

Committee on Sustainability Summer Research Grant:
A Comprehensive Transportation Plan for the College

Max Cunningham (2013) and Professor John Swaddle
August 20th, 2010

Transportation on both a large and small scale is one of the most prominent opportunities to improve campus sustainability. This project aimed to improve efficiency of campus transportation in three ways:

- 1.) Promote carpooling, specifically among faculty and staff
- 2.) Find ways to encourage student usage of mass transit
- 3.) Explore the possibility of providing faculty, students and staff the opportunity to purchase carbon offsets at the College

Improvements in transportation sustainability were most immediately relevant on the local level, meaning that special attention was given to the first and second goals of the project.

I. Carpooling

The majority of William and Mary faculty and staff commute daily to campus in single occupancy vehicles. Graduate students and some undergraduate students also commute to campus, typically in single occupancy vehicles. Parking Services has provided incentives for carpooling for several years; in this time, Parking Services has had no registered carpool last for a substantial time frame. There are no current carpools registered on campus. This project focused on finding ways to create long-lasting rideshares that effectively eliminate the need to drive single occupancy vehicles in daily commute.

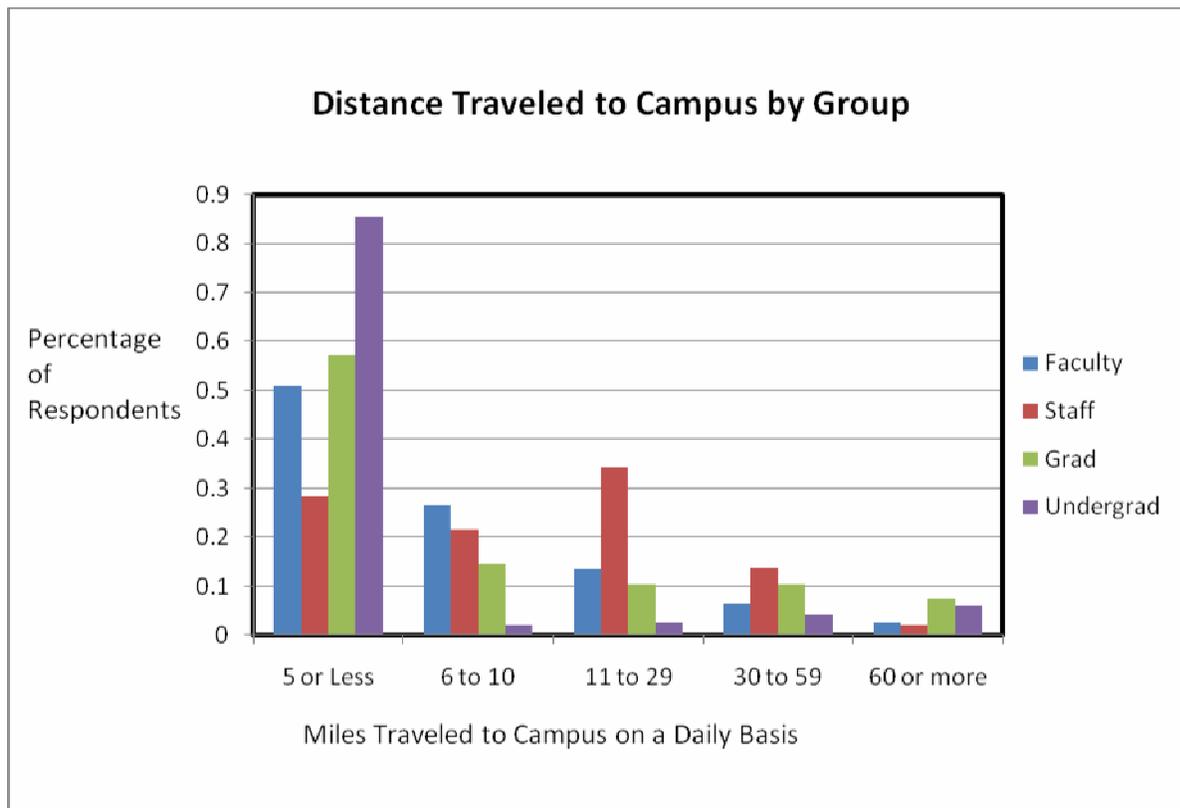
Parking Services offers financial and logistical incentives for carpooling. Commuters can purchase a single parking hangtag to share between two or three individuals; that hangtag rotates between cars according to a system arranged by the carpool itself. The hangtag is sold at the baseline rate (Tier 4). The majority of commuters purchase carpool passes below the Tier 4 rate, meaning that financial savings from buying a single parking pass will vary from person to person. There are, however, significant financial incentives in ridesharing: for example, cutting a yearly commute in half can reduce gas expenses and car maintenance costs.

Parking Services has selected 25 spaces around campus for carpool-specific parking. Five spaces will be reserved in five lots: Yates, Old Dominion, the Parking Deck, the School of Education and the Law School. These spaces are not reserved for specific carpools, but rather are available on a first-come-first-served basis for only carpool users. Parking Services will reevaluate the number of reserved spaces in October after reviewing the response to carpool promotion.

A survey conducted by Professor John Swaddle and Stephanie Burton (2010) provided valuable information regarding the target audience for carpooling advertisement. The survey asked faculty, staff and both graduate and undergraduate students about their commuting habits, and whether they would be willing to change those habits. Selected responses to this survey are listed in Figure 1.

Figure 1	Number of Respondents	Respondents Interested in Carpooling	Overall Interest within Group	Percentage Among those Interested in Carpooling
Faculty	266	35	13.16%	19.02%
Staff	473	77	16.28%	41.85%
Undergraduate	806	33	4.09%	17.93%
Graduate	323	39	12.07%	21.20%

Data from the 2009 Transportation Survey showing the distances traveled to campus by each respective group further contributed to understanding which members of the William and Mary Community would benefit from carpooling.



Staff members tend to favor carpooling strongest and commute the greatest average distance per day. In many cases staff members have a greater degree of consistency in work schedules than faculty and students, further suggesting that this group will benefit most from carpooling. Faculty members and graduate students also expressed interest in carpooling and tend to have commutes of distances of greater than five miles to campus. Although interest of undergraduate

students in carpooling is of similar magnitude to faculty and graduate students, they have a strong tendency to live very close to campus. Based on this information, this project believes that a carpool program will offer the greatest service for faculty, staff and graduate students.

The study of how to best promote carpooling began with research on successful rideshare programs at other universities. Schools that contributed information to this project include Princeton University, the University of Virginia, Duke University and Cornell University. While these schools are, in some cases, very different than William and Mary, they offered insightful advice for carpool promotion.

One key link between each school listed above is the usage of online tools to organize campus carpools. The interest in carpooling at William and Mary and the evident lack of successful carpools within the campus community suggest that the College needs greater communication between potential carpool parties; the universities listed above often advised William and Mary to experiment with an organizational tool. Efforts for the first month of this project focused on finding a tool that the William and Mary community would embrace and use to find more effective carpools.

There are a number of carpool organizational tools. Each tool that this project explored offers similar services, although nuances make each distinct. The tools operate in a similar manner: each takes certain information about an individual, specifically commute schedule and route, and matches that individual with similar commuters. Differences occur in each tool's method of connecting matched commuters. A detailed outline of each individual tool is included in Table 1; a more brief description continues below.

This project closely reviewed two carpool organizing tools: Zimride and AlterNet Rides. Several factors led this project to purchase AlterNet Rides for a one year trial.

Zimride is an increasingly popular tool, the fastest growing on the market. Developed by a recent graduate of Cornell University, Zimride offers a very tech-savvy, social-network oriented service. Participants create a personal user profile to be viewed by potential carpool interests. Many institutions are drawn to Zimride by a feature that allows it to interface with Facebook. Zimride charges an annual subscription fee of \$9,500.

The second tool is a ten-year-old program called AlterNet Rides. As it was developed before the advent of widespread social networking, AlterNet Rides is a much more discreet program than many of its competitors. Through a low-key profile, participants are matched and given a list of contacts. These contacts are subsequently reached through anonymous email. More specific arrangements are made when each party expresses interest in committing to a carpool. AlterNet Rides charges an annual subscription fee of \$500.

Different contacts at the universities listed above offered different opinions of both AlterNet Rides and Zimride. A frank discussion with Andrea DeRose, Head of Transportation Demand Management at Princeton University, helped lead this project to the conclusion that AlterNet Rides could make the strongest impact at William and Mary. DeRose has watched the Princeton community respond to AlterNet Rides since it subscribed to the service in October 2008. Despite free parking at Princeton, the carpooling program there continues to grow. A large percentage of students at Princeton do not commute, meaning that promotional efforts were

directed at faculty and staff; the faculty and staff appreciated the low-profile nature of AlterNet Rides.

AlterNet Rides offers a service for multiple commuter destinations. The 2009 Transportation Survey found that a number of faculty, staff and graduate students that commute to the Virginia Institute of Marine Science were interested in carpooling. Additionally a number of graduate students commute to the William and Mary Peninsula Center in Newport News. These destinations are included in the William and Mary-AlterNet Rides tool. AlterNet Rides charges \$100 for carpool destination added to a base site. Added to the original \$500 AlterNet Rides service, William and Mary's annual subscription fee is \$700. An additional \$250 is charged for installation fee. This project funded the \$950 purchase of AlterNet Rides.

Carolyn Davis, Director of Auxiliary Services, and Bill Horacio, Head of Parking Services, made the purchase of AlterNet Rides possible. Ms. Davis and Mr. Horacio provided crucial guidance and support in bringing AlterNet Rides to William and Mary, showing their commitment to this sustainability initiative.

In order to promote AlterNet Rides, this project designed several pages related to carpooling for the Parking Services main page. These pages are currently available.

In order to better understand the nature of carpooling at William and Mary, it will be imperative to track the success of AlterNet Rides and further promote carpooling. This project suggests that William and Mary record the number and size of carpools that form in the upcoming year as well as successful matches created by AlterNet Rides. In addition, it would be beneficial to track the longevity of these carpools. With these additional data, Parking Services can further decide whether to adjust the carpool program. Specific adjustments may include a long-term commitment to AlterNet Rides or expanding reserved carpooling spaces beyond 25.

II. Public Transportation

This project had the goal of promoting public transportation at William and Mary, particularly among the student body. The challenge of this goal lies in the fact that Williamsburg is rural, leaving the town with relatively few resources to manage public transportation. In the 2009 Transportation Survey, many students cited bus timeliness as a detractor from use.

Unfortunately, this project did not find direct ways to remedy that problem. That being said, a bigger problem among those who choose not to use public transportation is a lack of information. 70% of student non-users reported an inability to find and comprehend information regarding bus times and routes.

A lack of student knowledge regarding Williamsburg transportation is understandable. During the academic year, as many as nine separate bus lines run in the Williamsburg area; in addition, the Trolley runs a separate route. A student unfamiliar with the greater Williamsburg area, let alone specific bus routes, is easily overwhelmed by the complexity of information provided by the Williamsburg Area Transportation Authority (WATA). This project found a place where

pertinent information is consolidated and presented in an intuitive interface to those interested in using the bus system.

Google Transit is a feature on Google Maps. In collaboration with Google, WATA mapped its bus routes and the times that those routes run. Given a place of origin and destination, Google Transit will suggest a bus route. Google's mapping feature makes finding bus stops and destinations easy; only a vague knowledge of the Williamsburg area is required to effectively use the tool. For instance, if a student were to enter "William and Mary" as a place of origin, Google Transit would direct that student to several bus stops on campus. A destination of merely "Target in Williamsburg" would suggest the student go to the Target on Monticello Avenue. This project believes that Google Transit has the ability to completely change the student perception of Williamsburg public transportation.

There are several opportunities to improve Google Transit. The most immediate is the fact that the Trolley route and run time is not included in the map. Due to the Trolley's relative newness, WATA did not include this route in its initial mapping project; the technician responsible for the project has since left WATA. It is possible that, as part of a GIS class, a group of William and Mary students could provide this mapping information to Google Transit. This project offered to arrange contact between WATA and the William and Mary GIS program in order to map the Trolley route. As of mid-August, this project is still awaiting a response from WATA.

Additionally, Google Transit does not list a handful of very specific stops. Each stop follows exactly the routes outlined on WATA's website, which in some cases are more of a guideline than a stop-by-stop route. For instance, the Blue line makes stops up and down Richmond Road that are not specified on its official route description.

Over the next academic year, there are several goals that this project aims to meet for public transportation. The first is mapping the Trolley on Google Transit. This will require further communication with WATA, specifically Leon Sisco, and the William and Mary Center for Geospatial Analysis, more specifically Professor Stuart Hamilton. In addition, it would benefit Google Transit users to ensure that all stops are accurately mapped, specifically for the Blue line.

A final suggestion for public transportation is the creation of a student-oriented map. This map would be based on key locations, places of student interest, including Target, New Town and Prime Outlets. This map need not be geographically accurate, but show more specifically what lines go where. This may take a degree of creativity. The next step for this task should be to establish communication with either Professor Hamilton in the William and Mary CGA and Creative Services to produce an attractive and functional map.

III. Zipcar

Due to an effort by Parking Services, William and Mary will have four Zipcars on campus by October of 2010.

Zipcar is a car-sharing service. With an annual fee, students, faculty and staff can register for a Zipcar membership, which grants access to William and Mary specific vehicles parked on campus. Zipcar members can reserve cars online and use the cars for up to four days at an hourly rate. While Parking Service's effort to bring Zipcar to William and Mary took place in the periphery of this project, it still makes an invaluable contribution to William and Mary transportation on several fronts.

Zipcar has the ability to convince many skeptics to experiment with carpooling. A common fear among potential carpool participants is that of being "trapped" in one place without a personal vehicle. William and Mary's partnership with Zipcar effectively eliminates this fear by providing the community with a car whenever needed.

Zipcar also adds an interesting spin to public transportation. If students are aware of Zipcar, they may decide to avoid the hassle of bringing a car to campus, as Zipcar offers a convenient alternative. Rather than reserving a Zipcar for more mundane tasks, say going to Bloom or Target, students will have incentive to use public transportation. Zipcar officially claims that 46% of its members "agreed or strongly agreed that they use public transit" more after joining the service.

IV. Carbon Credits

The final goal of this project was exploring ways to offer members of the William and Mary community the opportunity to purchase carbon offsets. To put the study in context, this project took into consideration a general level of skepticism surrounding carbon offsets programs.

This project began its exploration of carbon offsets by meeting with Professor Sarah Stafford, an environmental economist. A frank discussion with Professor Stafford pointed to some glaring problems with partnering William and Mary with a private carbon offsets program. Namely, finding a company with enough transparency to satisfy potential purchasers is exceedingly difficult; companies that sell carbon offsets are often unwilling to fully disclose expenses. Nevertheless, this project communicated with two different companies that exclusively sell carbon offsets. These are Renewable Choice and NativeEnergy.

Renewable Choice provides carbon offsets for Macalester College in Minnesota and Juniata College in Pennsylvania. They offer two basic options for customers of our scale:

- 1.) William and Mary estimates its own carbon footprint and reports that information to Renewable Choice. Renewable Choice then provides a monetary offsets figure. This figure could be paid on an annual basis.

- 2.) Individuals within the William and Mary community use an online service provided by Renewable Choice to offset personal emissions. Examples of individuals that would participate include commuters that offset a part of their daily commute over a given time frame, or a student or faculty member that uses plane travel for academic reasons.

Jason Wycoff, a representative from Renewable Choice, suggested that William and Mary use the second option, as it is interested in carbon offsets specifically for travel.

Renewable Choice did not discuss specific percentages of its expenses; Jason Wycoff mentioned that a “marginal” amount goes towards administrative responsibilities, while the company’s vast majority of income goes towards a specific project. Renewable Choice is currently financing a project in East Moline, Illinois that is directed to destroying methane in a local landfill. The landfill project is described as “additional,” meaning that it would not exist without funding provided by Renewable Choice.

Native Energy is a more politically prominent company than Renewable Choice. For example, the Sierra Club endorses Native Energy. Many delegates at the Democratic National Convention use Native Energy to offset their travel, as did Al Gore in his production of the documentary *An Inconvenient Truth*. Despite this company’s popularity, a discussion with Adam Scherr of Native Energy resulted in the same basic conclusions as the discussion with Renewable Choice. Native Energy does not disclose its administrative costs; there is no way to see exactly what portion of their incoming funds goes to administrative responsibilities and privileges.

Native Energy finances a project in Greensburg, Kansas. Two years ago, a tornado destroyed the town, leaving it with limited energy infrastructure. With financial assistance from Native Energy, Greensburg is creating a new town powered primarily by a wind farm. President Barack Obama called the town “a global example of how clean energy can power an entire community.”

Adam Scherr suggested that if William and Mary were to partner with Native Energy that the school calculate its carbon footprint, if only for travel, and pay an offset cost suggested by Native Energy. Scherr alluded to past experiences where voluntary offset payments were meager compared to an administrative commitment to Native Energy; he also mentioned that Native Energy would be reluctant to put significant effort towards an institution from which relatively little monetary flow is expected.

Taking into consideration several factors, including school-wide attitudes towards carbon offsetting, the relatively distant location of the projects financed by companies like Renewable Choice and NativeEnergy and the lack of complete transparency in funding these projects, this project recommends that other alternatives be pursued before turning to these companies.

In consultation with several faculty and key staff members within the William and Mary community, we have generated three alternatives to partnering with an offsets company. These include:

- 1.) Promote more sustainable transportation options as a way of reducing one’s own carbon footprint. For instance, if an individual were to take a trans-Atlantic plane trip, a William and Mary service would recommend that that individual use public transportation for a

certain number of trips leading up to the plane travel. Professor Stafford was a keen proponent of this idea

- 2.) Find more local examples of carbon offsets programs. This project contacted the Virginia Department of Environmental Quality to ask for assistance in finding projects in Virginia directed at reducing carbon emissions. The DEQ responded with this statement: “Unfortunately, there are not any VA specific carbon offset programs currently available that we are aware of for carbon offset purchases.” The DEQ further suggested that this project contact power companies such as Dominion to inquire about their green energy purchasing programs.
- 3.) Create an offsets program at William and Mary itself, where school administration or a campus organization designate a specific project and have full control and visibility into the true costs and carbon offsets of that program. Such an approach could also directly benefit the College through increased efficiency of utility consumption (presuming this would be some form of energy project, such as HVAC renovation or building insulation) and by covering maintenance costs of the particular offset project (hence positively affecting the net operating budget of Facilities Management).

Of these three options, this project finds the last option most appealing (due to its transparency and home-grown nature), potentially effective (as William and Mary will monitor the actual carbon benefits) and beneficial to William and Mary (because we experience the offset as a community). The first option is rated as a back-up; but this project foresees issues with reliably tracking personal behavior and calculating whether this contributes to any intended offset. The second option does not appear viable.

In order to attract members of the William and Mary community to a newly established W&M Offset Program, this project will identify a high profile, widely-used academic building that could benefit from a carbon-reducing project. Essentially, this project will also appear as one that would not normally occur if not for the existence of the W&M Offset Program. This project contacted Dan Patterson in Facilities Management to discuss potential carbon-reducing projects of this nature. As of mid-August, we are in the process of identifying a suitable project. This project intends to bring a specific proposal to the COS Steering Committee in early September 2010.

This project experienced a conceptual breakthrough in the idea of a W&M Offset Program. At the outset of this project, it was not expected that a school-specific program would be created. As a result of this change in course, there remain a number of tasks before such a project is initiated, nonetheless completed. Once a carbon-reducing project is agreed upon, both Finance and IT will need to be involved in setting up an offsets fund and online contribution tool. Within this “offset donation” tool, there will need to be ways to calculate individual contributions for specific methods of travel so that individual contributors can assess how much they should contribute to offset their particular activities. We will also necessarily collaborate with central University Development and the Alumni Office to help advertise the availability of a *bona fide*

offset program that directly benefits the William and Mary community. We believe such a home-grown offset program would be unique, with William and Mary leading the way among national academic institutions. As far as this project knows, William and Mary will make the first to attempt to create such a program.

Once a W&M Offset Program is established, we hope to convince the Board of Visitors to contribute a suitable offset for their next meeting and advertise this broadly to the William and Mary community, and beyond. This action would provide William and Mary a tremendous marketing/branding opportunity while also making a significant contribution to reducing the carbon footprint of the institution. In the future, this project may launch campaigns for offsetting particular events associated with William and Mary, such as Homecoming, football games, Charter Day and Earth Day. All of these opportunities will be discussed in full with the COS Steering Committee and every other relevant entity on campus; here we are simply expressing our enthusiasm for this unique opportunity.

V. Conclusions

In order to promote Google Transit, AlterNet Rides, Zipcar and potentially a W&M Offset Program this project created a “Sustainable Transportation” myWM channel. It is currently live on myWM. We need the assistance of the COS Steering Committee to advertise this channel appropriately.

This project has produced a number of initiatives that should be observed and studied in the upcoming year. Specifically, the use of Parking Services’ carpool program and AlterNet Rides should be monitored, as well as the number of students using Google Transit and local transportation. Inroads have been made in the creation of carbon offsets program, but this particular project remains far from completion.

In order to keep these initiatives moving forward, this project recommends the restoration of a Committee on Sustainability working group directed at transportation. Student involvement could assist in monitoring changing transportation behaviors, take the lead in establishing a W&M Offset Program and further promote of tools currently at the finger tips of the William and Mary community.

Tool	AlterNetRides	Zimride	GreenRide
------	---------------	---------	-----------

Table 1

Customers of Interest	Princeton, Cornell, Pittsburgh University	Cornell, Stanford, George Mason, U. Michigan, Dartmouth In Discussion with: UVA, JMU and VCU	Duke, Purdue, U. Michigan
Brief Description	10 years Used by Colleges, Regional Transportation, Corporations (Lockheed Martin)	3 years Designed Specifically for College Campuses	Product of Ecology and Environment Inc., founded in 1973
Price	\$250 Installation Fee \$500 Per Year for 1 Destination \$100 Per Year for each Additional Destination	\$950 Installation Fee \$9,500 Per Year With Zipcar, \$7,500 Per Year	\$9,900 for First Year \$7,900 for Each Subsequent Year
Administrative Capabilities	View <ul style="list-style-type: none"> •Number of Users •Number of Matches (Number and Location of Non-Matches) •Location of those who elect to place themselves on map Member of InCommon	View <ul style="list-style-type: none"> •Number of Users •Number of Matches (Number and Location of Non-Matches) •Distance Traveled by Each Ride Share •Map of Ride Distribution Member of InCommon	View <ul style="list-style-type: none"> •User Account Activity •User Matching Activity •User Profile Information •Raffle Management
Interface	<ul style="list-style-type: none"> •Applet: Gives the impression that AlterNetRides is merely an extension of Official School Website •List of Potential Rides; Ability to Choose Rides from Map (Map Voluntarily Marked) •Widen and Narrow Range of Potential Rideshare partners •Yahoo Mapping 	<ul style="list-style-type: none"> •Zimride Profile: Address, Rideshare Information, Picture •Matches similar addresses, the user views profiles of potential partners •Ability to Hide Street Address •Linked to Facebook •Google Mapping 	<ul style="list-style-type: none"> •Client Name listed next to GreenRide Banner •Personal Account Sign-In •Individual Commute Calendar Application •Bing Mapping
Unique Characteristics	<ul style="list-style-type: none"> •Blind Email, Discreet/Private •Applet Interface gives genuine college appearance 	<ul style="list-style-type: none"> •Partnered with Zipcar •Ability to link with regional schools (VCU, UVA) 	