**Subject area/course:** Mathematics/Algebra I

**Grade level/band**: 9-10

**Task source**: Generation Texas San Antonio (GenTX SA), Educational Policy Improvement Center (EPIC); Original Author: Tracy Anderson

**Solar Energy Estimate**

**STUDENT INSTRUCTIONS**

1. **Task context**:

In this task, you will write an estimate for a potential client who is interested in installing solar energy panels. You will provide dollar amounts for the initial purchase of the solar energy panels along with the charge per kilowatt-hour. You also will estimate when the potential client will see their investment pay off. You will calculate these amounts by using one-variable linear functions.

1. **Final product**:

Write a persuasive letter that provides mathematical calculations to encourage a fictional business to invest in solar energy panels. Give this potential client the details they will need to make an informed decision about solar power.

Necessary elements:

* Your business letter must be written in professional language and be free of typos or grammatical errors.
* Letters must provide a logical rationale and mathematics to back up your recommendation to adopt solar panels.
* All mathematical calculations should be correct.

**Additional Information**

1. **Knowledge and skills you will need to demonstrate on this task:**
* The meaning of energy, federal tax credits, kilowatt, kilowatt hour, percent, and power.
* Current electric rates in your town.
* How to prepare an estimate for a potential commercial client that is interested in purchasing a solar energy system from your company.
* How to calculate the savings in energy usage (in kilowatt hours) per month and year based on the purchase of a 5 kW solar energy system that produces 8000 kilowatt hours per year on average.
* How to write a business letter using Business Letterhead (Level Design) from Microsoft Word.
1. **Materials needed:**
* Access to *Business Letterhead (Level Design)* from Microsoft Word, either on your own computer or through the school computer lab
* Solar Energy Estimate Letter Requirements handout (see below)
* Computer access to conduct research and write your business letter
1. **Time requirements:**

You will have approximately one week to complete this task.

1. **Scoring:**

Your work will be scored using the SCALE Math Performance Assessment Rubric (Grades 9-12). You should make sure you are familiar with the language that describes the expectations for proficient performance.

**Solar Energy Estimate Letter Requirements**

Your boss has asked you to prepare an estimate for a potential commercial client that is interested in purchasing a solar energy system from your company. You have received the following information about your client’s energy usage:

* *The company currently uses 1250 kilowatt hours of energy per month on average.*

You will need to provide the following calculations for the client:

* *You will need to research current electric rates in your town in order to find out how much the company is paying each month, on average.*
* *What is the savings in energy usage (in kilowatt hours) per month and year based on the purchase of a 5 kW solar energy system that produces 8000 kilowatt hours per year on average?*
* *What is the savings per month and per year on their electric bill?*
* *You will need to research the total purchase price of a 5kW solar energy system, including installation. Cite your source of information.*
* *The U.S. government offers a federal tax credit for these types of systems. Research the amount of tax credit that would apply to the system you propose to the client. Cite your source of information.*
* *Determine how long it will take to repay the total cost of the solar energy system, based solely on how much the client will save per year with the system installed. (Assume that the client will pay for the installation and system in full at the time of purchase for simplification purposes.)*

Prepare your estimate using the *Business Letterhead (Level Design)* from Microsoft Word. Create your own fictional solar energy business and address. You should maintain a persuasive tone throughout the letter by appealing to the client’s potential concerns. Be sure to include the calculations from above as well as other environmental benefits that would convince the client to purchase a solar energy system.