

Engineering Electricity Project: Engineering Option

Goal:

- Create a model of a power plant that can generate energy or renewable energy

Constraints:

- No purchased pre-built/completed design

Engineering Process

- Brainstorm 1 or 2 different designs
 - Include sketch(es) and ideas in your presentation
- Select the design you will build
 - Consider the various factors in the design- creativity, complexity, materials, cost effective, stability, etc.
 - Explain why you decided to choose the design you will be building
- Build your power plant
 - As you build, note any modifications you make from the original plan and why
- As you build, note any changes you had to make and challenges during the build. Test it and see if you can your LED to light!
**Note- it will be difficult to get enough power from energy sources other than a blow dryer, so you will not be penalized if your model either doesn't work, or if you need to 'pretend' the blow dryer is something else.*
- Explore the physics and engineering principles of your power plant
 - How does your power plant generate energy? (electromagnetism, etc.)
 - Making connections to conservation of energy. (Hint: Transform/transfer of energy)
 - Evaluate your product/prototype- how well does it work? How can it be improved? How well does it model how the actual power plants work- what is well represented and what is simplified?

Research

Research how the engineering of that type of powerplant has changed through history

- When was it first used?
- How has it changed?
- How much is it used today?

Create your presentation

Your presentation can be in any format you choose, but must be submitted as a Flipgrid video. I recommend creating a PowerPoint presentation- then filming through Flipgrid, which allows you to flip between recording your screen and through you camera.

- Your face at the beginning of the video - briefly introduce yourself and your power plant
- Showcase your model:
 - Show your sketch(es) and why you decided the power plant you built
 - Building process, any changes/challenges during the build
- Explain your model
 - Explain how your power plant generates energy
 - Evaluate your model- what does it

- Research
 - Share how that particular type of power has been used throughout history
- Reference list

Grading Rubric:

	1- Not Yet at Standard	2- Approaching Standard	3- Meets Standards	4- Exceeds Standards
Criteria 1: Model Engineering Process Clear following of engineering process. Shows brainstorming, sketches, and explains both the model and the process to build the model.	Attempted, but does not meet criteria	Meets all but 2-3 criteria	Meets almost all criteria	Completely meets all criteria
Criteria 2: Explanation of Model Explains how model generates energy, relating to type of energy, energy conservation, and electromagnetism concepts. Evaluates model- how it works, what can be improved what it represents well, what is simplified, etc.	Attempted, but does not meet criteria	Meets all but 2-3 criteria	Meets almost all criteria	Completely meets all criteria
Criteria 3: Research of Power Type Explains how that type of power has changed throughout history. When it was first used, advances made, and how much it used worldwide today.	Attempted, but does not meet criteria	Meets all but 2-3 criteria	Meets almost all criteria	Completely meets all criteria
Criteria 4: Presentation Skills Presentation and presenter are introduced, presentation is clear, concise, and easy to follow. Visuals and text are appropriate. Works cited is present.	Attempted, but does not meet criteria	Meets all but 2-3 criteria	Meets almost all criteria	Meets all criteria, and is engaging

