**INTRODUCTION**

**Function:** BIPSS is an aftermarket embedded computer system installed on a bicycle, with a focus on security and power peripherals, including a GPS tracking system and electronic lock system.

**BICYCLES ARE STOLEN EVERY SINGLE DAY IN THE UNITED STATES.** Nearly all store bought bicycles do not have any anti-theft or location tracking components. Regular bicycle cable locks are also prone to rust, bolt cutters, and mechanical failures. Bicyclists can also have their smartphone die in remote areas.

The product will serve casual cyclists in the Grand Rapids area. Shipping costs and risk of damage will be kept to a minimum by keeping the product local.

**REQUIREMENTS**

The system must be a visually appealing, low cost, low weight, and easy to install aftermarket product for casual bicyclists. Our prototype will be installed on a standard commuter mountain bike, provided by one of our team members. Our design will need to store enough energy through magnetic induction (or heat from the braking system) to charge an iPhone to 1% per minute at a casual pace (defined as 10 mph for the average biker). The GPS and the lock will have low power coin cell batteries as a backup. Near Field Communication will be used as it is secure, used in close proximity, and is common on most smartphone devices.

**DESIGN GOAL**

The goal is to create an aftermarket security system for bicycle riders and to provide them with a sense of security. We want this system to be easily installable, but hard to tamper with.

**CONCLUSION**

Our design will effectively serve the market with a reliable product that meets all of our design requirements.