# Electrical TODO Fall 2017

## Circuits

* BMS (high priority)
  + Test current BMS configuration on car
  + New BMS ECU
    - Solder
    - Test with battery pack in office
    - Install in car
  + Design new BMS monitoring board
    - Find proper fuses
    - Find solution for HV trace spacing
  + Design new BMS ECU to fit in top tray
* Wiring harness
  + Design new harness schematic
  + Make new wiring harness
* Front ECU rev4 (adds Raspberry Pi, better working BSPD) (high priority for RasPi logging)
  + Solder
  + Install
  + Test BSPD
* Rear ECU rev4 (adds better latching mechanism, more efficient cooling)
  + Redesign latching mechanism to not require Teensy
  + Make PWM cooling control more efficient
* Test using better Analog to Digital Converters to replace built-in Teensy ADCs

## Electric Drive Systems

* Design and manufacture busbar layout for 4 segments
* Design and build battery pack building jig
* Design and manufacture new ECU boxes
* Build 2+ new battery segments
* Cooling system
  + Research better pumps
  + Change fittings on motor
* Fix orientation of pedal sensors so they can sense along entire travel distance

## Software

* BMS (high priority)
  + Keep testing current software on Linduino
  + Test code with new Teensy ECU
  + Add features
    - Coulomb counting
    - Send more voltage info on CAN Bus
    - Better voltage monitoring
* Telemetry system
  + Raspberry Pi
    - Write data to Raspi SD card (high priority)
    - Send live data via wifi (possibly)
  + XBee
    - Add XBee code to Rear ECU
    - Make XBee more efficient (send data faster / more real-time)
  + Analysis platform
    - Web server platform (possibly)
* Code refactoring to match simplified ECU architecture

## Validation

* Battery testing
  + Build testing resistor jig (work with mechanical people)
  + Design discharge control and data acquisition circuit
  + Test batteries and store characteristics about each cell
* Test cooling system to make sure it is sufficient
* LV battery testing
  + Run vehicle and log data about current usage
  + Resize battery based on testing data
* Design and build wiring harness validator circuit