- **Customer Requirement: The system should be robust.**
  - Engineering Requirement: The system should maintain all functionality with no interruptions after dropping 3 feet onto pavement.
  - Video Link: [Enclosure](#)

- **Customer Requirement: The system should be safe.**
  - Engineering Requirement: The system must use MC4 (or similar weatherproof) connectors, have a disconnect switch, and not have any exposed conductors. Wires must be organized in split loom or other protective materials. All devices must be rated at least IP64 (https://en.wikipedia.org/wiki/IP_Code).
  - Video Link: [Waterproof](#)

- **Customer Requirement: The system turn signals should be automatic.**
  - Engineering Requirement: The system turn signals should turn off within 15 feet of completing a turn.
  - Video Link: [Signals](#)

- **Customer Requirement: The system brake lights should be automatic.**
  - Engineering Requirement: The system brake lights should linearly adjust to maximum brightness and flashing speed as the bicycle slows down until fully stopping.
  - Video Link: [Brakes](#)

- **Customer Requirement: The system should be visible.**
  - Engineering Requirement: All system lights should be visible by a driver with 20/20 vision from 40 feet away in complete darkness with a light output of at least 1000 lumens.
  - Video Link: [Lights](#)

- **Customer Requirement: The system will have a small LED to indicate the level of the battery in 33% increments.**
  - Engineering Requirement: The recharging function will be achieved via a small battery connected by something similar to a USB-c that will be able

to be directly connected to an outlet and charged, with the LED indicator showing the battery level in 33% increments.
  - Video Link: Battery

- **Customer requirement: The turn signal indicator lights will mimic the turn signal itself when they are on. The speedometer will display the rider's speed in mph over 2 7-segment displays.**
  - Engineering requirement: The power level LED will be blue from 100% to 66% battery capacity, green from 66% to 33%, red from 33% to 0%.
  - Video Link: Dashboard

- **The final system may not include a breadboard**
  Anytime you show us a part of your system working for a score, it may not use a breadboard for implementation. Feel free to use them for testing and development but they are a no-go for check-offs.
  - Video link: No Breadboard

- **The final system must contain a student designed PCB**
  The PCB must be useful to the system, but does not need to contain all blocks of the system.
  - Video link: [PCB](PCB)

- **The system must be ruggedly enclosed.**
  All of your electronics need to be enclosed and safe. We will expect you to be able to shake the enclosure vigorously and still have the system function after.
  - Video link: Enclosed

- **All wire connections to PCBs and going through the enclosure (entering or leaving) must use connectors.**
  No wires will be directly soldered to a PCB that you design or purchase. Additionally, any wires entering or leaving your enclosure(s) need to use connectors so that the enclosure may have all wires removed from it if needed.
  - Video link: Connections