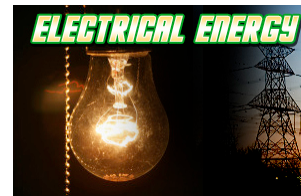


Graphing and Interpreting Electrical Usage

Overview:

This activity is designed to be a school year long project, where students are asked to either bring in their parent's/ guardian's electrical bill each month over the school year, use the electrical bill from the school building or find another source of electrical bills. After the initial introduction to the activity, students should journal periodically about their energy conservation efforts and record energy consumption within their journals and on their spreadsheets once a month.

Once the activity is brought to a close, students will prepare their final graphs and write a summary of the activity where they incorporate the notes they have been accumulating all year. They will draw conclusions about their ability to reduce their family's monthly electrical energy consumption and provide suggestions on how a scientific study might be conducted on a larger scale. They should be able to describe the parameters of such a study based on what they know about scientific investigations.



Introduction:

Challenge students to act consciously to reduce their energy consumption at home or at school.

Explain to the students that the energy consumption on an electrical bill will be used as evidence to see if they were able to consciously reduce their home energy consumption. It should be explained the number of KWH per household will differ greatly based on house size, house heating method, number of people living in the house, etc. The object of the lesson is to see if a student's conscious efforts in reducing their own energy consumption are enough to reduce the electrical energy consumption of the entire house.

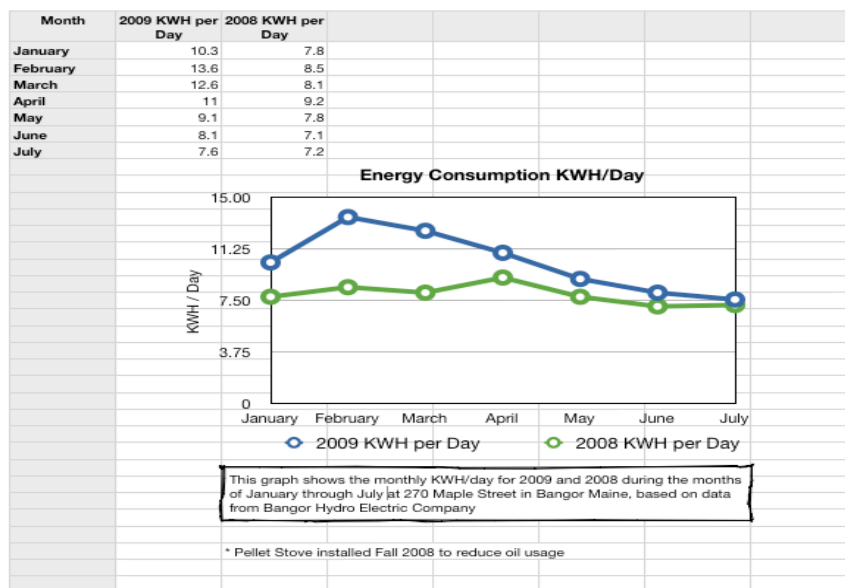
Students should initially describe a bit about their household within their journals. Have them think if anything has change within the last year that might significantly effect electrical energy consumption. For example, did their family install energy efficient appliances, purchase a pellet stove, and/or add an addition to the house.

Next step is to ask students to research some ways they might be able to reduce their energy consumption at home and have them share their ideas with the class. Students should select energy saving ideas that they think are most doable for them and make a note of the energy saving steps they are going to take in their journal. How well students followed their chosen energy conservation ideas should be reflected upon each month.

How to create a line graph of KWH/day by month for the energy consumption investigation:

1. Open a spreadsheet program (Excel, NeoOffice, Number, Pages etc...).
2. Label cell A1 "Month", A2 *Current Year's KWH/day* and A3 *Last Year's KWH/day*.
3. Starting with cell A2 students will go down column A with the names of the months this study with encompass.
4. Starting with cell B2 students will go down column B with the KWH/day data for the current year.
5. Starting with cell C2 students will go down column C with the KWH/day data for the past year.
6. Once all the data has been collected, select all the work you have entered >select graph data> select line graph.
7. Make sure graphs contain the following:
 - Title
 - X axis labeled
 - Y axis labeled
 - Legend
 - Caption, which explains the graph and describes where the data came from

* See example below.



* This graph was done in Numbers a Mac Spreadsheet program