

## C. Sustainability

### 1. Introduction

This portion of the Facility Standards includes sustainability guidelines to be followed by the Consultant in the course of a project at the University of Chicago.

Conventional construction and operation of buildings are resource-intensive processes that create a significant amount of waste and contribute to global climate change. The environmental impact of a building is significant, and has implications for the local community and the world beyond our borders. Locally, the University faces environmental and political concerns such as water use and quality, land use, energy consumption, and ongoing operations and maintenance costs. The entire range of impacts should be taken into consideration when designing and constructing buildings.

These guidelines complement the implementation of the University of Chicago’s Strategic Sustainability Plan, specifically High Performance Buildings. They will help the University place clear parameters and identify measurable results around what it means to be truly sustainable. The goal is to incorporate principles, materials, and actions into building design, construction and maintenance.

### 2. Sustainability Process

Each Process Phase is presented below and discusses specific process activities as they pertain to sustainability. The greatest achievement in sustainability occur by maximizing both the environmental and economic return on investments through design, construction and maintenance standards to improve resource conservation and create healthy spaces in a way that’s meaningful for the people who study, teach or live in our buildings. Decisions made in one area often affect many other areas.

The guidelines outline an integrated design approach. Each step is identified to establish performance goals and to ensure that decisions are made in a collaborative and informed manner. The maximum benefit for minimum cost are achieved when sustainability is incorporated at project inception

#### Processes by the University prior to Consultant engagement:

Process Phase	Sustainability Objective
Program Planning/ Project Initiation	Translate academic or departmental initiatives into potential facility needs to determine if a capital construction project is necessary. As part of that effort, a mandatory meeting attended by the FS Project Manager, Office of Sustainability and key stakeholders must be held to discuss potential sustainable approaches.
Program Planning/ Project Initiation	Incorporate the sustainability issues discussed previously into the Request for Proposal (RFP) and Owners Project Requirements (OPR) outlined in the Standards. Understand anticipated costs or savings that may be incurred in order to create a more sustainable building.
Process Phase	Sustainability Objective
Programming	During the Programming phase, the OPR should be further developed to incorporate sustainability goals as they pertain to user needs and design parameters. As the project team develops or verifies the project program, summary schedule, and preliminary budget, the FS Project Manager should arrange a sustainability workshop to review the options and the underlying principles of sustainability as they relate to building design, construction and operation. A sustainability coordinator is to be designated during this meeting.

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Programming	Consultant is to begin development of the Basis of Design (BOD) and sustainability checklist (LEED, Living Building Challenge or other, as agreed upon by stakeholders) in response to the OPR and results of the sustainability workshop.
Schematic Design	At the beginning of the Schematic Design (SD) phase, program priorities and associated assumptions should be reevaluated to determine if spaces and functions can be shared or co-located with the sustainability goal of reducing the volume of the building, increasing space efficiency, using fewer raw materials and optimizing energy and water use.
Schematic Design	The largest energy impacts should be identified, prioritized and discussed at design meetings. Energy modeling should be used to evaluate energy efficient design alternatives and refine the project's sustainability goals and energy usage. The results are to be incorporated into the BOD document and sustainability checklist.
Design Development	During the Design Development (DD) phase, the approved schematic design begins to include a level of detail necessary to work out a clear, coordinated description of all aspects of the project. Because the DD phase is one of the last opportunities for the User Group to become involved in the design, it is crucial that sustainability principles from each of this document's categories be fully discussed and implications be understood and integrated as appropriate.
Design Development	Design and construction costs associated with the sustainable elements of the project should be clarified. Sustainable component cost metrics (capital and life cycle) should be developed and cost and/or savings decisions evaluated against performance and life cycle cost considerations. The results are to be refined within the BOD document and sustainability checklist.
Design Development	The project team should ensure that the project schedule allows adequate time for implementing the activities that may lead to a more sustainable project such as commissioning, life cycle analysis and training, among others.
Construction Documents	During the Construction Document (CD) phase, a comprehensive, fully coordinated set of construction documents and specifications are issued to obtain the necessary permits and construct the project. A review of sustainability elements by appropriate Facilities Services and project team stakeholders must be included in the 50% CD review along with any update of the BOD document and sustainability checklist. This review should specifically address materials selection.
Construction	At the start of the Construction phase, a representative from the general contractor, each subcontractor and a designated sustainability coordinator should attend the pre-construction meeting. The sustainability goals and design features of the project should be made clear at this meeting. Review of the project sustainability requirements should occur if applicable. Contractor ideas and opinions should be encouraged during these discussions to allow for innovations and efficiencies.
Closeout	Closeout facilitates the occupancy and turnover of the finished and fully commissioned project to the user group and maintenance department. It is important for building occupants and maintenance personnel to understand how their facility is designed to function, particularly as it relates to specific user behavior, in order for it to operate as designed. The designated sustainability coordinator is to facilitate contributions from all project team members towards the development of a training program to educate personnel about the relevant features of the building and how they are meant to operate, including any user-influenced control strategies.

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### 3. Guidelines

These guidelines are for use by Facilities Services personnel and Consultants on projects of all scales. Although the University's current Sustainable Building Policy requires implementation of minimum LEED Silver certification standard for larger projects (new buildings over 5\$ million in construction costs), all projects are to follow these guidelines.

The guidelines are organized into the following categories:

- a) Sustainable Sites
- b) Water Efficiency – Wise Water Guidelines
- c) Energy
- d) Materials & Resources
- e) Health, Comfort and Productivity
- f) Education and Training
- g) Innovation

The discussion of each category begins with a set of goals, followed by a list of suggested strategies to be used in achieving those goals. The strategies included are not comprehensive; they are intended to provide ideas, and not exclude any from consideration. The project team should develop additional strategies. The following are suggested reference documents: LEED v4 Reference Guide, Living Building Challenge Rating System or the Sustainable Site Initiative Guidelines, among others. Contact the Office of Sustainability for a more extensive list.

#### **Whole Building Design Approach**

Application of a **whole-systems design** approach is crucial for sustainability. Categories and strategies are interdependent; none stand in isolation. Decisions made in one area may affect the performance in another. For example, careful decisions on building shape and window placement that take into account both prevailing wind and sun angles may not only enhance a building's thermal performance but can also improve daylighting. On the other hand, considering one building system alone without regard to others may result in poorer performance in the other systems. Any conflicts among categories should be resolved using an integrated design approach; and careful decisions should be made to select those designs that can trigger multiple savings or other benefits. It is essential that all members of the project team work together and consider all sustainability categories in order to be aware of the influence of their decisions on the overall performance of the building. In addition, not all strategies suggested here are relevant for every project. Considerations and decisions will have to be balanced by the Project Team and strategies that make sense will need to be negotiated.

#### **a) Sustainable Sites**

##### **Goals:**

- Promote sensitive development that relates well to natural systems and existing infrastructure.
- Maintain and enhance the biodiversity of natural systems and/or existing character of the site.
- Respond to campus microclimates and natural site conditions.
- Reduce energy use for transportation and site related activities.
- Contribute to the cohesiveness and intelligibility of the existing campus.

##### **Strategies:**

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