



Pomona College

Green Building Standards

May 2010

*Sustainability Integration Office
Facilities and Campus Services*

POMONA COLLEGE
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DRAFT

The following standards apply to all capital projects, including new construction, renovations, remodels, and upgrades. Upon review, specific standards may be altered by recommendation of the President's Advisory Committee on Sustainability to the President, the Board of Trustees Facilities and Environment Committee, or other person(s) or committee(s) as appropriate.

New Construction/Major Renovation

The following standards apply to all new construction and major renovation of buildings (requiring replacement of mechanical, electrical, and plumbing systems and replacement of over 50% of non-shell areas).

Process

It is important to note that before engaging in any new construction or renovation project, the College is committed to fully assessing the need for construction activity to take place. Creative reuse of facilities and the extensive use of renovations in place of new construction have been a hallmark of Pomona's building activity and will continue to be emphasized as a sustainable strategy for space utilization.

- >> All projects must include relevant sustainable design/operations language in all RFPs where relevant, including architects, MEP consultants, commissioning agents, and general contractors.
- >> A representative of the Sustainability Integration Office must be included in the following project activities:
 - Project Team
 - Interview/selection process for Architect, General Contractor, and other major contractors/consultants
 - Initial sustainability workshop during project programming phase

Programming

- >> *Pomona College Campus Planning Guidelines* and *Pomona College Open Space and Landscape Guidelines* describe how the following elements apply to various sites and districts throughout campus. These guidelines must be reviewed as the project team determines the project's sustainability objectives and green building features:
 - Potential for energy reductions and other sustainability benefits in site design and programming
 - Applicability of roof-mounted renewable energy or other sustainability-related technologies
 - Landscape style and irrigation technology
- >> During the programming phase (or early in the schematic design phase), the project team must engage in the following activities:⁶⁵
 - **Hold a sustainability workshop**
 - Confirm energy budget goals
 - Develop project goals using Green Building Standards
 - Create preliminary LEED checklist and confirm Green Building Standards
 - Determine renewable energy integration goals
 - Include stakeholders, potential contractors, Savings By Design
 - Identify design concepts with significant operational savings
 - **Develop preliminary life cycle cost model for building**

⁶⁵ These tasks are also included in the upcoming *Pomona College Design Guidelines*, to be finished by Summer 2010. This document will be updated with confirmed language once those guidelines are completed.

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- >> Project managers/project teams for all projects must collaborate with the Sustainability Integration Office to produce a report describing initial sustainability goals/objectives (as well as final decisions; see “Project Completion” below). This report must be cataloged and available online.
- >> **Utility rebates** All projects must enroll in Savings By Design and/or other relevant rebate programs in cooperation with utilities (e.g. electricity, natural gas, water utilities) and the Project Manager must inquire about these programs during the programming phase of the project.

Schematic Design/Design Development

- >> All projects must include relevant sustainability objectives and other sustainable design/operations language in Project Owner’s Requirements, where produced.
- >> During the schematic design phase, the project team must engage in the following activities:⁶⁶
 - **Develop renewable energy goals**
 - **Refine/confirm sustainability initiatives**
 - **Life cycle cost analysis** Generation of a life cycle cost report to compare design alternatives, considering systematically the impacts of building systems on each other. At a minimum, the following major building systems must be examined using life cycle cost analysis:
 - Mechanical: HVAC equipment and controls, energy sources
 - Electrical: lighting sources and controls
 - Envelope: roofing, insulation/mass, glazing
 - **Develop preliminary energy model**
- >> During the design development phase, the project team must engage in the following activities:⁶⁷
 - **Life cycle cost analysis update** Update on life cycle cost report for whole building and decisions made on building systems and other features
 - **Finalize energy model**
 - Develop:
 - **Education and communication plan**
 - **Commissioning plan**
 - **Measurement and verification plan**
 - **Evaluate materials for reuse** Evaluate and inventory existing building materials for reuse, whether on the project site or other campus locations.

Construction

- >> During the construction phase, the project team must engage in the following activities:⁶⁸
 - **Evaluate materials for reuse/donation** Before clearout of existing facilities, the project team must walk the site to evaluate fixtures, furniture, and equipment for reuse/donation.
 - **Develop solid waste management plan** The project team must develop a solid waste management plan that details how construction and demolition wastes will be handled in a manner that reduces landfill wastes and emphasizes reuse, recycling, and reclamation.

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Project completion

- >> All project teams must collaborate with the Sustainability Integration Office to produce a report detailing sustainability-related project features, a review of initial sustainability goals/objectives and whether they were fulfilled, and relevant life cycle cost analyses. This report must be cataloged and available online.
- >> Project contractor(s) must supply a report of waste management that includes the quantities landfilled, recycled, reused, salvaged, and donated, along with a breakdown of materials in each category and the destination of these materials.

Design

>> LEED standards + Pomona College requirements

- All eligible new construction projects must strive for a minimum of LEED-NC Gold level certification. Within the LEED framework, projects must meet particular prerequisites as outlined in Appendix A – LEED 2009 Requirements.
- All renovation projects must use LEED-NC and the College’s prerequisites (Appendix A – LEED 2009 Requirements) as guidelines, with a goal of achieving Gold level equivalency. Whether certification-eligible projects apply for certification will be determined by the project team, based on assessment of financial and other impacts.

>> Energy use and sources

- Energy efficiency and conservation are important in programming, designing, and planning for the operations and maintenance of campus facilities. All projects must include a detailed energy model and exploration of opportunities to increase the efficiency and decrease the overall use of facilities under consideration. All projects must also include discussion of potential renewable energy applications (including solar photovoltaic, solar hot water heating, geothermal, or other relevant options) to offset facility energy use.
- Any project must keep in mind the district-based energy standards described in the Energy chapter of the *Sustainability Action Plan*.
- As described in the *Pomona College Campus Planning Guidelines*:
Projects that increase square-footage above the existing 2010 base will include a feasibility study to determine the effects of a net-zero increase in energy use and carbon emissions for the additional square-footage. The evaluation should include programmatic, aesthetic, and first and life-cycle cost considerations.

- >> **Labs21** All relevant laboratory projects must comply with Labs21 development standards.

- >> **Ongoing monitoring and communication** All new and renovated facilities must include a comprehensive plan for building measurement and verification, ongoing commissioning activities, and a communication/education program, including meaningful monitoring of building resource use, generation of on-site energy, and other meaningful data.

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Minor Renovations/Projects

The following standards apply to all renovation projects of at least \$5 million but that do not meet the threshold for new construction/major renovations standards (above).

Process

- >> *Pomona College Campus Planning Guidelines* and *Pomona College Open Space and Landscape Guidelines* describe how the following elements apply to various sites and districts throughout campus. These guidelines must be reviewed as the project team determines the project's sustainability objectives and green building features:
 - Potential for energy reductions and other sustainability benefits in site design and programming
 - Applicability of roof-mounted renewable energy or other sustainability-related technologies
 - Landscape style and irrigation technology

- >> **Sustainability workshop** The project team must conduct a sustainability workshop with a representative of the Sustainability Integration Office.
 - Confirm compliance with Green Building Standards and Sustainable Operations and Maintenance Standards
 - Include stakeholders, potential contractors, Savings By Design
 - Identify design concepts with significant operational savings

- >> **Life cycle cost analysis** The project team must use life cycle cost analysis to compare design alternatives for major building systems, including:
 - Mechanical: HVAC equipment and controls, energy sources
 - Electrical: lighting sources and controls
 - Envelope: roofing, insulation/mass, glazing

- >> **Utility rebates** Renovation projects of at least \$5 million that do not meet requirements for LEED-NC certification should use LEED and College standards to develop sustainability goals and plans as relevant. Projects must enroll where eligible in Savings By Design and/or other relevant rebate programs in cooperation with utilities. Laboratory-related projects must reflect Labs21 development standards, where applicable.

Design

- >> Refer to *Pomona College Sustainable Operations and Maintenance Standards* for purchasing standards related to fixtures, furnishings, and equipment.

Appendix A – LEED 2009 Requirements + Pomona College Requirements

Project Checklist

11		Sustainable Sites	Possible Points:	26	PC Standard
Y	Prereq 1	Construction Activity Pollution Prevention			
1	Credit 1	Site Selection		1	This point should be possible when developing anywhere on campus. These points should be possible when developing anywhere on campus.
5	Credit 2	Development Density and Community Connectivity		5	
	Credit 3	Brownfield Redevelopment		1	This point is possible for many (but not all) locations on campus from proximity to existing facilities. This point should be possible for many (but not all) locations on campus from proximity to existing facilities.
	Credit 4.1	Alternative Transportation—Public Transportation Access		6	
	Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms		1	
	Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles		3	
	Credit 4.4	Alternative Transportation—Parking Capacity		2	
	Credit 5.1	Site Development—Protect or Restore Habitat		1	
	Credit 5.2	Site Development—Maximize Open Space		1	
1	Credit 6.1	Stormwater Design—Quantity Control		1	Prerequisite - MUST complete.
1	Credit 6.2	Stormwater Design—Quality Control		1	Prerequisite - MUST complete.
1	Credit 7.1	Heat Island Effect—Non-roof		1	Prerequisite - MUST complete.
1	Credit 7.2	Heat Island Effect—Roof		1	Prerequisite - MUST complete.
	Credit 8	Light Pollution Reduction		1	
6-8		Water Efficiency	Possible Points:	10	PC Standard
Y	Prereq 1	Water Use Reduction—20% Reduction			2 or 4 points should be a goal for every project, in keeping with the standards College’s Landscape Design Guidelines.
2-4	Credit 1	Water Efficient Landscaping		2 to 4	
	Credit 2	Innovative Wastewater Technologies		2	
4	Credit 3	Water Use Reduction		2 to 4	Prerequisite - 4 points is the goal for every project.
17-26		Energy and Atmosphere	Possible Points:	35	PC Standard
Y	Prereq 1	Fundamental Commissioning of Building Energy Systems			Prerequisite – each project MUST strive for at least 10 points on this credit.
Y	Prereq 2	Minimum Energy Performance			
Y	Prereq 3	Fundamental Refrigerant Management			
10-19	Credit 1	Optimize Energy Performance		1 to 19	

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	Credit 2	On-Site Renewable Energy	1 to 7	See <i>Campus Planning Guidelines</i> for guidance on when renewable energy technologies are appropriate for campus sites.
2	Credit 3	Enhanced Commissioning	2	Prerequisite - MUST complete.
2	Credit 4	Enhanced Refrigerant Management	2	Prerequisite - MUST complete.
3	Credit 5	Measurement and Verification	3	Prerequisite - MUST complete. Measurement and verification systems must coordinate with College-wide monitoring programs.
	Credit 6	Green Power	2	
7	Materials and Resources		Possible Points: 14	PC Standard
Y	Prereq 1	Storage and Collection of Recyclables		
	Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof	1 to 3	
	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements	1	
2	Credit 2	Construction Waste Management	1 to 2	Prerequisite - MUST complete. Campus standards require at 90% waste diversion rate.
	Credit 3	Materials Reuse	1 to 2	
1	Credit 4	Recycled Content	1 to 2	Prerequisite - MUST complete. Projects must acquire at least one point.
3	Credit 5	Regional Materials	1 to 2	Prerequisite - MUST complete.
	Credit 6	Rapidly Renewable Materials	1	
1	Credit 7	Certified Wood	1	Prerequisite - MUST complete.
10	Indoor Environmental Quality		Possible Points: 15	PC Standard
Y	Prereq 1	Minimum Indoor Air Quality Performance		
Y	Prereq 2	Environmental Tobacco Smoke (ETS) Control		
	Credit 1	Outdoor Air Delivery Monitoring	1	
	Credit 2	Increased Ventilation	1	
1	Credit 3.1	Construction IAQ Management Plan—During Construction	1	Prerequisite - MUST complete.
	Credit 3.2	Construction IAQ Management Plan—Before Occupancy	1	
1	Credit 4.1	Low-Emitting Materials—Adhesives and Sealants	1	Prerequisite - MUST complete.
1	Credit 4.2	Low-Emitting Materials—Paints and Coatings	1	Prerequisite - MUST complete.
1	Credit 4.3	Low-Emitting Materials—Flooring Systems	1	Prerequisite - MUST complete.
1	Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products	1	Prerequisite - MUST complete.
1	Credit 5	Indoor Chemical and Pollutant Source Control	1	Prerequisite - MUST complete.
1	Credit 6.1	Controllability of Systems—Lighting	1	Prerequisite - MUST complete.

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1	Credit 6.2	Controllability of Systems—Thermal Comfort	1	Prerequisite - MUST complete.
1	Credit 7.1	Thermal Comfort—Design	1	Prerequisite - MUST complete.
1	Credit 7.2	Thermal Comfort—Verification	1	Prerequisite - MUST complete.
	Credit 8.1	Daylight and Views—Daylight	1	Prerequisite - MUST complete.
	Credit 8.2	Daylight and Views—Views	1	Prerequisite - MUST complete.
3	Innovation and Design Process	Possible Points:	6	PC Standard
1	Credit 1.1	Innovation in Design: Specific Title	1	Prerequisite - MUST complete.
1	Credit 1.2	Innovation in Design: Specific Title	1	Prerequisite - MUST complete.
	Credit 1.3	Innovation in Design: Specific Title	1	
	Credit 1.4	Innovation in Design: Specific Title	1	
	Credit 1.5	Innovation in Design: Specific Title	1	
1	Credit 2	LEED Accredited Professional	1	Prerequisite - MUST complete.
2	Regional Priority Credits	Possible Points:	4	PC Standard
1	Credit 1.1	Regional Priority: Specific Credit - SSc7.1	1	Will complete when complying with the above.
1	Credit 1.2	Regional Priority: Specific Credit - WEc3 (40%)	1	Will complete when complying with the above.
	Credit 1.3	Regional Priority: Specific Credit	1	
	Credit 1.4	Regional Priority: Specific Credit	1	
56-67	Total	Possible Points:	110	

LEED certification thresholds:

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