Project – Energy Production

1. Goal –

Develop a renewable energy generating device. This is very small scale – not trying to generate large amounts of energy, just prove the conceptual understanding, and potentially provide for low power devices such as cell phones in rural areas in developing countries. Use commonly available supplies such as new/used car or computer parts.

Connection between school and community: Consider who in the community could utilize the energy or device.

Provide students an industry context and/or contacts.

1. **General Outline**

All project start with research on two factors: site for deployment, appropriate technology.

**Research –**

* Characteristics of each location: climate, presence of water/streams, hills, sun exposure, cultural needs for technology (cell phones, laptop computers, home/work lighting). Cultural and geographic region and the impacts on the area.
* Appropriate technology
* Wind
* Solar
* Hydropower
* Material availability

Source: Car alternators, discarded cables, fans, etc.

Contact companies that might donate.

Solicit from community and family members.

* Types of renewable resources available – Wind, solar, hydro., geothermal.
  + Needs for each technology
  + Potential for locating materials

**Design-**

Stages of design – concept, design, prototype

Proof of concept:

* Drawings or computer simulation

Wind

* Fan to rotate a turbine, connect to a generator (car alternator) to light a low wattage light bulb.

Solar

* Obtain panel, connect to batter or charger

Hydro

* Use a sink faucet to run a turbine and light a light bulb
* Levers, gear reductions

1. Student activities
   1. High School

Resources: Internet, interview, contact with communities in need of small delocalized power sources, maps.

Materials: Solicit re-usable materials, contact industry partners for re-usable materials. Who (what companies) have supplies that can be useful?

Assessment: Report and Presentation of Research and device

Science Fair - Compensate companies who donate with a mention in the flyer

* 1. **Community College**

Resources and Materials similar to High school, but students take more initiative.

Opportunity for math segment in budgeting cost, and in calculating power needs of a specific device.

Opportunity for grant writing experience.

Opportunity to travel and deploy successful devices.

**Assessment –**

Presentation/Report

Project management and leadership opportunies for CC students

1. Connections between high schoolers and community college students

CC students can facilitate small groups of high schoolers in brainstorming, assist with design process and assembly. CC students can help guide research and help assess research results.