

Eco- Pedaler



Our Goals

- Generate electricity using human power
- Use the electricity to accomplish something useful
- Teach users about:
 - Power
 - Energy
 - Electricity Use



Generating Electricity



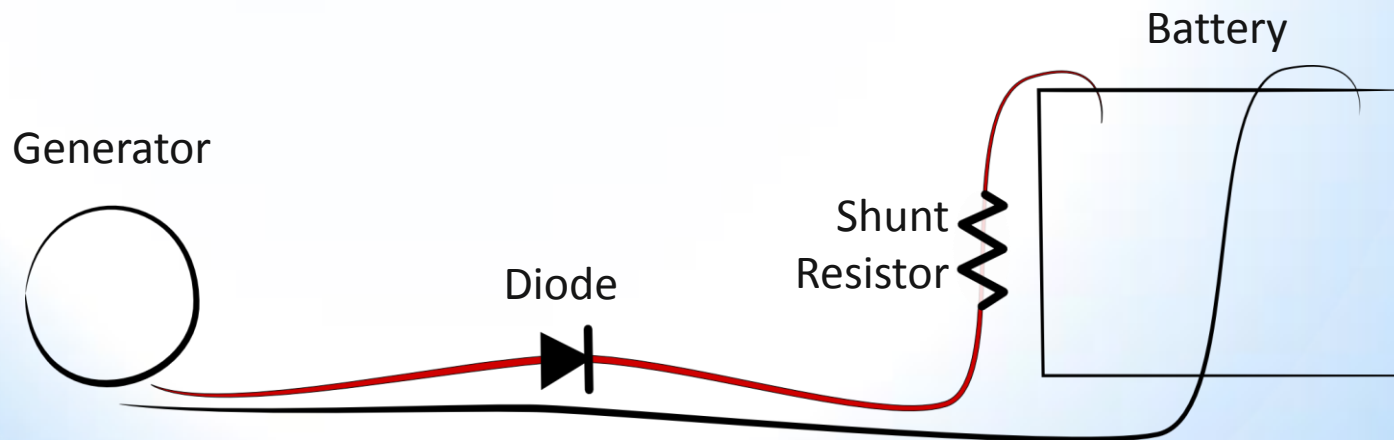
V-belt makes a 10 to 1
gear ratio!

- A V-belt connects the bike rim to the generator pulley
- A scooter motor is used as the generator

Generator:
24V Permanent Magnet DC Motor

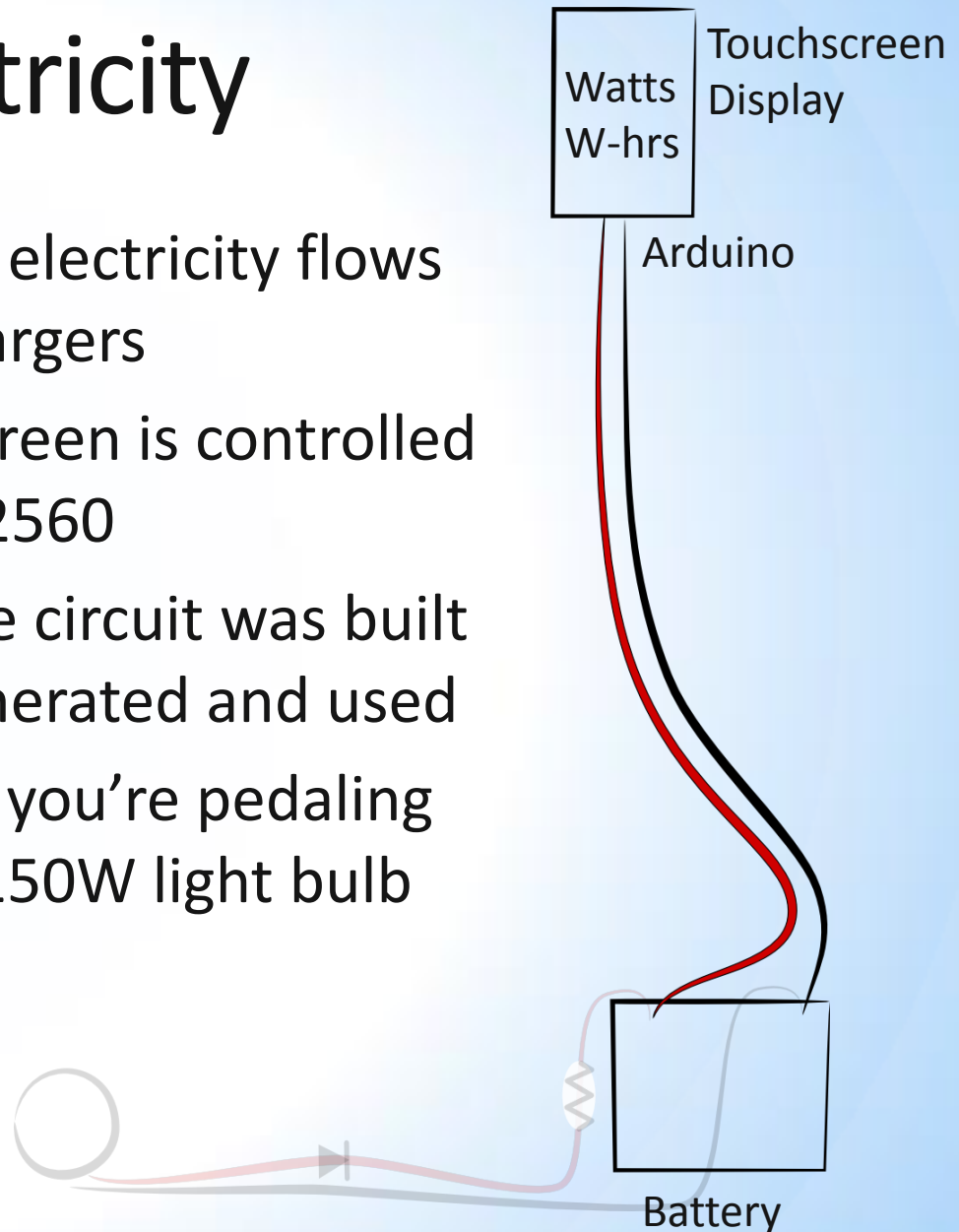
Managing the Electricity

- **Diode** – a one way valve which allows electricity to flow from the generator to the battery, but not from the battery to the generator
- **Shunt Resistor** - measures the current being generated
- **Battery** - acts like a buffer, so the electricity is distributed at a consistent voltage



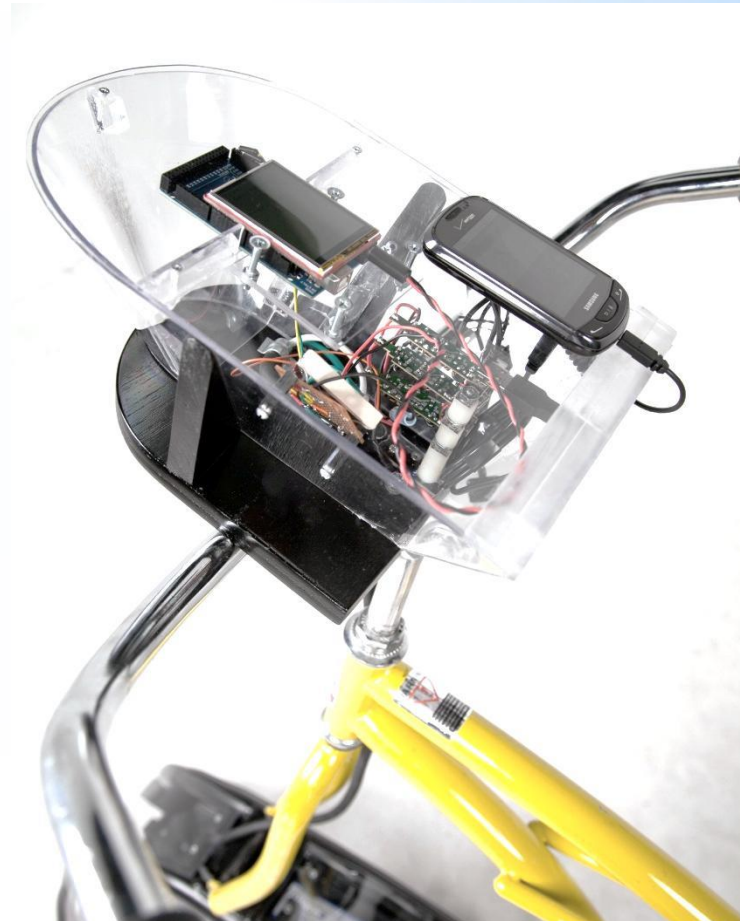
Using the Electricity

- From the battery, the electricity flows to the display and chargers
- **Display** – the touchscreen is controlled by an Arduino Mega 2560
- **Monitoring** – a simple circuit was built to monitor power generated and used
- All extra electricity (if you're pedaling really fast) goes to a 150W light bulb



Using the Electricity Cont'd

- The display shows:
 - Power you are generating (Watts)
 - Energy you generated (Watt-hours)
- Car chargers allow your phone to charge in the same amount of time it takes to charge in a car



References

Similar Projects:

- Some free DIY plans and good examples of a refined design:
<http://www.pedalpowergenerator.com/>
- A similar project using a car alternator:
<http://www.instructables.com/id/Bicycle-Power-for-Your-Television%2c-Laptop%2c-or-Cell-/>

Parts Supply (after looking locally!):

- A large selection of pulleys, belts, and other mechanical items: <https://www.surpluscenter.com/>
- Permanent Magnet DC Motors that work as generators:
<http://www.monsterscooterparts.com/24voltmotors.html>