



Transportation Sustainability

Business Report

To: Chris Johnson, Winthrop Sustainability Coordinator

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I. EXECUTIVE SUMMARY

Winthrop University's Office of Sustainability provides information on its website on sustainability efforts related to recycling practices and reducing water usage. However, the website does not adequately address transportation sustainability.

In David Kaplan's article "Transportation Sustainability on a University Campus," found in the *International Journal of Sustainability in Higher Education*, Kaplan focuses on student-related issues surrounding transportation and how students' attitudes affect the implementation and success of sustainable transportation programs on college campuses. The article "Transportation, Land Use and Sustainability," by James A. Moore and Julie M. Johnson in the *University of South Florida Scholar Commons*, points out the environmental, economical, and health benefits of using alternative transportation. "A NEW COURSE: How Innovative University Programs Are Reducing Driving on Campus and Creating New Models for Transportation Policy," an article by the *U.S. Public Interest Research Group*, also emphasizes the environmental benefits of alternative transportation. This article includes detailed reports of university programs, making note the successful strategies that target the newer generation of students who have different attitudes than previous generations towards transportation. Carlos Balsas highlights the *opportunities* on college campuses to promote alternative transportation programs, such as cycling and walking paths, in his article "Sustainable Transportation Planning on College Campuses" found in *Transport Policy*. In Alex Koma's article, "Universities Offer Sustainable Transportation Alternatives for Students" in *USA Today College*, Koma emphasizes incentive programs, such as free fare student transit systems, to be an effective way to encourage students and staff to use alternative transportation.

Cornell University currently has many sustainability programs in place to promote alternative transportation. The university has created an outdoor education program, a safe cycling environment for students and locals, a campus-to-campus bus system, and an action initiative to reduce fuel consumption of the campus fleet system. Cornell's sustainability website (sustainability.cornell.edu) conveniently keeps students up-to-date on campus programs and activities, as well as news information related to sustainability. Amherst College extends its sustainability programs to the IT departments and general infrastructure, such as implementing sustainable fluorescent light bulbs across campus and using biodiesel fuel in all delivery trucks and grounds equipment. Amherst also runs a Zip Car program, which uses fuel-efficient vehicles to transport students around campus. All information related to Amherst's transportation sustainability programs can be found on their website at amherst.edu/campuslife/greenamherst. Finally, Clemson University currently has 13 Leadership in Energy and Environmental Design (LEED) buildings on campus. There is high student-involvement in Clemson's sustainability organizations, which have created sustainable methods for agriculture practices and taken responsibility to keep the environment clean. Clemson also runs a carpooling system, provides parking incentives around campus for low emission vehicles, and operates on a bike-friendly campus. Their sustainability website can be found at clemson.edu/sustainability.

Universities that have had successful programs reach out to their students effectively on their respective websites. By extending Winthrop's Office of Sustainability's online content to include transportation, students, faculty and the local community can become more aware of how their daily choices affect the environment and can encourage them to consider alternate modes of transportation. The Office of Sustainability needs to improve its communication on transportation sustainability efforts and provide student-related information on the effects of students' modes of transportation on the environment.

II. LITERATURE REVIEW

A. “Transportation Sustainability on a University Campus” by David Kaplan, Kent State University, *International Journal of Sustainability in Higher Education* (2015)

This article analyzes the sustainability of transportation such as walking and cycling on college campuses. It reports that important considerations when trying to incorporate transportation sustainable programs on campus would be to observe students attitude towards transportation, any impediments that may interfere with students being sustainable, and economic factors that may or may not be in favor of transportation sustainability.

The article says that a primary issue college campuses, such as Kent State, face is that most students use and prefer the convenience of automobiles versus alternative forms of transportation. Kaplan says, “Students who live on campus walk as a principal mode of transportation to classes, and even in this case, there are more students who use private vehicles. For students living off campus, automobiles are by far the principal choice of transportation. Buses are used by many students but bicycling is still fairly rare as a means of commuting” (Kent State University).

B. “Transportation, Land Use and Sustainability” by James A. Moore and Julie M. Johnson, *University of South Florida Scholar Commons* (2015)

This article focuses on the importance of transportation sustainability and how it affects the community, environment, and economy. The article points out ways to reduce non-renewable fossil fuels, new land development such as highways, and ultimately the amount of miles travelled by private cars. Some of these ways are increasing the amount of walking, cycling and use of mass transit. The report states that some issues that may make transportation sustainability difficult is lack of knowledge about the benefits of transportation such as health and economical

benefits, and the size of the area that determines the amount and type of mass transit. The article states the health benefits from bicycling, such as the increased amount of calories burned in a day. The article says using mass transit can move the most amounts of people with the least amount of energy. According to the article, consumers could reduce expenses by eliminating the overuse of gasoline.

C. “A NEW COURSE: How Innovative University Programs Are Reducing Driving on Campus and Creating New Models for Transportation Policy,” *U.S. Public Interest Research Group* (2014)

This article by the U.S. PIRG Education Fund consists of a detailed report and news release from 2014 that explains plans and programs that university and college campuses use to promote alternative methods of transportation. “Over the past two decades, colleges and universities have increasingly adopted the goal of reducing driving as part of their long-term plans to develop healthy, sustainable and successful institutions,” (*U.S. PIRG*, 2014). This article discusses how alternative modes of transportation can ultimately help environmental sustainability and reduce land use; the article also discusses the use of carsharing programs, online classes to reduce traffic to campus, the encouragement of local partnerships, and more. It talks about how to effectively implement biking, walking, and ridesharing programs through research, advertising and promotions, partnerships, and sponsorships. The report states that college campuses are learning to tailor their promotions toward the newer generations. For example, many students are starting to delay or forgo learning to drive, and others may not have the funds for a personal car, so students need alternative modes of transportation.

D. “Sustainable Transportation Planning on College Campuses,” by Carlos J. L. Balsas, *Transport Policy* (2003)

This article addresses the opportunity for change on college campuses, and what other colleges and institutions of higher education have done to promote sustainable transportation. Other colleges not only encourage a shift toward alternative modes of transportation, but also provide their students and faculty with such alternatives. This article’s main purpose is to reflect on the *opportunity* to create sustainable campuses from a bicycle and pedestrian planning viewpoint. It also discusses the concept of transportation demand management (TDM), “which includes market prices for parking, expanded transit access, park and ride lots complemented by bus shuttles, rideshare programs, bicycle and pedestrian facilities and traffic-calming schemes,” (Balsas). Although this article was written in 2003, the tactics mentioned are still relevant in 2015.

E. “Universities Offer Sustainable Transportation Alternatives for Students,” by Alex Koma, *USA TODAY College* (2014)

This article states that in the past few years many universities have encouraged students to reduce driving to school by giving students some benefits and access to other methods of transportation. For example, UNC Chapel Hill has partnered with the town of Chapel Hill by offering free fare transit for students. If students still need a car, they have access to car sharing services like Zip car which reduces traffic and pollution in the college area. Some universities encourage avoiding cars all together by offering students bikes for rent and low cost bike repair services. “Researchers view the value of these types of programs both for their positive short-term effects and the culture change they could help bring about” (Koma, Alex). The article reports that if universities provide programs similar to these, students and staff will most likely use them.

III. EXAMPLES OF UNIVERSITY SUSTAINABILITY PROGRAMS

A. CORNELL UNIVERSITY (*sustainability.cornell.edu*)

Cornell University is a four-year university located in Ithaca, New York. Cornell's Office of Stability has many programs and opportunities for students to get involved, along with themes and data to inform sustainable actions. In regards to transportation, Cornell takes measures to make sure the students who do ride bikes are comfortable and safe, with lanes and etc. Cornell also has a bus system that takes students into the city. Cornell's sustainability website is user-friendly and easily readable with interactive links and tabs corresponding to upcoming campus events and news topics related to sustainability.

1. Overview

According to the Cornell University Office of Sustainability, The College Engagement Program at Cornell University uses monthly themes and college specific data (about sustainability efforts) to educate the Cornell community on sustainable actions. Each monthly theme focuses on a different area of resource conservation.

2. Transportation Programs

a. Cornell Outdoor Education Program

The Cornell Outdoor Education Program featured on the Cornell Office of Sustainability, offers biking courses and holds meetings on how to improve the cycling environment on campus.

b. Biking at Cornell

Biking at Cornell is also featured on Cornell's sustainability website. The university created a safe and accommodating transportation system for cyclists including marked bike lanes, pedestrian shared paths, and dismount zones. Big Red Bikes organization is responsible

for the biking share program. The Cornell cycling team promotes programs for students interested in racing.

c. Greening the Fleet

According to the Cornell University Sustainable Campus website, the primary goals of the Greening the Fleet action is to reduce fuel consumption of the campus fleet and increase the use of alternative fuel. The two main components of this action are: 1) to require higher efficiency standards for the campus fleet, and 2) to consider alternative fuels for university-operated vehicles. Since 2009, there have been a variety of high-efficiency vehicles that have been added to the fleet including two all-electric vehicles (EVs), six compact hybrids, nine sub-compact hybrids, and two sub-compact plug-in hybrids.

d. Campus-to-Campus Bus

The Campus-to-Campus Bus program at Cornell provides express bus service between the Ithaca and New York City campuses to reduce carbon emissions resulting from individual vehicle trips to and from the city. The bus system operates seven days a week. The Cornell University Sustainable Campus website stated, “A new, more fuel-efficient bus was added to the fleet in November 2003. The new bus will have lower particulate emissions and should increase overall fuel efficiency from 5.8 mpg to 6.4 mpg,” (para. 6).

B. AMHERST COLLEGE (<https://www.amherst.edu/campuslife/greenamherst>)

Amherst College is a four-year college in Amherst, Massachusetts. Green Amherst is the name of the sustainability program at Amherst College. Other than water, recycling and transportation, other efforts include, cleaning processes, cogeneration and green computing. Green Amherst coordinates many campaigns that directly involve students.

1. Overview

Amherst College's sustainability programs includes campaigns such as its Million Monitor Drive. This effort is a national ENERGY STAR campaign to enable the monitor power management features on a million computer monitors. Amherst IT and Physical Plant joined to help students, faculty and staff enable the power management settings on their PCs, letting monitors shut down or "sleep" when idle. Amherst has also administered several Lightbulb Amnesty campaigns in which students exchange their old incandescent light bulbs for new compact fluorescent lamps (CFLs), getting thousands of them out on campus. According to National Geographic, CFLs provide the same light output at 25% of the power. They also last 8-10 times as long and will save their purchase price in energy at least 20 times over. Green Amherst strives to make more fuel efficient cars available to students and the opportunity to carpooling more accessible.

2. Transportation Programs

a. Zip Cars

The Zip Car program on Amherst's campus allows students, faculty and staff to rent cars for \$7/hour with gas and insurance included. These cars are hybrid, fuel-efficient vehicles, such as the Toyota Prius. This information is found on Green Amherst's website under the section "Transportation."

b. Diesel Equipment

According to Green Amherst, “Since 2000, [Amherst College] has systematically upgraded and converted all of its heavy trucks, grounds equipment and delivery trucks to fuel-efficient diesel vehicles. In order to further reduce the college’s carbon footprint, all diesel vehicles run on biodiesel fuel, in which a component of the fuel is derived from agricultural products instead of fossil fuel, reducing carbon dioxide emissions.” More information about Green Amherst’s diesel equipment is found on Green Amherst’s website under the tab “Transformation,” which is accessible to both students and members of the community.

C. CLEMSON UNIVERSITY (<http://www.clemson.edu/sustainability/>)

Clemson University is a four-year university located in Clemson, South Carolina. Clemson has 13 Leadership in Energy and Environmental Design (LEED) buildings, of which 8 are gold certified. Clemson also offers many clubs and organizations for students to get involved in its efforts to improve sustainability, such as Solid Green and The Sustainable Agriculture Program. Clemson also takes measures to improve transportation at Clemson.

1. Campus Organization

Two organizations that are linked to Clemson’s Office of Sustainability are Solid Green and the Sustainable Agriculture Program. According to Clemson’s Office of Sustainability website, “Solid Green is all about taking pride in Clemson's campus, taking responsibility for keeping it clean and taking action to help sustain the environment for a better future.” The difference being that Solid Green’s goal is to not only raise awareness of sustainability, but to promote events and clean-up activities that promote environmental awareness. The Sustainable Agriculture Program is part of Clemson’s Office of Sustainability efforts to practice sustainability in the field of agriculture. According to Clemson’s Office of Sustainability website, “The organization encompasses numerous research opportunities, student programs, educational outreaches and more.” The organization has gone as far as creating a Student Organic Farm, which offers opportunities for research and hands on experience for students. Solid Green and The Sustainable Agriculture Program, are just a couple organizations created for students to get involved in the efforts of sustainability. More information about Clemson’s clubs and organizations linked to sustainability is found on the Clemson’s sustainability website.

2. Transportation Programs

a. Low Emission Vehicle Parking

According to Clemson's Sustainability website, low emission vehicle parking spaces have been placed in convenient locations all throughout the Clemson campus for cars considered to have low greenhouse gas emissions. This system provides an incentive to faculty and staff members who drive environmentally friendly vehicles and further promotes others to do the same.

b. Bike-Friendly Campus

Clemson University has been nationally recognized as a bike-friendly university by providing a more bike-able campus for its students and faculty. Clemson has attained this ranking by striving to make bike pathways between on campus housing and facilities more accessible for students. More information on how Clemson initiates a bike-friendly campus is located on Clemson's sustainability website under "Transportation."

c. Clemson Carpool

Clemson carpooling offers students preferred parking and reduced permits. This has increased Clemson's commuter transportation. More information about how Clemson takes measures to improve transportation in regards to sustainability is found on Clemson's sustainability website.

IV. WINTHROP UNIVERSITY'S SUSTAINABILITY PROGRAM

A. Critique of Current Communication of Message

Winthrop University's Office of Sustainability has an office on campus and distributes flyers/documentation around campus in high-traffic, relevant areas. However, the overall communication on transportation is poor and needs improvement on all sites. There is an emphasis on recycling and water-conservation habits, but there seems to be a lack of programs and information transportation topics.

B. Web Presence

The Office of Sustainability currently holds a social media presence that is relevant to its audience (Facebook, twitter, etc.) and somewhat active, but it lacks any engagement with students. We do feel that the Facebook page contains rich and relevant articles with beneficial information. However, while pages on Winthrop's website contain messages on waste and water, their focus on transportation sustainability is not as clear; there are very few facts or advice concerning transportation issues. We also feel the Office of Sustainability website lacks interactivity.

C. Recommendations

- **Improved Interactivity**

As a group focused on transportation sustainability, we would like to see more interactive posts about transportation on the Office of Sustainability's website. We want to promote students to engage in conversation and increase our outreach by more "shares/likes." More interactive topics and links could promote both the entire office and its goals, as well as specific programs such as those related to transportation. Furthermore, it would be beneficial for the Office of Sustainability to push educational programs that will educate faculty, staff, and students about

the benefits and importance of alternative forms of transportation. Adding content on transportation on the website will help promote the topic as an important issue for students/faculty to consider. Creating an entire page dedicated to transportation sustainability, rather than briefly mentioning on a single bullet point list, could benefit the Office of Sustainability's overall goals. If information on the incentives and local transportation systems are easier to access, students and staff would be more willing to use said services.

- **Student-Centered Programming**

The possibility of creating a more student-oriented movement to engage students with our vision is an idea we would like to further foster as we continue to understand and promote the efforts on sustainable transportation at Winthrop University. Amherst College's programs emphasize student engagement; instead of just having events and information sections, Winthrop should try to have campaigns that directly involve students, so that the students are more informed and attentive to sustainability efforts.

The Office of Sustainability could think of ideas that would encourage students to commute green by providing incentives that will benefit students themselves, instead of just trying to promote the benefits of the environment. Another way to motivate students to bike to school could be to provide incentives on campus; for example, if students cycle to campus a certain number of times within a designated period, they can get extra cafe cash.

- **Expanded Transportation Options**

The main focus both around campus and online seems to be solely centered on "How to Recycle" or other obvious, basic concepts, and we feel that transportation should be better emphasized. Other schools, such as Clemson, provide website pages dedicated to transportation sustainability, not just waste and water. Such pages discuss the effects of cars and car exhaust on

the environment, and discuss in detail how students and staff can change their methods of transportation. Moreover, Winthrop University's Office of Sustainability should consider making alternative forms of transportation appealing and convenient to students. Winthrop could even consider expanding its modes of transportation by transporting students around to stores, such as the Rock Hill Galleria.

Other schools also list and describe their campus-specific programs and incentives that aid in transportation sustainability: bike rentals, priority carpool parking spaces, shuttles, and more. Some websites also include information on local public transportation systems.

Winthrop could think about having bikes for rent. This could be successful among students because there are bike racks close to almost every building on campus making it easy for students to go from one class to the other. Also, the fact that Rock Hill is a "bicycle friendly community" with bike lanes along a majority of the main streets may also help students feel safe when cycling from their house to campus. This program would probably be the most affordable one among the other ones seen in the other universities. Students who ride bikes on campus, or who are interested in riding bikes, may appreciate an initiative to improve the cycling environment at Winthrop.

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