A Cost Benefit Analysis: Exploring Alternative Transportation Initiatives with Parking Services

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ENVS4100: Appropriate Technology and Sustainability – Ecological Design: The Campus as a Living, Learning Laboratory

Project Synopsis:  
The goal of this project is to identify alternative transportation options and increase their use on and around campus by making them available to the Parking Services Parking Enforcement Division. The authors hope it will serve as a platform for students to investigate related issues dealing with non-sustainable transportation practices on campus. One of the intentions is to facilitate a paradigm shift in parking service employees so they become interested in the use of sustainable transportation alternatives. The project began with a desire to reduce GHG emissions on campus and save precious monetary resources spent on maintenance, labor, and fuel costs of the vehicles. Furthermore, the authors want to promote a healthier lifestyle choice for these employees and other campus inhabitants.

The authors believe that conducting a pilot program using the Office for Sustainability Yuba bikes along with our calculated estimates derived from the vehicle cost work history forms received from the FOIA request would provide sufficient evidence of total maintenance cost reduction in addition to GHG emissions reduction.

Finally, the authors hope this project demonstrates convincing evidence to implement a pilot program on campus for Parking Enforcement employees to use the Yuba Bikes, and inspire future university goals for the use of alternative transportation solutions at least 13.5% (35 days out of the year, weather permitting) of the total time Parking Enforcement employees are working with vehicles.

Methodology:  
Three central methods were used to gather data for this project – interviews, research of best practices currently used by universities and police patrols, and research into costs associated with the vehicles used by parking services regarding maintenance, labor, and fuel use, as well as GHG and more specifically CO2 emissions. In addition the authors will also be conducting a post pilot program survey geared towards Parking Services enforcement employees to measure the success and validity of the paradigm shift this project could potentially accomplish.

Our interview process included several prominent figures in the Office for Sustainability, Parking Services of WMU, Facilities Management at WMU, and the University of Tennessee Chattanooga police bicycle patrol. All of these individuals provided valuable insight regarding concerns of implementation, and best practices.

Conducting our best practice research led us to the IPMBA (International Police Mountain Bike Association), as well as Wayne State University, and the University of Tennessee Chattanooga.

The research done on the costs of maintenance and labor was done by submitting a FOIA request to facilities management. From that information the authors were able to derive estimated calculations on GHG emissions and the yearly overall cost of using the current vehicle fleet.
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Conclusions:
After reviewing the information obtained from the vehicle cost work history forms provided by the FOIA request the authors have concluded:
1. Total maintenance costs of the nine Parking Services enforcement vehicles between 2011 and 2016 was $62,477, which is $12,495 a year on average.
2. Considering that Parking Enforcement employees only work a five day work week, that is 261 work days a year. If 13.5% (35 days out of the year, weather permitting) of the total time Parking Enforcement employees are working with vehicles was done with alternative transportation method such as using a Yuba Bike it could potentially provide enough monetary savings from maintenance costs to purchase a Yuba Bike every year. Our estimates show that 13.5% of $12,495 is $1,686 which is roughly $680 more than the cost of an electric assisted BODA BODA V2. The estimates were generated generously to include a wide margin of error.
3. Total GHG and more specifically CO2 emissions produced from the fleet of Parking Enforcement vehicles between 2011 and 2016 was 271,185.6 lbs. of GHG emissions and 188,651.55 lbs. of CO2, which is an average of 54,237.13 lbs. of GHG emissions per year and 37,730 lbs. of CO2 emissions per year.
4. Furthermore, if 13.5% of the total time Parking Enforcement employees are working with vehicles was done with alternative transportation method such as using a Yuba Bike GHG emissions would decrease by a total of 7,322 lbs. per year while CO2 emissions would be offset by 5,093 lbs. per year.

Recommendations:
In order to improve WMU’s current transportation practices and meet the goal of the Climate Action Plan, the Talloires Declaration, and the ACUPCC to make a transition to alternative transportation options, university wide, the authors would like to make the following recommendations:
1. The implementation of a pilot program using Yuba bikes for Parking Service employees. Specifically a BODA BODA V2, and the El Mundo models held at the Office for Sustainability.
2. Pending the pilot programs success and willingness of parking enforcement employees, the addition of a university policy regarding the use of the Yuba bikes at least 13.5% of the time Parking Service enforcement employees are working.