President’s Committee on Sustainability

May 21, 2009
Background

Organized by School and Department Initiatives Subcommittee

Open to Undergraduate, Graduate, and Professional Students

Designed to Foster Student-led Sustainability Projects

Also Designed to Generate Multi-disciplinary Collaboration
Who Submitted Projects?

- Grad. and Prof.
- 1st Years
- 2nd - 4th Years

Total of 75 Students

Where Were Projects Focused?

- Beyond
- Virginia
- On-Grounds

Total of 24 Projects

Project Submissions

Office of the Architect
Project Purpose

Two thirds of UVA community members use the most inefficient mode of transportation—a car—-at least once per week. Just as many wish there was a more eco-friendly way to get around Grounds.

We as a community want to change the way we get around. We are thinking about our carbon footprint and looking for a new, eco-friendly alternative. UVA Bikes are what we’ve been waiting for.

Project Description

UVA Bikes are a revolutionary system of one-way on-Grounds bike rentals for the UVA community. TIME magazine called bike systems one of the “50 Best Innovations” for 2009. The system is essentially ZipCar for bikes: by using their University IDs, UVA students, faculty, and staff can check in and check out bikes from self-locking bike racks, or “ubs,” conveniently placed around Grounds. For example, a first year could check out a bike at his dorm, ride to central Grounds, and check in the bike at a different hub near the library. Or, instead of driving, a Darden professor could bike to a meeting in the Rotunda.

In the first year alone the system will decrease UVA’s carbon footprint by 34 tons of emissions and reduce dependence on oil by saving 5,594 gallons of gas. Transportation accounts for one fourth of the world’s carbon emissions. By bringing UVA to the forefront of transportation development, the system’s potential impact is worldwide. At the same time, the concept’s scope is actionable at a university level.

Technology is what makes UVA Bikes so environmentally efficient. Solar-powered hubs and “drop-n-go” installation enable the system to operate off the grid. Bikes can be tracked from hub to hub to manage traffic flow. The system’s bikes are especially designed for bike systems to minimize costs associated with wear and tear and theft. UVA Bikes complement the University Transit Service by reducing traffic on packed bus routes, resulting in a more efficient transportation mode split. In all, the system will save the university almost $83,000 in environmental costs per year. Additionally the system improves cost efficiency on an individual level; using a UVA Bikes is cheaper than driving a car and less hassle than owning a bike.

Some of UVA Bikes’ greatest benefits are those that cannot be measured. UVA Bikes will connect undergrads to goods to faculty and staff by connecting distant parts of campus like North Grounds and New Dorms. The system will bring together departments of the university such as Parking and Transportation, Office of the Architect, and Student Affairs to brainstorm more environmentally friendly transportation methods. Most importantly, UVA Bikes users can tangibly and personally interact with the issue of sustainability every day.

Future Plans: System launch in August 2010

Immediate goals:
- Identify sufficient funding sources
- Select bike system vendor through Request for Proposal (RFP) Process
- Market system to potential users
**Project Purpose**

The Learning Barge is an innovative student project that wonderfully demonstrates the "three Cs" of sustainability: Environmental resource management and education; the edification of equitable social communities; and greater economic efficiency. It is completely intertwined in the concept and realization of the Learning Barge, a 32’x120’ floating classroom and environmental field station.

**Project Description**

An interdisciplinary team of students from the Schools of Architecture and Engineering and Applied Science have collaborated with the two projects: the Elizabeth River Project (ERP) and the Portsmouth-based non-profit organization, the Elizabeth River Project. The Learning Barge will provide interactive and educational activities about the river and human activities in the Elizabeth River. It will be an eco-friendly structure that can be used for educational purposes.

An important urban river linking the two cities, the Elizabeth River will traverse an urban river linking the cities of Norfolk and Portsmouth. The river is a major port with a significant amount of maritime activity. The Learning Barge will teach participants about the tidal estuary ecosystem, wetland and oyster restoration, and the Elizabeth River’s economic and transportation significance.

The Learning Barge will be highly visible to participants in the Barge’s programs. It will provide instantaneous information on the Barge’s energy generation and consumption as well as current environmental conditions.

**Results**

Once completed this summer, the Learning Barge will serve as a sustainable classroom and working platform to help make the Elizabeth River fishable and swimmable by 2020. It is estimated that more than 9,000 students and adults will visit the Barge annually.

The Learning Barge will be located in the Elizabeth River and will be heated by energy collected from two 30-tube solar evacuated tube arrays that power a radiant heating system. All of the systems of the Barge will be highly visible to participants in the Barge’s programs.

**Future Plans**

Our hypothesis is that an environmental education field station built using rigorous environmental criteria will have a positive impact on the students, the community, and the planet. Students have been engaged in this project for multiple semesters, and we are nearing the culmination; funds secured from the VA’s Sustainability Project Competition will directly support the student team completing construction in Norfolk this summer.

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**The Learning Barge**

**Student Sustainability Symposium**
Project Purpose
- Minimize the volume of waste water generated at VDOT’s 300+ salt storage facilities
- Identify and evaluate potential treatment alternatives
- Investigate the feasibility of reusing waste water as a feed source for brine generation for purposes of anti-icing

Project Description

Problem
- The Virginia Department of Transportation collects approximately 60 million gallons of salt-laden stormwater at its chemical storage facilities each year
- Disposal of this waste water is both limited and costly ($0.13 to $0.55 per gallon)
- This waste also has the potential to contaminate surface and ground water if managed improperly

Research approach
The research effort consisted of:
- Collecting and analyzing water samples from 45 randomly selected storage locations throughout the state
- Calculating the volumes of stormwater captured statewide using site-specific characteristics and historical precipitation and evaporation data
- Developing waste minimization recommendations by improving on current site designs and management practices
- Evaluating the feasibility of three treatment alternatives (electrodialysis, ion exchange, and reverse osmosis) through lab and field experiments
- Evaluating the reuse of the waste for brine generation through lab-scale and in-field experiments
- Performing a benefit/cost analysis using historical disposal costs and deicing chemical usage data

Results
- Specific methods for reducing the volume of waste generated could cut current volumes by nearly 50%
- While no feasible treatment methods were identified, a method for reducing the reduced volume of waste generated was assessed and deemed to be practical
- Reuse of salt-laden stormwater runoff for brine creation would not only result in significant savings ($1 million to $2 million annually), roadway chloride loading would also be significantly reduced (35%), and less fresh water would be required for brine production

Future Plans
- Three salt storage facilities will be retrofitted to incorporate all or part of the recommendations for minimizing waste collection and reusing waste that is generated on site
- These sites will be closely monitored during the winter of 2009-2010
- The findings of this implementation pilot will further quantify the savings and environmental benefits of this new approach to saltwater waste management and inspire other facility managers to alter their current practices

Management and Reuse of Salt-Contaminated Stormwater Runoff
Student Sustainability Symposium
Joint Funded by VP Research, VP Student Affairs, Facilities Management and Office of the Architect

Distributed via PTAO for ongoing project implementation
Next Steps

Repeat, potentially on Fall Competition - Spring Implementation

Create Award Categories

Explore Additional Funding Opportunities
  Development
  Green Fund
  Others...
Green Inc.

Energy, the Environment and the Bottom Line

May 11, 2009, 10:50 AM

College Students Clamor for “Green Fees”

By KATE GALBRAITH

College students often protest when administrators threaten to raise their fees.

But rising numbers of students seem willing to self-impose a “green” fee, to help the environment and purchase renewable energy. The Association for the Advancement of Sustainability in Higher Education posts a list of universities that have done so.
**William and Mary - Eco-House Energy Use Monitoring** ($5,300) - From Lauren Edmonds on behalf of Eco-House. To provide energy metering for the Eco-House. One of the goals of Eco-House is to learn how changes in resident life can improve energy efficiencies in the W&M residence halls. Metering will allow for a variety of test cases and competitions among residents that will yield useful data on best energy practices.

**TGIF - The Green Initiative Fund - UC-B, UCSB, UCLA**

**Fume Hood Sash Stickers** ($807.00) - This project will install stickers on fume hoods in labs around campus to remind users to lower their sashes in order to save energy.

**Berkeley Student Food Cooperative** ($91,000) - Provide fresh, healthy, environmentally sustainable, and ethnically produced food at affordable prices through a student-run food café and market.
Grounds Improvement Fund (GIF)
Facts at a Glance

• Approved by the University’s Board of Visitors in January of 2007

• 1.5% Assessment to capital projects in the Academic Division, Medical Center and College at Wise

• Maximum contribution per project is $500,000, collected at the time of construction contract award

• $1,000,000 per year is available in an expendable account for the support of projects proposed by academic or auxiliary programs on the main University grounds or research stations; University is pursuing the ability to spend beyond this amount for year 2009-2010

• Types of projects considered for funding include improvements to pedestrian and bicycle facilities, lighting, site furnishing, plantings and public art

• Annual project list has been recommended by Executive Review Committee; next step will be final approval by President Casteen
Grounds Improvement Fund (GIF)
Selection Criteria

• Eliminates/prevents an existing health, environmental or safety hazard

• Satisfy an academic or auxiliary program need

• Reduces total capital and operating expenses

• Supports campus planning objectives

• Provides renewal of a deteriorating infrastructure asset

• Enhances the aesthetic quality of the public domain, including the addition of public art
Art Museum Public Art Terrace
Chapel Plaza & Accessibility
Hospital Drive Turn-around
& Pedestrian Paths and Steps
Pavilion Alley Light Replacement
Arts Commons, Phase I & II
Newcomb-University Ave.
Intersection/Safety Improvements
Lambeth Streambank & Pedestrian Bridge Accommodation
LED In-ground Crosswalk Lights
On Leonard Sandridge Drive at Darden and Massie at U-Hall/Klockner
Master Planning Council Agenda
May 20, 2009

Student Sustainability Initiatives
Grounds Improvement Fund Update
Health System Area Plan (HSAP)
Health System Area Plan (HSAP)
Master Planning Council
May 20, 2009

David Neuman, FAIA
Julia Monteith, AICP
Luis Carrazana, AIA
HSAP | Existing Conditions
HSAP | Existing Conditions
• Enhance visitor and daily user experience
• Improve the safety of pedestrian, bike and vehicular circulation throughout the study area
• Implement a unifying design concept for the district
• Strengthen UVA Medical Center image
• Create a campus-like environment
• Develop a landscape hierarchy and recreation opportunities
• Allow for future renewal and replacement of facilities
Claude Moore
Nursing Education Building

+ In Construction
+ Project Cost: $15.6m
+ Architect: Bowie Gridley Architects
+ Contractor: Martin & Horn Inc.
+ Construction Start: October 2006
  Finish: July 2008
Carter-Harrison Research Building (MR-6)

- Project Cost: $84.1 m
- Architect: Henningson, Durham & Richardson
- Contractor: Barton Malow
- Construction Start: March 2006, Finish: March 2009

HSAP | Carter-Harrison Research (MR-6)
Claude Moore Medical Education Building

- In Construction
- Project Cost: $300 m
- Architect: CO Architects
- Contractor: Barton Malow
- Construction Start: Fall 2007
- Finish Fall 2009
Hospital Bed Expansion & Infrastructure

- In Design
- Project Cost: $80.2 m
- Architect: SmithGroup
- Contractor: Gilbane
- Construction Start: Spring 2008
  Finish Fall 2010
Emily Couric Clinical Cancer Center

- In Design
- Project Cost: $74.0 m
- Architect: Zimmer Gunsul Frasca Architects
- Contractor: Gilbane
- Construction Start: Spring 2008
- Finish: Fall 2010
HSAP | Lee Street Corridor
HSAP | Primary Zones of Use
HSAP | Greenbelt and Renewed Space
HSAP | Green Space Improvements: Major Entrances
HSAP | Green Space Improvements: Pedestrian Links
Green Space Improvements: Pedestrian Links
HSAP | Green Space Improvements: Recreation