

**Appalachian Energy Summit Poster Competition**

**Abstract Proposal**

**April 2015**

**Proposed Title: E-Cycle Share App State**

Note: This is for both a research paper and project

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**Vision:** The vision is twofold. Part one is in progress, whereby an independent student initiative on Appalachian's campus aims to install a bike share as a permanent fixture. The justification for this initiative is to contribute to Appalachian's stated goal of being carbon neutral by 2050, and one area of challenge is in transportation systems due their nature of being carbon intensive during operation. For this reason, the ultimate outcome is to have a bike share that employs use of bicycles and bicycles that use electric motors to mitigate difficulty of traversing challenging terrain. The second part of the vision is to implement this concept within the community of Boone. Once the program is proven on campus, it should serve as an example for the town to reference as justification for investing in the project.

**Project Methodologies:** A framework for determining suitable universities will be crafted so as to provide consistent and reliable outcomes of the data gathering process. An examination of each university's program will include data on the pros and cons of various types of programs. These will include a comparison of variations within the bike share concept, electronic bike sharing, bike collectives/co-ops, bike libraries, bike rentals, bike promise, and town-gown contracts. Another area of consideration is feasibility --- cost of bikes, racks, maintenance, frequency of use, etc. It will also include data on user behavior to understand patterns of operation and how to most efficiently implement the project. Aspects in this area include types of trips, route choices, terrain aversion, and response to weather conditions among other things. Environmental considerations will also be examined. Such aspects include air quality, and external vs. internal costs among other things. An examination of administering programs will be conducted. On this front, information will be gathered on parking issues --- planning for capacity, impounding, etc. It will also look at weaknesses in programs and what is being done to combat the issue(s).

**Ultimate Outcome:** The results of this study will be used to aid in the process of starting a bike share on Appalachian's campus. Should the outcome prove successful, the next desired outcome is to implement this program in the Boone community.



Figure 1 Bike Powered by Electricity --- completed by Nicholas Stover and Ryan Gillespie.

**Phase 1** – Build an e-bike for exhibition (complete)

**Phase 2** – Display bike at campus and community functions to build support.

- Research and develop database of bike share case studies
- Construct solar powered charging station
- Develop and implement pilot study

**Phase 3** – Begin collaboration with town officials on potential implementation.

- Develop plan within the town's bike plan framework to achieve desired outcomes.