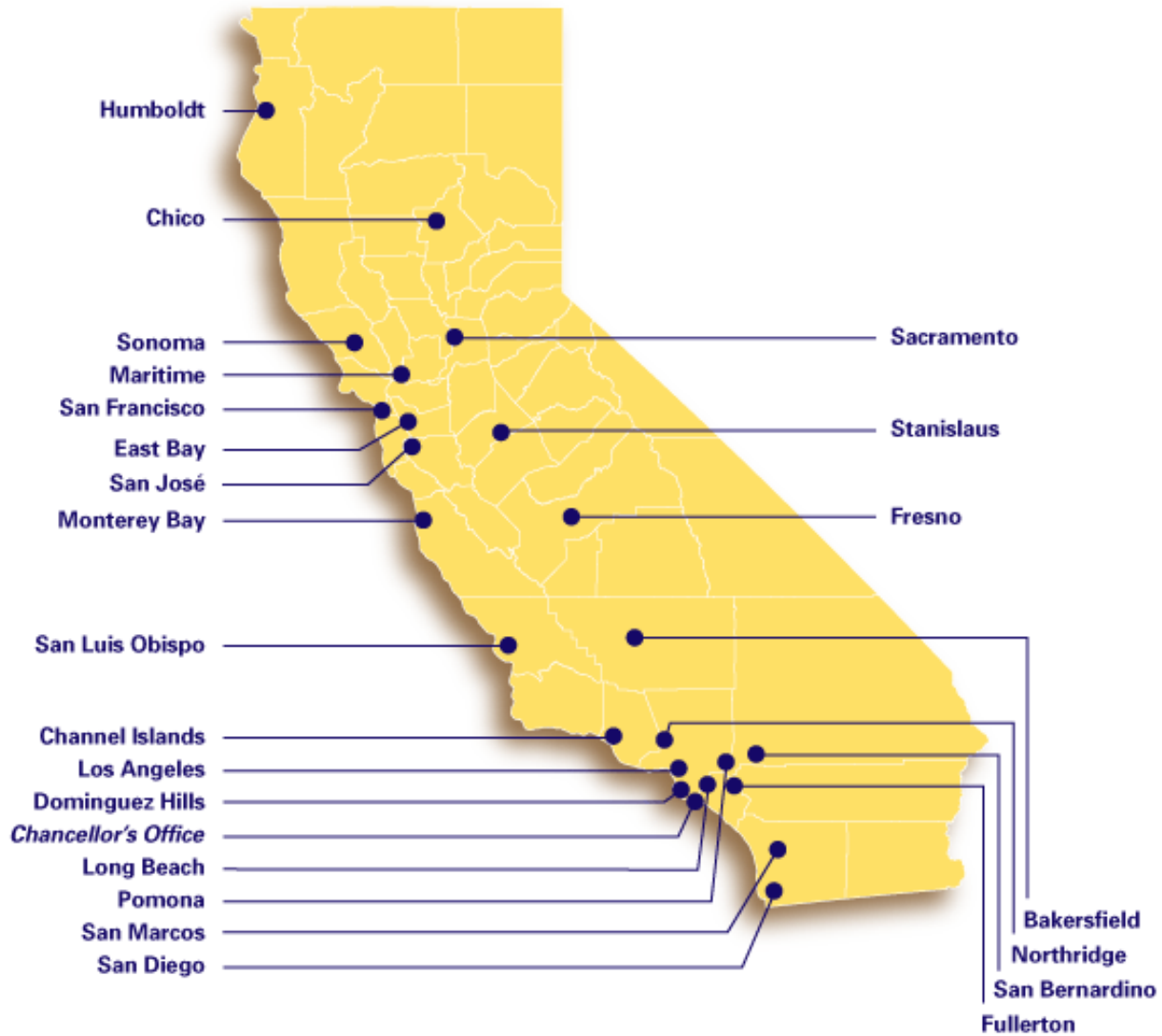
UC/CSU/CCC Sustainability Conference-UCSB

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## CSU Sustainability Policy

- Policy on Energy Conservation, Sustainable Building Practices, and Physical Plant Management
  - 1978-Initiated;1988-Updated; 2004-Updated
- 2005-Updated: Executive Order 987
  - Energy Conservation Goal
    - 5 year goal: 15% reduction by 2009/10;Baseline year: 2003/04
  - Energy Independence Goal
    - Self-generated energy capacity: 26 to 50 MW by 2014
      - Cogeneration: 24 to 40 MW; Renewable: 2 to 10 MW
  - Energy Conservation Methods
    - New Construction: Outperform Title 24 by 15%
      - New metric: Outperform by **20%** (established 2008)
    - Renovations: Outperform Title 24 by 10%
  - Develop CSU Sustainability Measurement System

# CSU Procedures

- 2004-05
  - Mechanical Review Board & Systems Reviews
  - Commissioning
    - Guidelines and Master Enabling Agreements
  - Life-Cycle Cost Analysis
  - Sustainability Advisory Committee
- 2007-08
  - Sustainability Website [www.calstate.edu/cpdc/sustainability](http://www.calstate.edu/cpdc/sustainability)
  - A/E Agreement-Fee Distribution
  - Building Information Modeling
  - 'Green 2-7'
  - Basis of Design Reports
  - Envelope Design

# Energy Procurement

<b>Co-Generation</b>	Existing: 26 megawatts installed (10 megawatts in development) Goal: 40 megawatts by 2014		
<b>On-Site Generation</b>	Fuel Cell:	CSU Northridge	1 megawatt
	Future:	4 Campuses: EB, LB, SB, SF	6 megawatt
<b>Renewable Energy</b>	Photo-Voltaics:	Chico State	.3 megawatts
		CSU Dominguez Hills	.6 megawatts
		CSU East Bay	1 megawatt
		Fresno State	1.18 megawatts
		Long Beach State	.4 megawatts
		CSU Northridge	.7 megawatts
		CSU Sacramento	.1 megawatts
		CSU San Bernardino	.3 megawatts
		San Diego State	.12 megawatts
		San Francisco State	.03 megawatts
	Cal Poly, San Luis Obispo	.175 megawatts	
	Sonoma State	.01 megawatts	
	Future:	15 Campuses	9.6 megawatts

# LEED Projects

**CSU Chico**

- Student Services
- Wildcat Activity Center
- Student Housing & Dining
- Natural History Museum

**CSU Fullerton**

- Recreation Center
- Student Housing
- Behavioral & Social Sciences
- Schatz Energy Center

**Humboldt State**

**CSU Long Beach**  
**CSU Los Angeles**

- Recreation Center
- LEED EB Portfolio Pilot Program
- Hydrogen Fueling Station
- Tanimura & Antle Library

**CSU Monterey Bay**  
**CSU Northridge**  
**CSU Sacramento**

- Performing Arts Center
- Rec Wellness Center
- Student Housing Phase 1
- Science II

**CSU San Bernardino**  
**San Diego State**

- Palm Desert Campus Phase 3
- Manchester Hall
- Aztec Center

**San Francisco State**  
**San Jose State**

- Performing Arts
- Moss Landing Marine Laboratory
- Student Health Center
- Student Union

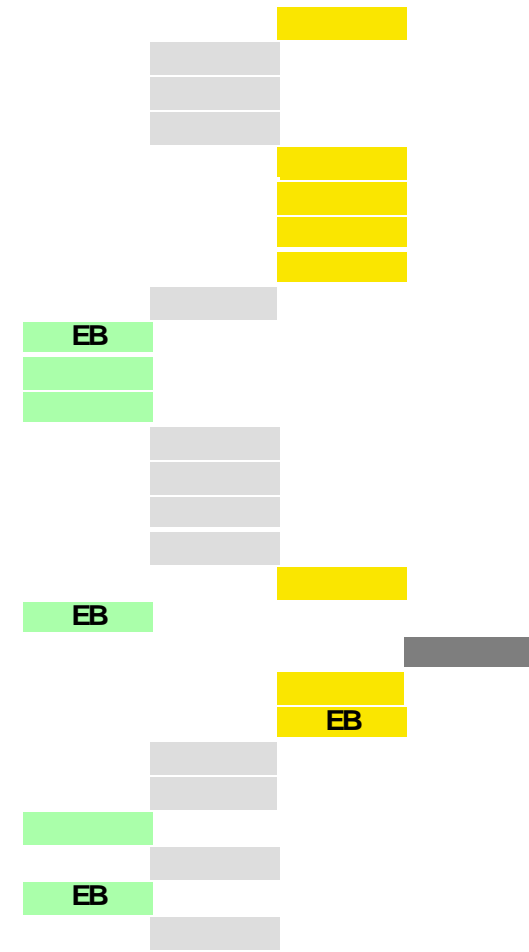
**Cal Poly San Luis Obispo**

- Poly Canyon Village-Housing
- Recreation Center
- Faculty Offices East

**CSU Stanislaus**

- Naraghi Hall of Science

**Certified Silver Gold Platinum**



# Program for Environmental Responsibility

## Mission Statement

The California State University Program for Environmental Responsibility, **CSU•PER**, is a **comprehensive program** that encourages and monitors **responsible decisions and actions** during integrated planning, design, construction and operations of state and nonstate capital projects on the 23 geographically diverse CSU campuses. It is a program to promote **responsible stewardship** of buildings and grounds in order to provide the **best learning, living, and working environments** possible on campuses while **minimizing ecological impacts**.

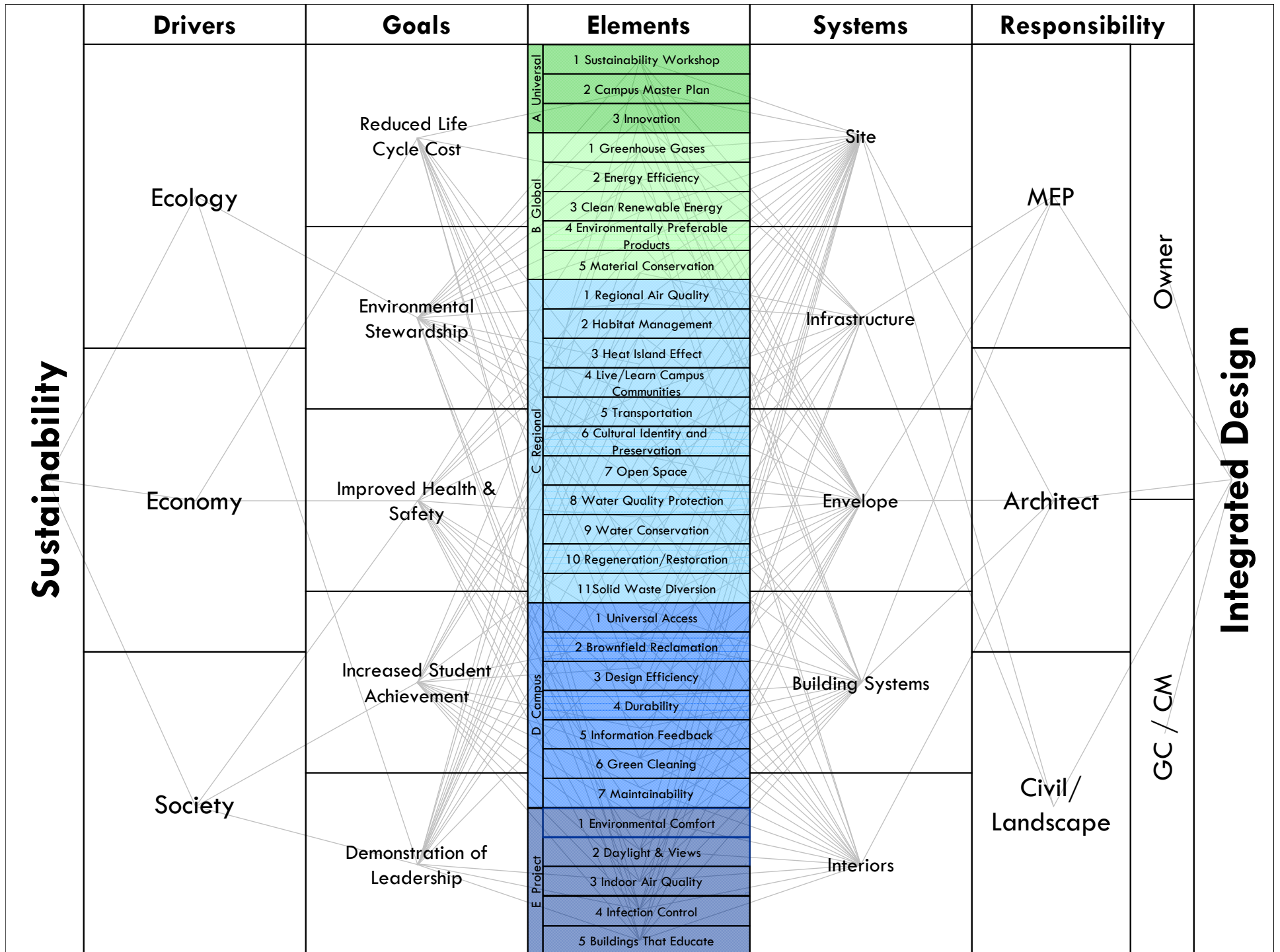
# Program for Environmental Responsibility

- Impacts to the CSU
  - CSU Policy
    - SUAM
    - EO 987
  - California State Codes
    - Title 24-Building Codes
    - AB 32 California Global Warming Solutions Act
    - AB 75 Waste Management
    - California Energy Code
  - California Green Building Code
  - President's Climate Commitment
  - Campus Policies
  - Zero Energy Buildings

# Program for Environmental Responsibility

## ■ Intent of the PER

- More than a rating system; it's about process for CSU personnel
- Exceeds LEED
- Balance economic, environmental and social considerations
- Early Use
- Sustainability Workshop
- Integrated Building Design
  - Iterative Process: Design, Construction & Operations
  - Collaborative/Team Coalition
  - Front Loaded
  - Whole-systems Thinking/Synergistic/Life-cycle Costing/Goal Oriented
  - Team Members
    - Owner-Building Committee/Design/General Contractor (CM@Risk)
  - Challenges
    - Broad team management/Front-loaded process
  - Successes
    - Cost-effective design/Whole-systems thinking/Inclusive



# Program for Environmental Responsibility

- Four Sections

- I. Implementation

- How the program is to be integrated into campus planning efforts

- II. Elements

- Identifies the 31 specific, strategic requirements, intentions, recommended strategies and verification benchmarks
    - Intent, Strategies, Verification, References

- III. Documentation and Verification

- Describes how to measure and verify results

- IV. Resources

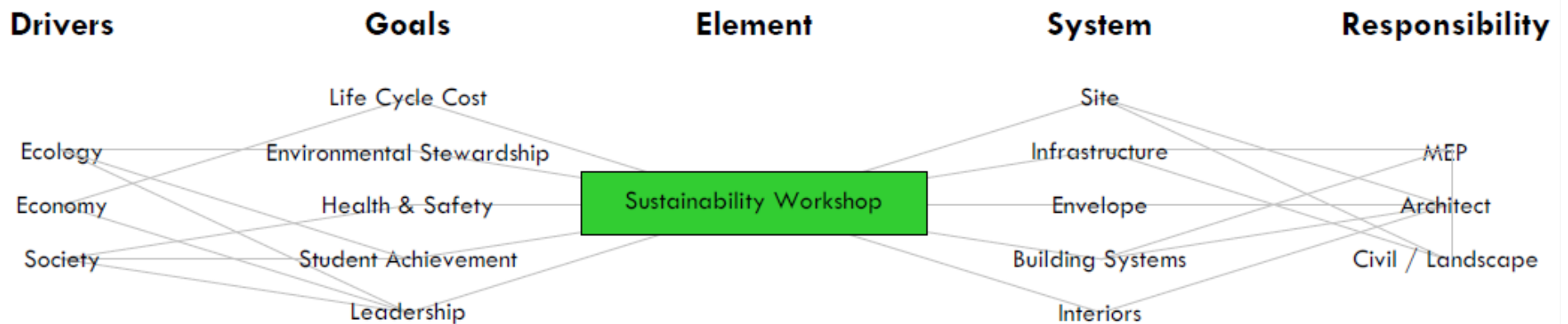
- Glossary of terms and supporting information

# I. Implementation

- Team based integrated development process
- ‘Whole-building’ as opposed to ‘systems based’
- Integrated sustainable measures
- Cost effective sustainable buildings
- Full range of campus projects
- PER Integrated Design Matrix

## II. Elements

### A.1 Sustainability Workshop



#### Intent

The **integrated design** approach is critical to achieving sustainable design and optimal building performance. This requires significant early phase team building and project planning, documented goal setting and prioritizing, preliminary **technical analysis**, and continuous coordination with all project team members.

# III. Documentation and Verification

## Project Summary

Project Name	
Project Type	<b>New Construction</b>
Campus	CSU Chancellor's Office
Job Number	
Project Contact	
Project Phase	Feasibility
Submittal Date	

Element	Campus Baseline	Achievable		Verification		
		Applicable to Project	Targeted	Achieved	PER Score	LEED Equivalent
A Universal	A.1 Sustainability Workshop	✓	✓			n/a
	A.2 Campus Master Plan	✓	1		0	n/a
	A.3 Innovation	✓	4		0	0
B Global	B.1 Greenhouse Gases	✓	2		0	0
	B.2 Energy Efficiency	✓	14		0	0
	B.3 Clean Renewable Energy	✓	4		0	0
	B.4 Environmentally Preferable Products	✓	7		0	0
	B.5 Material Conservation	✓	3		0	n/a

### III. Documentation and Verification

C Regional	C.1	Regional Air Quality	✓	1	0	0
	C.2	Habitat Management	✓	2	0	0
	C.3	Heat Island Effect	✓	2	0	0
	C.4	Live / Learn Campus Communities	✓	1	0	0
	C.5	Transportation	✓	5	0	0
	C.6	Cultural Identity and Preservation	✓	4	0	0
	C.7	Open Space	✓	1	0	0
	C.8	Water Quality Protection	✓	2	0	0
	C.9	Water Conservation	✓	5	0	0
	C.10	Regeneration / Restoration	✓	2	0	0
	C.11	Solid Waste Diversion	✓	2	0	0
D Campus	D.1	Universal Access	✓	1	0	n/a
	D.2	Brownfield Reclamation	✓	1	0	0
	D.3	Design Efficiency	✓	1	0	n/a
	D.4	Durability	✓	1	0	n/a
	D.5	Information Feedback	✓	1	0	n/a
	D.6	Green Cleaning	✓	1	0	n/a
	D.7	Maintainability	✓	1	0	n/a
E Project	E.1	Environmental Comfort	✓	4	0	0
	E.2	Light Quality	✓	2	0	0
	E.3	Indoor Air Quality	✓	9	0	0
	E.4	Infection Control	✓	1	0	n/a
	E.5	Buildings That Educate	✓	1	0	n/a

Score  
Certification Level

86
★★★★

0	0

## III. Documentation and Verification

### A.1 Sustainability Workshop

- Campus Baseline
- Targeted

Note: this Element represents the only **prerequisite** in PER. No verified PER points will be recorded until this prerequisite is documented.

Provide a brief narrative describing the Sustainability Workshop held.

Attach the following documents, as applicable:

- Sustainability workshop agenda.
- Workshop sign-in sheet.

### III. Documentation and Verification

- Photographs, audio recording, or video recording of the workshop(s).
- Owner's Project Requirements and/or workshop minutes/results.

**Verification**

Element verified by:

Applicable to Project:

Yes

Achieved:

No

PER Target:

✓

Verified PER Point:

LEED Equivalent:

n/a

Comments:

## IV. Resources

- Glossary
- PER/LEED Cross Reference
- PER Reference List
- PER Email Address: [PER@calstate.edu](mailto:PER@calstate.edu)
- CSU Sustainability Website
  - [www.calstate.edu/cpdc/sustainability](http://www.calstate.edu/cpdc/sustainability)

## IV. Resources

### PER / LEED® CROSS REFERENCE

PER		LEED-NC v2.2 Rating System™ Criteria		Exceeds LEED-NC requirements?	
A.1	Sustainability Workshop	IDc2	LEED Accredited Professional	Yes	No LEED-NC equivalent.
A.2	Campus Master Plan			Yes	No LEED-NC equivalent.
A.3	Innovation	IDc1	Innovation in Design	No	Similar to LEED-NC.
B.1	Greenhouse Gases	EAp3 EAc4	Fundamental Refrigerant Management Enhanced Refrigerant Management	Yes	Addresses on-site combustion efficiency, passive and active energy efficiency measures, reduced transportation, cogeneration. Ties Element to pending AB32 requirements.
B.2	Energy Efficiency	EAp1 EAp2 EAc1 EAc3 EAc5 SSc8	Fundamental Commissioning of the Building Energy Systems Minimum Energy Performance Optimize Energy Performance Enhanced Commissioning Measurement & Verification Light Pollution Reduction	Yes	Requires life cycle cost analysis and performance-based energy analysis. Addresses non-building energy-consuming systems, energy efficient equipment. Emphasizes the prioritization of passive over active strategies. Requires calculation of carbon emission reduction.
B.3	Clean Renewable Energy	EAc2 EAc6	On-Site Renewable Energy Green Power	Yes	Requires sub-metering of renewable energy systems. Requires demonstration of carbon emissions reduction. Requires consideration of aesthetic impacts of renewable energy systems.
B.4	Environmentally Preferable Products	MRc4.1 MRc4.2 MRc5.1 MRc5.2 MRc6 MRc7	Recycled Content: 10% Recycled Content: 20% Regional Materials: 10% Regional Materials: 20% Rapidly Renewable Materials Certified Wood	Yes	Requires comprehensive life cycle analysis of materials, rather than isolated characteristics. Also addresses FF&E items. Requires identification of alternative materials considered but not ultimately selected.

[www.calstate.edu/cpdc/sustainability](http://www.calstate.edu/cpdc/sustainability)

[www.calstate.edu](http://www.calstate.edu)

**CSU** The California State University

**HMC**  
Architects

[www.hmcarchitects.com](http://www.hmcarchitects.com)