

4.42J
Design Project 1
Due: November 3, 2010
In Class at 11:00 AM

MIT has undertaken a program to improve the energy efficiency of all existing buildings. Through a cooperative agreement with the electrical utility NSTAR, MIT will be rewarded for each efficiency improvement that can be documented. You are asked to pick one building or wing of an existing building on campus and focus on one or two particular inefficient energy features such as exits doors. You are asked to access the current energy use, develop redesigns of components or operations that substantially improve energy efficiency and predict the energy savings and economics of these new designs. The new concepts should be an outstanding sustainable design that is also financially sound.

In Design Projects 1 and 2 you are asked to select a building and propose and assess innovative building designs, technologies and operating schemes that will yield an outstanding sustainable building. For Design Project 1 you should first collect basic information about the proposed building features you want to address. Some of this information might be available from the MIT Facilities Department. In addition, you should develop general conceptual designs and technologies for the building and site and qualitatively describe their importance. In phase 2 you will quantitatively assess the behavior of the proposed schemes and refine your designs.

Students should work on this project in teams of two and produce a written report. The report should indicate the contribution of each student. Address your report to readers who have some technical background. This report for Design Project 1 should be the preliminary assessment of the proposed scheme and additional concepts that you propose. The report should include an introduction, discussion of the above items and diagrams, and conclusions and recommendations.

The grade for this project is equivalent to one half of an hour quiz.

You are required to discuss your preliminary findings with the instructor and TA (unpaid but highly knowledgeable consultants) at least once before the due date.

Your design will be graded in terms of:

Clarity and thoroughness of the report

Originality

Practicality

Punctuality (Late reports will lose substantial credit)

Some suggestions for design projects

Control of dorm heaters

Revolving doors vs swing doors vs double doors

Control of shades, lights in Building E62

Stata Building daylight sensors

Façade improvements for original MIT buildings

Relighting potential in academic buildings, dorms

Living group energy improvements

Behavioral measures: design, monitoring, confirmation

Your suggestions?

MIT OpenCourseWare
<http://ocw.mit.edu>

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