Powering the whole Recycle Sorter:

* Note that both Arduino and the PC each have pin-outs for 5V (can supply power to all known sensors
* Note that voltage converter is needed between the PC or Arduino and the LED strip
* Note that a servo board is necessary when using Arduino because the current draw of 5 servos is too high
* Note that a servo board is necessary when using PC since there is only one PWM port (still need confirmation on allowed current draw on PC’s GPIO, but the board is needed for a different reason anyways)
* More information is needed on how to program the GPIO on the PC
* What allows the servo board to do it’s magic is it has a microcontroller that does the PWM pulse programming (basically just delays and switching between which servo is being controlled and some shutoff techniques so the servos don’t move when switching between them) such that several servos can be run off one pwm cable and so that we don’t need to program it ourselves (but possibly find the library for it?)
* “Servo board” means a board with a small microcontroller that distributes power to each servo

Option 1: **No PDB**

Wall adapter will power PC

PC powers all other components

PC powers camera through USB

Option:

Arduino connected by USB to USB-B

Arduino powers all sensors, servo board, and servos

Option b:

Arduino connected by USB to USB-B

Arduino powers all sensors

Servo board and connected servos are powered independently from PC

Option i:

Program all sensors and servos through Arduino

Option ii:

Program servos through PC and communicate back to Arduino with sensors

Option ii:

Program everything through PC

Option c:

Program the PC for all sensors and actuators

Servos and servo board are powered from PC

Option d:

Make/buy a light version of an Arduino board that would already have an servo board integrated on it

Option 2.1: **Arduino included**

Make/ buy power distribution board where the wall adapter connects as an input and output slots would be for the PC, arduino, servo board and LED strip (board would include the voltage conversion for each)

(See options in Option 1: No PDB)

Option 2.2: **No Arduino**

Make/ buy power distribution board where the wall adapter connects as an input and output slots would be for the PC, and LED strip (board would include the voltage conversion for each)

PC powers servo board, servos and sensors

Option 2.3: **No Arduino**

Make/ buy power distribution board where the wall adapter connects as an input and output slots would be for the PC, servo board and LED strip (board would include the voltage conversion for each)

PC powers servo board, servos and sensors

**For Options 2.1 - 2.3:**

Assume USB is powered by PC

Though it is possible to power the camera through PDB it’s too much trouble