

Green Living At Dartmouth College



BUILDINGS, COMMUNITY AND THE ENVIRONMENT

Environmental Studies 50

Spring 2005

DARTMOUTH COLLEGE

INTRODUCTION AND SUMMARY

I. OUR PROJECT

This year the Office of the Provost asked the students of ENVS 50 to analyze the environmental performance of Dartmouth residence halls and make suggestions pertaining to new and existing buildings. Professor Howarth agreed that this was an important and relevant topic, especially considering the timing of the McLaughlin Cluster construction, and offered our class a plan of attack. And so the work began. The goal of this report is to provide a framework of recommendations that the Provost can follow to achieve a “greener” Dartmouth. Due to the College’s rural location, proximity to the Appalachian Trail, the Connecticut River, and the White Mountains, it has attracted students who enjoy spending time exploring the outdoors. The Dartmouth Outing Club maintains a strong presence on campus and is evidence that students have much interest in enjoying the outdoors. As the character of the College has evolved throughout the long history of the institution, its environmentally conscious reputation has persisted. Our report addresses the significance of this self-defined character, how it is manifest in student programs and college housing, and what opportunities the future holds for the College to further this green image. Professor Howarth elaborates on his motivations behind this project, stating:

“As Dartmouth itself has learned in recent years, a commitment to green buildings can actually save money while at the same time improving the aesthetic qualities and functional characteristics of the spaces where people live and work. A core challenge for Dartmouth is to integrate the insights, knowledge, and values of students in the design and management of student living spaces. My hope is that this year’s ENVS 50 project will help crystallize understanding of and ultimately action on issues that have been championed by students over the course of several years.”

To begin this project the class divided into four groups to answer questions and investigate different aspects of energy efficiency at Dartmouth. These groups analyzed the plans for the new dorms and the state of the existing dorms, conducted comparative studies on peer institutions, and combined months of research to create a proposal for a Sustainability Center at Dartmouth. This approach provides a well rounded and in depth look at what Dartmouth has done, is doing, and can do to become an environmentally progressive campus. The class believes that Dartmouth can and should emerge as a leader in environmentally sustainable building and behavior, and this report outlines steps necessary for this goal.

We begin by defining “green building” and explaining its relevance to the College’s plans for new residences. Green building incorporates sensitivity towards the environment into the design of buildings, with a focus on reducing the environmental impact of the finished product. This type of sustainable architecture can save not only energy but also costs, and results in a “low-tech” structure that minimizes consumption, draws upon local resources, and encourages an environmentally friendly lifestyle.

In section two we give an overview of the new dorm cluster, McLaughlin, which will sit on the College’s north campus and will meet the need for more student housing.

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We describe the history of the site, sources of funding, qualifications of the selected architects and their previous accomplishments, and analyze the dorms' designs. The Facilities Planning Office (FPO) emphasizes the sustainable goals of the McLaughlin project and expresses a desire to incorporate aspects of green building into their plans. Dartmouth is registered with the Leadership in Energy and Environmental Design (LEED) program, and is aiming to meet certain requirements to achieve certification for the McLaughlin cluster. In this section, we provide a thorough critique of the LEED certification program and make recommendations for ways in which Dartmouth could create residence halls that are even more energy efficient.

Next, the existing dorms section analyzes the success of the ECO and SPARCS programs and the current state of residence halls on campus. By conducting a survey we determine students' levels of awareness about environmental programs, and assess general sentiments concerning energy efficiency on campus. From these results we are able to devise educational programs to improve student awareness. In addition to student behavior, we look at the dorm buildings themselves. We analyze windows, heating systems, lighting, and appliances for energy efficiency, and pinpointed what the Office of Residential Life (ORL) has done in the past to retrofit older buildings. ORL also provided us with information concerning future renovations. From this research, aided and inspired by case studies of successful programs and technologies at other schools, we outline recommendations for the College to implement a more rigorous energy saving precedent for housing.

The fourth section is a proposal for a Sustainability Center. We describe the need for an integrated living and learning space that will be in a central location on campus for students, faculty, and community members to gather and build relationships revolving around a common commitment to environmentally friendly practices. Our proposal outlines the main functions and goals of the Sustainability Center. We focus on minimizing energy use, and state how this will shape the physical building design and the center's role in improving the quality of life at Dartmouth. A supporting petition, with over 200 signatures from students and faculty, expresses the mounting desire for a Sustainability Center within the Dartmouth community. This proposal provides an exciting glimpse at what Dartmouth's future could hold, as the College emerges as a true leader in green building.

Finally, we investigate what our peer institutions have done in terms of their commitment to environmental stewardship. In this section we describe innovative and state of the art administrative leadership efforts, environmental policies, student involvement programs, and financial structures found at other schools. Many of the universities examined face similar challenges as Dartmouth. Therefore, we hope Dartmouth can learn from the successes and failures of other schools, determine what will work at our campus, and develop the institutional structures necessary to guide the College towards the development of a more sustainable campus community.

The report you are about to read is full of facts and information, compiled over the course of the term. More importantly though, are the recommendations that have come out of our analysis of this information. We aim for this report to be used as a learning tool for the College. Following is a compendium of our creative suggestions; ones we truly hope will materialize.

II. OUR RECOMMENDATIONS

Chapters I and II: Green Building and New Dorms

Recently the College has taken significant physical steps to tackle the housing shortage that began in the 1970s when Dartmouth opened its doors to women. Under the initiative of Dartmouth College President James Wright, Provost Barry Scherr, and the guidance and of Jack Wilson and his team at the Facilities Planning Office, multiple new dormitory projects are in progress.

For example the state of the art McLaughlin Cluster dormitory will add 342 additional beds to the College and will occupy the northern part of campus by College Street and Rope Ferry Road. The way in which the College and the architects are primarily addressing sustainable building is through the United States Green Building Council's Leadership in Energy and Environmental Design (LEED). By registering and following a LEED-mandated checklist of sustainable practices regarding sustainable sites, water efficiency, energy and atmosphere, materials and resources, indoor environmental quality, innovation and design process, and by investing enough time and money, McLaughlin has a chance to become LEED-Certified. This would be quite an impressive and notable feat considering that fewer than 200 buildings have been LEED-certified since 2000.¹

The College's acceptance and initiative of LEED is a momentous step in the right direction, but it is worth noting, LEED is not without its shortcomings. In addition to certification difficulty, other common LEED-driven problems are high costs, crippling bureaucracy, "point mongering", difficulty in energy modeling, and misleading claims of green building benefits.² Because of this, alternative green building frameworks, such as the United States Environmental Protection Agency's Energy Star Program, are appealing because they can achieve many of the same outcomes of LEED while they lack many of the aforementioned potential pitfalls.

Recommendations:

- Enroll in the USEPA Energy Star program
- Implement a solar heating system
- Do not install the radiant cooling system due to the drawbacks of energy consumption and the possibility of condensation and mold growth
- Install light shelves on all the south facing windows of the new dorms

Chapter III: Existing Dorms

We decided to take on the task of examining and evaluating the use of energy in existing dormitories around campus. After a thorough assessment of the nature and state of energy use in the dorms, we proposed recommendations for alterations in College energy use policy, student energy use, and retrofitting measures that can be made in the dorms. We broke our work down into five main components. First, we created, circulated, and analyzed a survey to students on campus. This allowed our group, as well as other groups, to see how dorm occupants valued energy usage as well as living habits and personal preferences. Second, we made recommendations in terms of how students (both current and incoming) can be better educated about environmental issues and sustainable living habits. Third, we

¹ Auden Schendler and Randy Udall, "LEED is Broken... Let's Fix it." (2005).

² Ibid.

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created a “Rent-a-Refrigerator” program for students as a means to save both energy and money in the long run. Fourth, we proposed a program in which posters will be placed in each of the dorms illustrating to students what their energy consumption levels are—if students are aware of this then we feel they will be more conscientious of their habits and usage. Fifth, we looked at the technical aspects of the dormitories, including heating and lighting systems, and assessed their current condition. And finally, we investigated what can and will happen in the future with residence halls on campus.

Recommendations:

- Institute “Rent-a-Refrigerator” Program
- Retrofit heating systems in dormitories
- Install motion sensors for lights in all dorm kitchens, study lounges, and hallways
- Create and distribute posters for every dorm illustrating energy usage
- Circulate list of energy efficient appliances to incoming students
- Create sustainable living assembly or seminar for first-year students during orientation week
- Rework the ECO and SPARC programs

Chapter IV: Sustainability Center Proposal

Our group looked at the need for and the plausibility of building a Sustainability Center at Dartmouth. To do this, we took several steps. First, we determined through a petition/awareness campaign that there is, in fact, widespread student interest in a Sustainability Center. The rest of our time was spent meeting with various Dartmouth faculty and administrators and town officials to discuss the availability of space for such a center. Working with a town planner, a Dartmouth architect, a director of Facilities, Operations, and Management, the Office of Residential Life, and the Dartmouth Real Estate office, we determined the most appropriate and plausible of alternatives for a Center. The culmination of our work is an in-depth proposal that outlines our vision and mission statement for the Center, as well as a history of past proposals and ideas. It also includes our recommendations for implementation of the project, including funding, support, and location.

Recommendations:

- The building itself should be an educational tool and should be visibly sustainable.
- The Center should not be a residence
- The Center should be accessible to all students, faculty, staff, and other community members
- The Center should provide space for environmentally-minded student groups which currently do not have offices on campus
- The Center should be a truly interdisciplinary building, incorporating the social, academic, and extracurricular aspects of life at Dartmouth by including:
 - a lounge
 - a venue for concerts/lectures
 - a kitchen for cooking workshops
 - offices
 - small classrooms

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- The Center should be closely affiliated with, if not run by, the newly-hired Sustainability Coordinator, as well as a minimum of two and a maximum of three Dartmouth students/recent postgraduates
- Our suggested location for the Center is a small plot of land, just north of Burke
- While the Center should be allowed to change as is needed, in order to remain socially sustainable, the principles listed below should remain integral to its management and purpose on campus. Its Mission Statement is as follows:
 - It is an experiential and interactive learning space.
 - The physical structure is itself an educational tool
 - The facility offers a social space reflecting interest in sustainability, in accordance with the Student Life Initiative (SLI)
 - It fosters relationships between students and community members with interests in sustainability and environmental consciousness
 - It broadens and diversifies the scope of the student community interested in sustainability

Chapter V: Implementation: What We Can Learn from Peer Institutions

In order for our recommended policies, programs and technologies to be implemented in an efficient and coordinated manner, Dartmouth's administration must take a leadership role in building the institutional structures necessary for the establishment of a more sustainable campus community. High-level administrative commitments to finding funding and promoting communication across university divisions are invaluable for successful implementation. In addition, an effective environmental policy will help Dartmouth translate environmental ideals and rhetoric into meaningful energy savings by providing a broad set of goals to coordinate environmental efforts and help integrate environmental values into all facets of the College. The potential for environmental leadership exists at Dartmouth. It is up to the current administration to take action to ensure that our college emerges as a strong leader in this increasingly vital global realm.

Recommendations:

- Institutionalize lines of communication between Dartmouth's new sustainability coordinator, high-level administrators, faculty and students
- Increase the influence of the Resource Working Group (RWG) by expanding it to include students and other conservation minded staff
- Spell out a clear environmental policy
- Consolidate all Dartmouth's environmental groups under one umbrella organization
- Encourage sustainability projects by creating a loan fund designed to give interest-free loans for projects that have a payback period of five years or less
- Engage faculty members and administrators in the approval process so they gain familiarity with Dartmouth's environmental policies and programs