



Lesson 3: Cost Efficiency

Regular home energy bills can be pretty expensive; solar energy is not only cleaner, but also uses renewable resources. The startup cost of installing solar panels, however, is quite high. How can you be most efficient with your money?

Doing the Science

1. Start the Sun Banking Simulation.
2. Make the following selections:
 - Season: Summer
 - Type of Panel: K1OTGM
 - Roof Direction: South
 - Annual kWh needs: 10,000
3. Select the “ADD PANELS” button.
4. The K1OTGM panel you have selected is available to drag and drop. Select and drag as many panels as you can afford without going over \$10,000.
5. Record in Table 1 below in the first column the number of panels used.
6. Select the “BEGIN” button and wait for the simulation to complete.
7. Record in Table 1 the kWh produced daily.

Table 1. Solar Panels and Energy Conversion

| Budget | K1OTGM | | M3DSOM | |
|-----------|-------------|--------------|-------------|--------------|
| | # of Panels | kWh produced | # of Panels | kWh produced |
| \$10,000 | | | | |
| \$15,000 | | | | |
| \$20,000 | | | | |
| Unlimited | | | | |

8. Select the “RESTART” button.
9. Repeat steps 2-7 to first account for the other budgets, and then change the panel type to M3DSOM and repeat again for all budgets. Make sure to record your data in Table 1.

What Do You Understand?

1. What does the term "tradeoff" mean with respect to this investigation?

2. Describe the tradeoffs that had to be made in this investigation.

3. Describe some factors that should be considered in determining how long it would take to recoup the initial cost of an investment, such as adding solar collectors.

4. When your monetary budget is unlimited, which panel type choice is better? Provide a reason to support your response.

5. Is the cost-efficiency decision the same whether your budget is \$10,000 or \$15,000? Provide an explanation as to why or why not the cost decision was the same based on your budget.
