Utilizing a Green Revolving Fund For Reforestation on University of Richmond's Pagebrook Property

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Introduction

In 2013, the University of Richmond directly sponsored 3,000 miles of travel for faculty, staff, and student, conferences, engagements and sporting events. This type of travel emits over 2,410 tons of carbon into the atmosphere. This research and proposal recommends that the University implement a fee-structure that internalizes the cost of carbon from University sponsored travel, we conducted a meta-analysis of firms that provide offsets for carbon dioxide emissions. We examined ten firms that offer offsets for different types of transportation. With this information we created a fee-structure that would charge $0.006/passenger mile for air travel, $0.004/passenger mile for car travel, and $0.001/passenger mile for train travel (Map 5). Given the cost of the project and the 1% growth rate for University sponsored travel over the 50 year time horizon because reporting data will become more accurate (Zanella 2014). We anticipated that the loblolly forest growth will remained unthinned and have maximum growth over 50 years, leading to the total amount of carbon sequestered at 300 tons of CO2/acre (Nepal et al. 2010). With a 47 acre plot, the total amount of carbon sequestered per year, for a 50 year time period, would be 282 mtCO2. Given the 1% growth rate for University sponsored travel over a 50 year time period, this project would offset the carbon for 5.64 years between 2014-2064.

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The dollars saved from the projects up to the cost of the project, plus interest, will be repaid to the fund. Our research of other peer institutions found other institutions (i.e. Yale University, Macalester College, and William and Mary) that had voluntary fees in place for domestic travel that contributed to green funds in place for domestic travel that flows into fund.

Background

After a 2006 campus wide energy audit, the University put money into investing in improving campus efficiency through the creation of a revolving fund. The Energy Master Plan that Enervative Solutions identified and prioritized numerous opportunities for energy and environmental improvements with the lowest cost and highest payback (Enervative Sol., 2013). The master plan is broken down into three phases that will be implemented in the next 20 years (Zanella 2014). The projects in phase one have short payback periods, and are capital intensive, whereas the future projects have higher costs, complex implementation requirements, and the emerging technologies. The dollars saved from the projects up to the cost of the project, plus interest, will be repaid to the fund. Our research of other peer institutions found other institutions (i.e. Yale University, Macalster College, and William and Mary) that had voluntary fees in place for domestic travel that contributed to green revolving funds. The model that we are suggesting is a systematic institutional change for the University of Richmond that would internalize the cost of carbon by creating a mandatory fee-structure that would add to our green revolving fund.

The Pagebrook property was originally purchased from the Commonwealth of Virginia in 1996 as a potential site for future expansion of UR's campus in the future. The university has not used the area since it was purchased from the Commonwealth of Virginia in 1996. That purchase price included a commitment to develop the property with a master plan that would allow for the building of 2-3 buildings on the property. The legal description of land use prohibits development of the property.

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Methods and Assumptions

In order to create the fee-structure that internalizes the cost of carbon from University sponsored travel, we conducted a meta-analysis of firms that provide offsets for car travel by 67% by 2044.

Carbon Sequestered per year = $14,100 mtCO2; 50 years = 282 mtCO2

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Reference

References

Acknowledgements

Thank you to Dr. David Salisbury and Dr. Peter Smallwood for their support and guidance. We appreciate the information provided by Dr. John Hayden about the best species to use for reforestation and Louis Love on tax status of the property. A special thanks to Megan Zanella-Like for her direction and advice throughout the course of the project.

Graph 1

Figure 1: Predicted CO2 emissions from University sponsored travel to 2050.

Graph 2

Figure 2: Predicted CO2 emissions from University sponsored travel to 2050.

Graph 3

Figure 3: Predicted CO2 emissions from University sponsored travel to 2050.

Graph 4

Figure 4: Predicted CO2 emissions from University sponsored travel to 2050.

Graph 5

Figure 5: Predicted CO2 emissions from University sponsored travel to 2050.