**Subject area/course**: Science/Physics

**Grade level/band**: 11-12

**Task source**: Summit Public Schools

**Energy Models**

**STUDENT INSTRUCTIONS**

1. **Task context**:

This brilliant complex idea comes to you in a flash! In the form of a complex animated visual or a mathematical formula. You know it might change the world, but you also know your boss just doesn't think the way you do and may not understand. How will you communicate this idea? How will you sell it as a powerful new way of thinking?

This project is your chance to practice! In this project you will have an opportunity to develop a model for conservation of energy that is all your own.

Conservation of energy refers to the fact that energy cannot be created or destroyed; it can only change forms or be transferred from one object to another. The total amount in the universe always stays the same.

1. **Final product**:

In this project, you will develop and communicate a conceptual visual model and computational model of the conservation of energy for the scientific community. You will then build a Rube-Goldburg device illustrating at least 3 types of energy conversions.

To achieve this, you will:

* As a group, define what a model is and discuss its purpose.
* Analyze the energy flow through a simple scenario.
* Create a model for the conservation of energy that takes place in a simple scenario.
* Present and explain your scenario and model in an oral presentation to a small group of peers.

**Additional Information**

1. **Knowledge and skills you will need to demonstrate on this task:**
* Define what a model is and discuss its purpose.
* Analyze conceptually energy flow.
* Model conservation of energy.
* Develop and refine a device that employs at least three energy conversions.
* Communicate your knowledge to your boss to convince him of the validity of your idea.
1. **Materials needed:**
* Item A. What is a Model?
* Item B. Energy Analysis
* Item C. Building the Model
* Item D. Planning Your Presentation
* Item E. Peer Feedback Form
* Assorted material for the Rube-Goldburg machine
1. **Time requirements:**

This task will take approximately 1 week to complete. Your teacher will provide additional details regarding deadlines and due dates.

1. **Scoring:**

Your work will be scored using the Summit Public Schools Energy Models rubric. You should make sure you are familiar with the language that describes the expectations for proficient performance.