Eco-Pedaler

- Display
- Phone Chargers
- Bicycle
- Stands
- Generator
- Battery
Our Goals

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

- 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

V-belt makes a 10 to 1 gear ratio!
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