

# Wellesley College Green Building Standards

Approved by Advisory Committee on Environmental Sustainability — 6/2/2014

Approved by the Board of Trustees — 10/30/2014

The Wellesley College Green Building Standards are comprised of three parts: An introductory statement of background and purpose and two appendixes. Appendix A outlines the process for integrating sustainability considerations into building projects. Appendix B outlines Wellesley's approach to LEED buildings standards.

## **Introduction: Background and Purpose**

Since its founding, Wellesley College has celebrated the design of its buildings and their place in the campus landscape. This document builds on that tradition by adopting a process and establishing building standards that reflect both Wellesley's history and demonstrate its commitment to sustainability. These building standards respond to the College's commitment to integrating environmental sustainability considerations into major institutional decisions.

Wellesley is embarking on a campus renewal program of building renovation and expansion. Decisions with respect to the design, construction, and operation of these buildings will impact the College's environmental sustainability and operating expenses for the next century. By implementing green building standards, we can improve environmental sustainability in the near and long-term future, reduce exposure to fluctuations in utility costs, and enhance building functionality.

The purpose of this document is to:

1. establish a common understanding of how Wellesley's commitment to environmental sustainability will be integrated into campus renovation and construction projects;
2. establish a process (including public documentation) and standards (specific to Wellesley) for accomplishing these goals on a project-by-project basis;
3. serve as a document that can be disseminated to the campus community, architects, engineers, contractors, and others involved in campus projects.

These standards were developed through a semester-long process led by the Advisory Committee on Environmental Sustainability (SUST), which includes faculty, students, administrators, staff, and union members. The committee held open meetings with interested community members, relied on research support from the Environmental Studies capstone course (ES300), and met with various stakeholders, including staff from the Office of Facilities Management and Planning, project architects, and consultants.

These goals led to the development of green building standards that will serve the campus renewal program and beyond when regularly reviewed and revised. The standards will be reviewed in consultation with SUST and approval of the Campus Facilities and Planning Committee (CFPC) every 4 to 5 years.

The green building standards apply to all capital projects, including new construction, additions, and renovations. The standards distinguish between two categories of projects: **major projects** (all new construction and major renovations of buildings that require replacement of major building systems and replacement of over 50% of the interior structure) and **minor projects** of at least \$1 million but that do not meet the threshold for new construction/major renovation standards. Projects smaller than \$1 million, although outside the specific scope of these requirements, should be developed with reference to the intent of these guidelines. This document include a process by which sustainability considerations will be integrated into building projects (Appendix A) and a set of Wellesley-specific goals for LEED buildings (Appendix B).

## **Sustainability Goals**

All major building projects (and minor building projects in some cases) should be designed to achieve LEED Gold standards at a minimum. LEED is an established rating system overseen by the United States Green Building Council that provides a common framework for integrating sustainability into building projects.

Wellesley has prioritized the LEED criteria to reflect the college's situation, environment, and values. Project teams should pursue LEED certification with reference to the Wellesley-specific priorities for LEED included in Appendix B. This prioritization scheme is not mandatory (i.e., it is not expected that projects will achieve all credits that are marked as high priority); instead, the priorities are meant to provide guidance to project teams as they consider options for pursuing LEED certification.

These Wellesley-prioritized LEED standards reflect five core concerns that are important to addressing environmental sustainability in building projects at Wellesley:

- **Landscape and Buildings.** Wellesley's campus landscape is one of the institution's distinguishing features. Honoring the relationship between a building project and the campus landscape is a College expectation we will uphold by maintaining the campus aesthetic and its functional values. . This approach offers the potential to enhance community engagement with the campus landscape, promote pedestrian and bicycle use, reduce water and energy consumption, and enhance ecosystem function (habitat conservation, water conservation, and

biodiversity). Construction activities should also be managed to minimize impacts on the campus, wetlands, wildlife, and open spaces.

- **Improved Indoor Environmental Quality.** Wellesley College aims to ensure buildings are healthy and comfortable spaces in which to live, study, and work. Potential benefits of improving indoor environmental quality include improved health, productivity, and satisfaction of students, faculty, and staff. Wellesley College anticipates achieving this goal by utilizing enhanced indoor air quality strategies, low-emitting materials, improved interior lighting, daylighting, and pleasant views. This goal will be pursued in consultation with the Office of Environmental Health and Safety Policy. Additional new and innovative strategies are encouraged and will be welcomed.
- **Metering and Sub Metering.** Data collection through metering and sub-metering linked to proper energy management systems will facilitate efficient building operations, improve indoor environmental quality, assist with monitoring of sustainability goals, serve as an educational resource, and promote engagement with building occupants. At a minimum, all utilities coming into a building should be separately metered. When appropriate, major energy uses within the building should be separately metered, including kitchens, data centers, laboratory clusters, and commercial spaces. If possible, Wellesley is interested in metering utilities by end use, such as separating energy use for lights and for outlets. If this is not possible, projects should be wired to facilitate sub-metering by end use in the future to as great an extent as is feasible. All projects should be integrated into a campus-wide, publicly accessible metering program upon occupancy.
- **Energy Conservation and Efficiency.** Wellesley considers it a social and moral imperative to address climate change. One of the most significant ways that Wellesley can accomplish this goal is by prioritizing energy conservation in the design and operation of buildings. The College is committed to making a strenuous effort to reduce energy consumption in its buildings, including investigating and implementing efficiency improvements in major building systems (mechanical, electrical, and envelope) and pursuing renewable energy sources (photovoltaic, solar hot water, geothermal, wind, and other technologies as they are developed). In many instances, improving energy conservation and efficiency will require upfront capital investment to reduce long-term operating expenses and achieve sustainability goals. The College aims to implement design strategies that maximize energy conservation and efficiency by undertaking all improvements with a net payback period of less than 10 years (based on a total cost of ownership, including energy and maintenance expenses) and additional improvements (which may have a longer payback period) necessary to achieve at least a 20% energy reduction below baseline cost (as calculated to meet the LEED Optimize Energy Performance credit).

- **Water Conservation and Efficiency.** Wellesley College is located in the Charles River watershed. The College is committed to protecting its aquifers by reducing potable water consumption in its buildings through efficiency measures, as well as implementing creative building and landscape designs that facilitate reuse of gray water and management of storm water.

## **Appendix A: Green Building Standards: Integrating Sustainability into Building Projects**

### **Major Construction/Renovation Projects**

#### **LEED Requirements**

If circumstances preclude the pursuit of LEED Gold certification as outlined above, the exception must be approved by the Campus Facilities Planning Committee during the appropriate design phase(s) of each individual project. For some renovation projects, pursuing LEED Silver certification may be necessary due to the existing conditions of buildings, other programming priorities, or budgetary considerations. In some cases, other systems for evaluating building sustainability, such as the Living Building Challenge, may be preferable to LEED. In making such a determination, the CFPC should do so in consultation with the Advisory Committee on Environmental Sustainability.

#### **Procedural Requirements**

Wellesley will deliberately integrate environmental sustainability considerations into every stage of the renovation and building process. This begins with assessing the need for new construction or renovation. The reuse and renovation of existing facilities have been important at Wellesley and will continue to be emphasized as a sustainable strategy.

#### ***Request for Proposals:***

- All requests for proposals (RFPs) will include language regarding sustainable design and operations as applicable to architects, general contractors, MEP (mechanical, electrical, and plumbing) consultants or subcontractors, and commissioning agents.
- The SUST committee will be invited to any public presentations by finalists for the architect and other relevant consultants (such as sustainability consultants or landscape architects).
- SUST representation will be included in the Extended Project Team.

***Programming:***

During the programming phase or early in the schematic design phase, the project team will engage in the following activities:

- Convene a sustainability workshop:
  - Include campus stakeholders (faculty, staff, students) and architects/consultants
  - Identify preliminary sustainability goals
  - Review preliminary site analysis
  - Identify design concepts with potential for significant operational savings
  - Review preliminary LEED checklist (see Appendix B)
  - Set a release date for a report identifying the initial project sustainability goals (a release date of one month after this meeting is recommended)
- Develop a preliminary life-cycle/total cost of ownership model for building construction, renovations, and/or additions to inform space programming.
- Identify sustainability “best practices” for specialized building functions that may fall outside the scope of LEED, such as scientific laboratories or kitchens.
- Project teams for all projects will collaborate with the Office of Sustainability and the Office of Public Affairs to produce a report documenting the initial project sustainability goals. This report will be available to the College community and incorporated into the Project Owner’s Requirements.

***Schematic Design:***

During the schematic design phase, the project team will engage in the following activities:

- Undertake life-cycle/total ownership analysis (20-year time horizon or life of relevant equipment) to systematically assess the environmental and economic impacts of design alternatives for major building systems and their controls, including mechanical (HVAC and energy sources), electrical (lighting), envelope (roof, insulation, glazing), and plumbing.
- Develop preliminary Energy Model to compare different design choices, building systems, and energy cost scenarios including renewable energy options.
- Develop a Commissioning Plan that addresses sustainability goals, including metering and verification.
- During development of standard site management plan: consider how design choices will affect permeable and non-permeable surfaces, stormwater management, and the relationship of the project to the campus landscape.
- Update the LEED checklist and expected LEED certification level.

***Design Development:***

During the design development phase, the project team will engage in the following activities prior to construction:

- Update the life-cycle/total ownership analysis for the project based on final building systems and features.
- Finalize energy model.
- Finalize the LEED checklist and confirm expected LEED certification level, preferably with design review by the Green Building Council Institute.
- During routine page turns and design review conversations, re-emphasize importance of sustainability with maintenance staff in reviewing issues such as access to machinery, metering, and other related maintenance issues.
- Develop an Education and Outreach Plan for communicating sustainability elements of project to community and key stakeholders in conjunction with the Office of Sustainability.

***Pre-Construction Documents:***

- During pre-construction document phase, the project manager will report to the Office of Sustainability on the plan for reuse/donation/sale of existing furniture, fixtures, and equipment. The purpose of this report is to ensure that reusable materials are salvaged prior to construction.
- The general contractor will develop a solid waste management plan that emphasizes reuse, recycling, and reclamation of construction and demolition wastes as required by LEED and proper handling of hazardous waste.

***Construction:***

During the construction phase, the project team will engage in the following activities:

- The construction site will employ erosion controls and other barriers to minimize impacts on the campus, wetlands, and open spaces per the college's Storm Water Pollution Program (overseen by the Office of Environmental Health and Safety).
- Construction equipment will use low-sulfur diesel fuel to minimize construction-related air pollution; anti-idling laws will be followed.
- The construction site will be managed to reduce energy consumption (such as ensuring efficient nighttime lighting of work sites).

***Project Completion and Operations:***

- The project architects and contractor(s) will provide a building occupant user guide that specifically explains how to realize the building's sustainability goals. Such a document should be targeted at user groups, such as students, faculty, and staff.

- The project team will collaborate with the Office of Sustainability and the Office of Public Affairs to produce a report detailing sustainability project features, a review of initial sustainability goals and how they were fulfilled, and relevant life-cycle and total-cost-of-ownership analyses. This report should be made publicly available within three months of building occupancy.

## **Minor Construction/Renovation Projects**

### **LEED Requirements**

The applicability of LEED certification will be determined on a case-by-case basis for minor projects, subject to review by the Campus Facilities Planning Committee. All minor projects, regardless of whether they will qualify for LEED certification, will integrate sustainability at all stages of the renovation and building process as outlined below.

### **Procedural Requirements**

#### ***Request for Proposals:***

- All requests for proposals (RFPs) will include language regarding sustainable design and operations as relevant to architects, general contractors, MEP (mechanical, electrical, and plumbing) consultants, and commissioning agents.

#### ***Programming:***

During the programming phase or early in the schematic design phase, the project team will engage in the following activities:

- Convene a sustainability workshop:
  - o Include campus stakeholders and contractors/architects (as possible)
  - o Identify preliminary sustainability goals
  - o Identify design concepts with potential for significant operational savings
  - o Review preliminary LEED checklist (if seeking LEED certification)

#### ***Schematic Design and Design Development:***

During the design phases, the project team will engage in the following activities:

- Undertake life-cycle/total ownership analysis (20-year time horizon or life of relevant equipment) to systematically assess the environmental and economic impacts of design alternatives for major building systems and controls, as relevant to the project.

- Develop preliminary site management plan: consider how design choices will affect permeable and non-permeable surfaces, stormwater management, and the relationship of the project to the campus landscape.

***Pre-Construction Drawings:***

- During construction document phase, the project manager will report to the Office of Sustainability on the plan for reuse/donation/sale of existing furniture, fixtures, and equipment.
- The general contractor will develop a solid waste management plan that emphasizes reuse, recycling, and reclamation of construction and demolition wastes and proper handling of hazardous waste.

***Construction:***

During the construction phase, the project team will engage in the following activities:

- The construction site will employ erosion controls and other barriers to minimize impacts on the campus, wetlands, and open spaces per the college's Storm Water Pollution Program (overseen by the Office of Environmental Health and Safety).
- Construction equipment will use low-sulfur diesel fuel to minimize construction-related air pollution. Anti-idling laws will be followed.
- The construction site will be managed to reduce unnecessary energy consumption (such as ensuring efficient nighttime lighting of work sites).

***Project Completion and Operations:***

- The project architects and contractor(s) will provide a building occupant user guide that specifically explains how to realize the building's sustainability goals. Such a document should be targeted at user groups, such as students, faculty, and staff.
- The project team should consider collaborating with the Office of Sustainability and Office of Public Affairs to produce a report detailing sustainability project features and relevant life-cycle and total-cost-of-ownership analyses. If produced, this report should be made publicly available within three months of building occupancy.

**Acknowledgements**

These building standards incorporate language and concepts drawn from similar standards adopted at other institutions, including Pomona College, Williams College, and Harvard University.

## **Appendix B: LEED Standards Prioritized for Wellesley College**

The following LEED v4 for BD+C (Building Design and Construction) criteria include Wellesley-specific prioritization (high, medium, low, or not applicable). This prioritization scheme was developed through the work of the Environmental Studies Program's capstone course in spring 2014 in collaboration with the Advisory Committee on Environmental Sustainability.

The priorities outlined here are meant to provide architects and consultants with guidance regarding how the building sustainability strategies included in LEED align with Wellesley College's situation, environment, and values. Project teams should pursue LEED certification with reference to these Wellesley-specific LEED standards. This prioritization scheme is not mandatory (i.e., it is not expected that projects will achieve all credits that are marked as high priority); instead, the priorities are meant to provide guidance to project teams as they consider options for pursuing LEED certification.

In addition, the last page of this appendix includes nine additional LEED+ criteria identified by the Environmental Studies Program's capstone course.

**LEED v4 for BD+C: New Construction and Major Renovations — Prioritized for Wellesley College**

			Possible Points: 1
			Wellesley Priority
Credit 1	Integrative Process	1	High

**Location and Transportation**

			Possible Points: 16
			Wellesley Priority
Credit 1	LEED for Neighborhood Development Location	n/a	n/a
Credit 2	Sensitive Land Protection	1	High
Credit 3	High Priority Site	2	n/a
Credit 4	Surrounding Density and Diverse Uses	5	High
Credit 5	Access to Quality Transit	5	High
Credit 6	Bicycle Facilities	1	High
Credit 7	Reduced Parking Footprint	1	High
Credit 8	Green Vehicles	1	Medium

**Sustainable Sites**

			Possible Points: 10
			Wellesley Priority
Prereq 1	Construction Activity Pollution Prevention	Required	
Credit 1	Site Assessment	1	High
Credit 2	Site Development - Protect or Restore Habitat	2	Low
Credit 3	Open Space	1	High
Credit 4	Rainwater Management	3	High
Credit 5	Heat Island Reduction	2	Low
Credit 6	Light Pollution Reduction	1	Low

**Water Efficiency**

			Possible Points: 11
			Wellesley Priority
Prereq 1	Outdoor Water Use Reduction	Required	
Prereq 2	Indoor Water use Reduction	Required	
Prereq 3	Building-level water metering	Required	
Credit 1	Outdoor Water Use Reduction	2	Medium
Credit 2	Indoor Water Use Reduction	6	Medium
Credit 3	Cooling Tower Water Use	2	High
Credit 4	Water Metering	1	High

**Energy and Atmosphere**

			Possible Points: 33
			Wellesley Priority
Prereq 1	Fundamental Commissioning and Verification	Required	
Prereq 2	Minimum Energy Performance	Required	
Prereq 3	Building-Level Energy Metering	Required	
Prereq 4	Fundamental Refrigerant Management	Required	
Credit 1	Enhanced Commissioning	6	High
Credit 2	Optimize Energy Performance	18	High*
Credit 3	Advanced Energy Metering	1	High
Credit 4	Demand Response	2	n/a
Credit 5	Renewable Energy Production	3	Medium
Credit 6	Enhanced Refrigerant Management	1	Medium
Credit 7	Green Power and Carbon Offsets	2	Low

\* Projects should strive to earn at least 9 credits under Optimize Energy Performance.

**Materials and Resources**Possible Points: 13  
Wellesley Priority

Prereq 1	Storage and Collection of Recyclables	Required	
Prereq 2	Construction and Demolition Waste Mgmt Plan	Required	
Credit 1	Building Life-Cycle Impact Reduction	5	High
Credit 2	Building Product Disclosure and Optimization — Environmental Product Declarations	2	Medium
Credit 3	Building Product Disclosure and Optimization — Sourcing of Raw Materials	2	Medium
Credit 4	Building Product Disclosure and Optimization — Material Ingredients	2	Medium
Credit 5	Construction and Demolition Waste Mgmt	2	High

**Indoor Environmental Quality**Possible Points: 16  
Wellesley Priority

Prereq 1	Minimum Indoor Air Quality Performance	Required	
Prereq 2	Environmental Tobacco Smoke Control	Required	
Credit 1	Enhanced Indoor Air Quality Standards	2	High
Credit 2	Low-Emitting Materials	3	High
Credit 3	Construction Indoor Air Quality Mgmt Plan	1	Medium
Credit 4	Indoor Air Quality Assessment	2	Medium
Credit 6	Thermal Comfort	1	Medium
Credit 7	Interior Lighting	2	High
Credit 8	Daylight	3	Medium
Credit 9	Quality Views	1	High
Credit 10	Acoustic Performance	1	Medium

**Innovation**Possible Points: 6  
Wellesley Priority

Credit 1	Innovation	5	
Credit 2	LEED Accredited Professional	1	High

**Regional Priority**Possible Points: 4  
Wellesley Priority

Credit 1-4	Regional Priority	4	
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The following criteria are additional priorities identified by the capstone Environmental Studies Course at Wellesley in spring 2014. Explanations of these criteria are included in the report: *Making Wellesley a LEEDer in Sustainable Design: The Synthesis of Wellesley's Sustainable Building Guidelines* (2014). Project teams should give consideration to these additional criteria. Depending on the project, these criteria could be innovation credits, appropriate for inclusion in LEED certification. In other cases, these criteria can be treated as advisory.

**LEED+ Criteria Specific to Wellesley**

		Wellesley Priority
Credit 1	Light Pollution — Lighting Near Observatory	High
Credit 2	Light Pollution — Impact on Wildlife	Medium
Credit 3	Building-Wide Energy Goals	High
Credit 4	Composting	Medium
Credit 5	Materials and Resources — Transparency	Medium
Credit 6	Innovation: Green Building Education	High
Credit 7	Innovation: Net Zero Energy	High
Credit 8	Innovation: Net Zero Water	High
Credit 9	Innovation: Historic Building Relocation	Medium