

Bremen Elementary School

Bremen, Kentucky

Presents

ENERGY

This year is our **FIRST** ever Student Energy Team! Our goal this year was to learn as much as we could about energy conservation and energy efficiency so that we could have a positive impact on the energy consumption in our community, school, and homes.



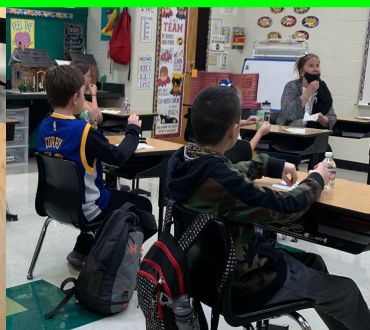
4th & 5th Grade
Student Energy Team

2020 - 2021

Sponsor: Mandy Toomey

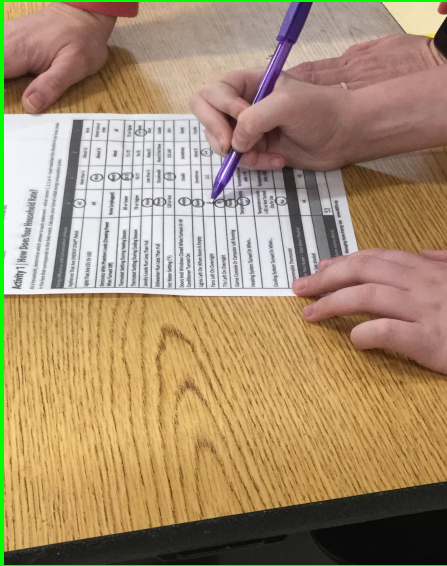
GOAL 1: LEARNING ABOUT ENERGY

Before we could dive into ways to conserve energy and be energy efficient, we had to learn and investigate!



Managing Home Energy Use

At the beginning of the year, I sat down with my parents and scored my family's home energy use. We looked at ways that we use a lot of extra energy. Then we figured out ways that we can conserve energy in our home.



Lesson 1 | Introduction to Energy and Its Management

In school, your child learned about how we use energy. When electricity is factored in, the residential and commercial sectors of the economy (homes and businesses) use the most energy.

Energy efficiency is related to the equipment we often use to do a certain job. For example, a 4-door sedan and pickup truck will both carry us to the store, but the sedan will probably do so using less fuel, is more efficient. Using efficient appliances, electronics, and lighting can help reduce energy use and cost at home, while still performing the same tasks.

Energy conservation is related to the behavior of those using the equipment. For example, even the most efficient refrigerator wastes energy when the door is left open unnecessarily. Conserving behaviors do not cost any money to implement, and they can help significantly reduce the amount of money your household spends on energy.

Activity 1 | How Does Your Household Rate?

As a household, determine which answer to each statement – either column 1, 2, 3, or 4 – best matches the situation in your home. Shade in the box that corresponds to the best match. Calculate your home's initial energy consumption score.

Energy Efficiency and Conservation at Home	1	2	3	4
Appliances That Are ENERGY STAR® Rated	All	More than 1/2	About 1/3	None
Lights That Are CFL Or LED	All	More than 1/2	About 1/3	Almost none or none
Electronics With Phasor Loads (Drooping Power When Turned Off)	None (unplugged)	None	Most	All
Thermostat Setting During Heating Season	68 or lower	65-70	70-72	73 or higher
Thermostat Setting During Cooling Season	78 or higher	74-77	74-75	71 or lower
Laundry Loads Run Less Than Full	More	Less than 1/2	About 1/3	1/4 or less
Dishwasher Run Less Than Full	More	Occasionally	About 1/3 the time	Usually
Hot Water Setting (%)	130 or less	120-130	135-140	140+
Doors And Windows Closed When Furnace Or Air Conditioner Turned On	Always	Usually	Sometimes	Rarely
Lights Left On When Room Is Empty	More	Sometimes	About 1/3	Usually
Fans Left On Overnight	0	1-2	3-4	5+
TVs Left On Overnight	0	1	2	3+
Game Console Or Computer Left Running	Temporarily	Rarely	Occasionally	Frequently
Heating System Turned Off When...	Temperature inside is 60 or less	Temperature inside is 60 or less	Temperature inside is 60 or less	A/C not turned on
Cooling System Turned Off When...	Temperature inside is 80 or less	Temperature inside is 80 or less	Temperature inside is 80 or less	Heat not turned on
Programmable Thermostat	Yes	Yes	No	No
Energy Star® Water Efficient Faucet Installed	Yes	Yes	No	No
Water per Year (gallons)	<4	<3	<2	<1
Column Score				
Total Score (Add 4 column points above)	53			

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At our meeting, we discussed our results and shared our ideas on how to conserve energy at home.





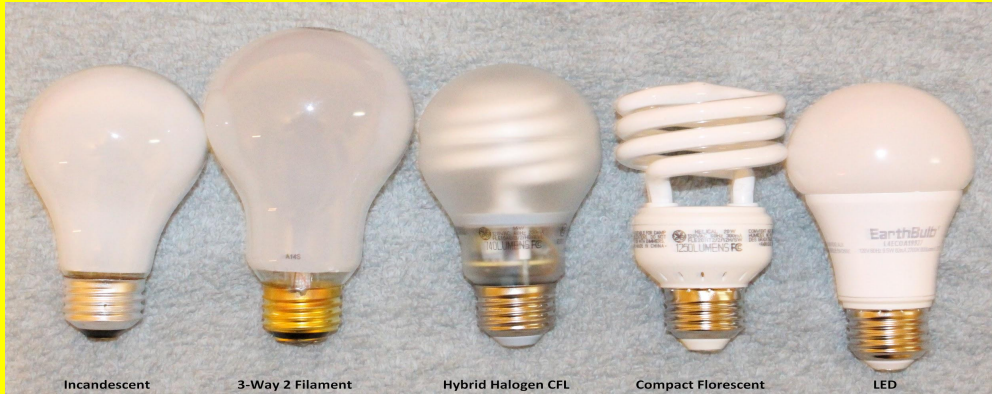
Learning about Thermal Energy Air Infiltration Investigation

First, I created a device to test air flow around the edges of my windows and doors using a pencil, some tape, and tissue paper. I tested it in my moms room. The window faces three west. There are two panes of glass in the window and the frame is made of wood. I tested with the window latch closed and noticed it didn't have any gaps anywhere. Around the window felt solid and flat but as you can see in the pics above there is a small air infiltration around the middle of the window

Which light bulbs are the most energy efficient?

TYPES OF LIGHT BULBS:

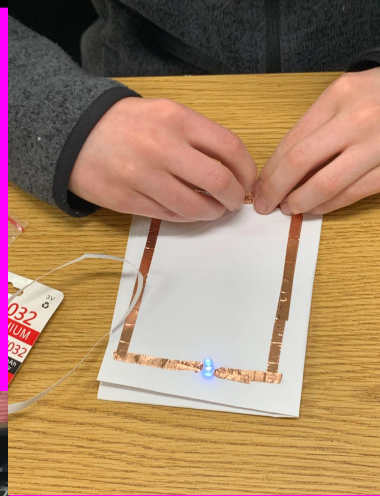
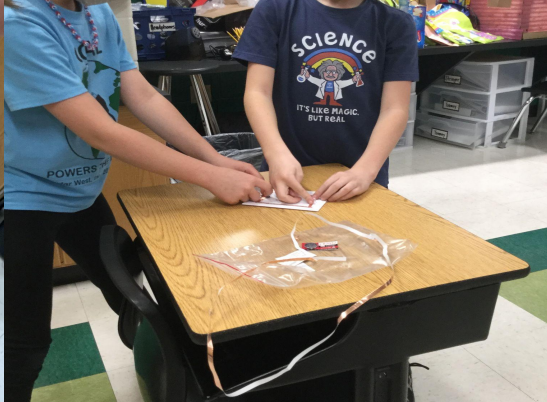
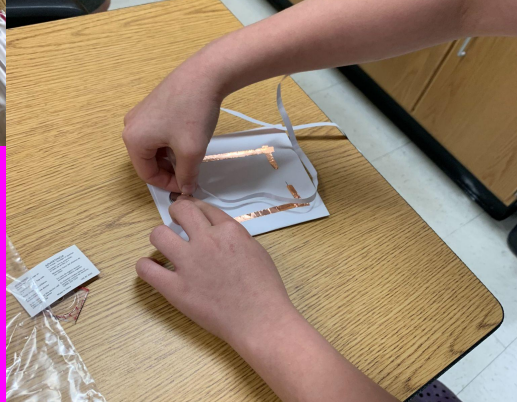
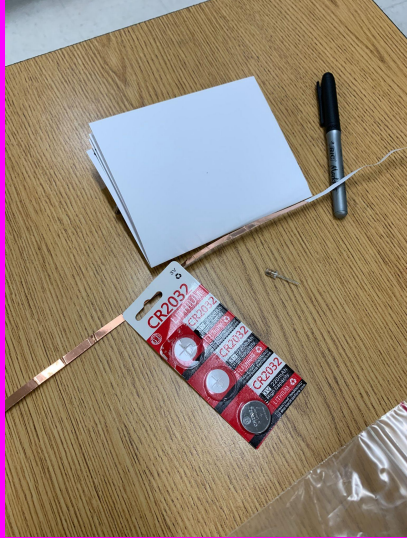
- Incandescent- LIFE: 1,000 hours, PRICE: per bulb .50 cents each.
- Halogen- LIFE: 3,000 hours, PRICE: per bulb \$1.50.
- Fluorescent- LIFE: 8,000 hours, PRICE: per bulb \$1.50 each.
- LED- LIFE 25,000 hours, PRICE: \$1.33 per bulb.



***PROS TO SWITCHING ALL YOUR BULBS TO LEDS- THEY HAVE A LONGER LIFESPAN, SO THEY PAY FOR THEMSELVES OVER TIME! THEY EMIT LESS HEAT THAN INCANDESCENT, SO THEY ARE SAFER. THEY SAVE ENERGY AND ELECTRICITY!**

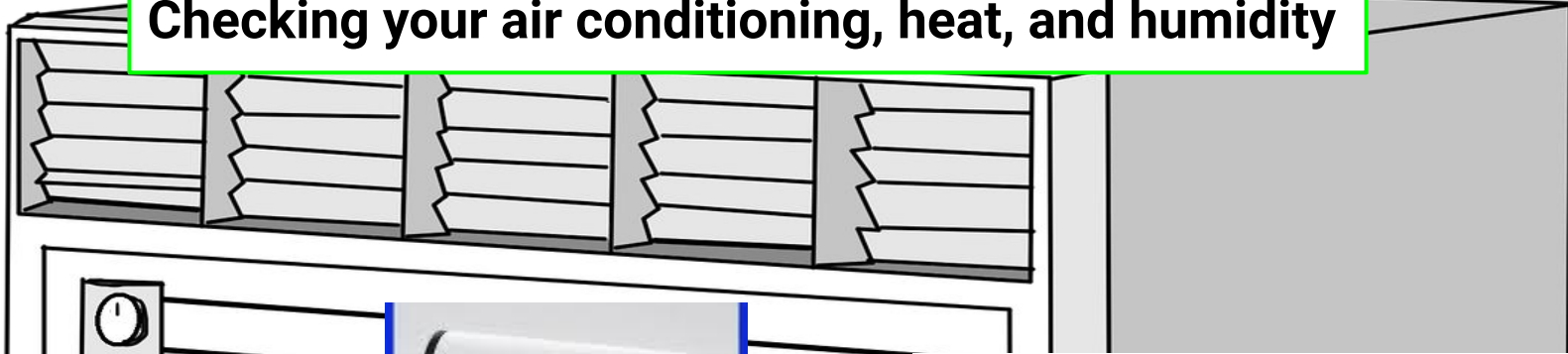
How do circuits work?

We learned about open and closed circuits by creating our own!



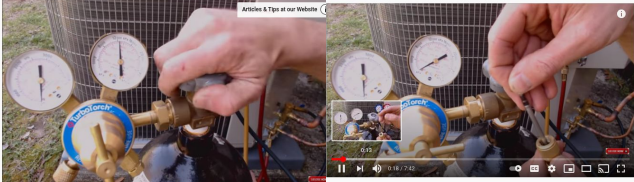
Home Systems

Checking your air conditioning, heat, and humidity



Checking your air conditioning

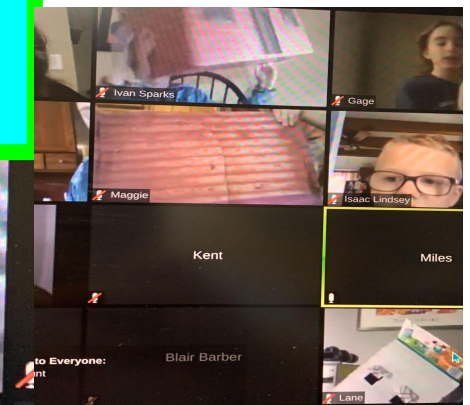
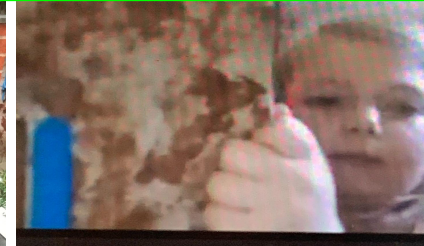
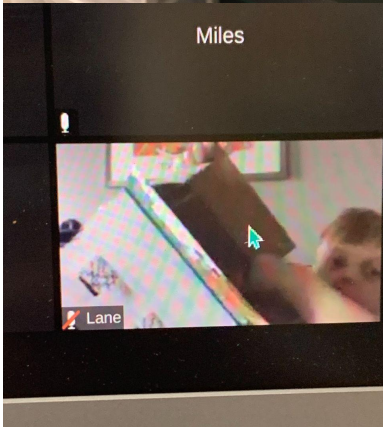
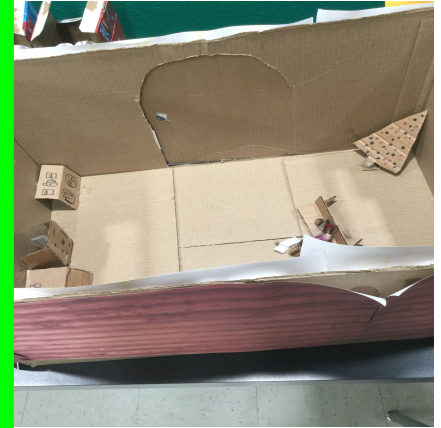
Checking your humidity



Checking your temperature/heating

GOAL 2: BUILDING ENERGY EFFICIENT HOUSES

Using what we learned, we created our own energy efficient houses. As we talked about different topics, we would add new things onto our houses. We worked with our parents and discussed energy efficiency in our own homes.



ENERGY HOUSE - STEP 1

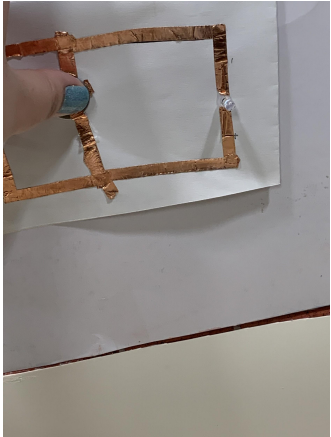
First, we had to choose a box that would be large enough so that we had two 10x10 cm windows and a 10x20 cm door. Then, then we had to decide what we would like to have for our windows. Some ideas were transparency film, clear cling wrap, and freezer bags.



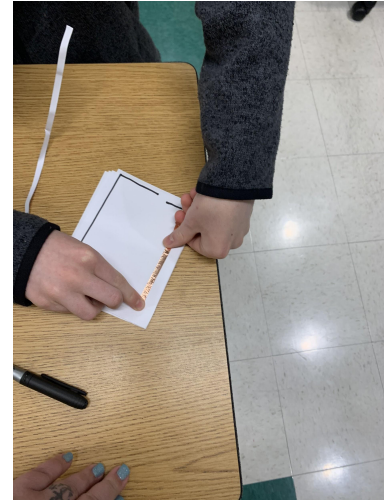
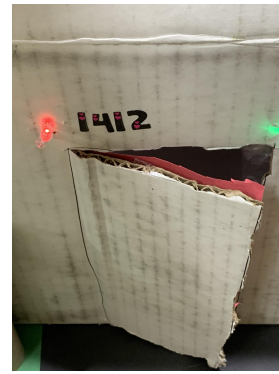
Energy House Lighting

Some of the materials that we used to make our Energy House's lighting were

1. Copper Tape
2. Paper/ cardstock
3. Battery (3 volt Lithium)
4. Marker
5. LED



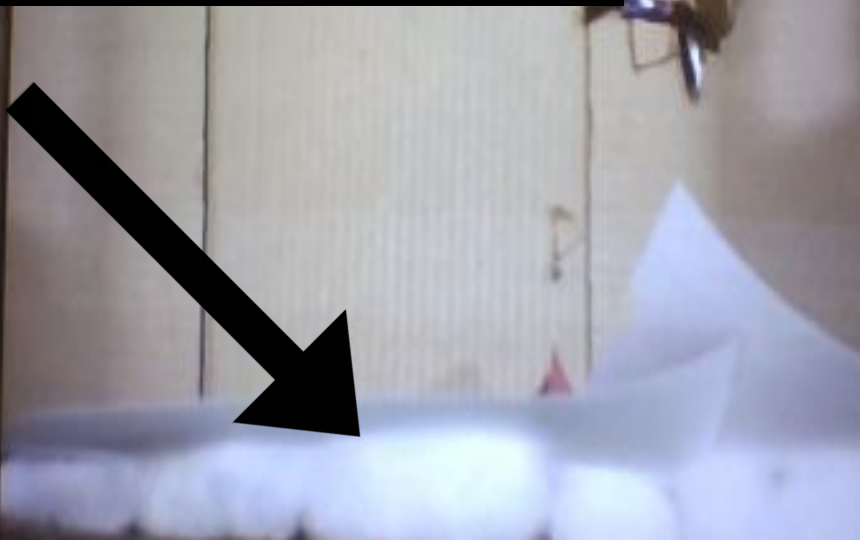
To make your circuit you will need to fold/cut your paper or cardstock into a rectangle, then draw a bracket [], cover your bracket with your copper tape, grab your battery and put the tape on both sides but make sure it does not go onto the other side,



Energy House: ISOLATION TIME!

Stuff we can use for our isolation:

1. Cloth
2. Cotton balls
3. Bubble wrap
4. Paper



COMPLETED ENERGY HOUSES



Reece



Gage



Miles



Maggie



Jude



Hannah



Ivan



Madilyn

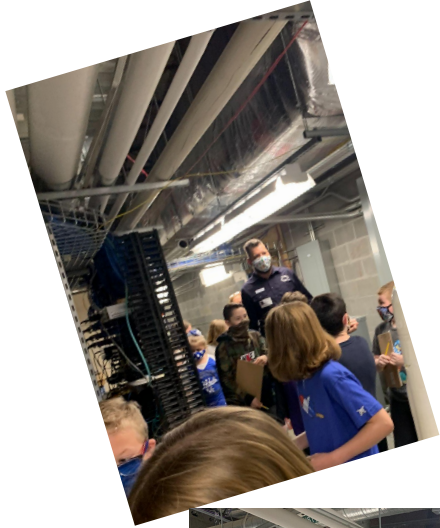


Lane

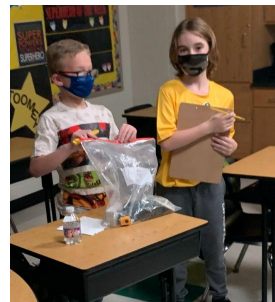
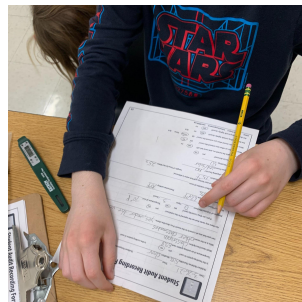
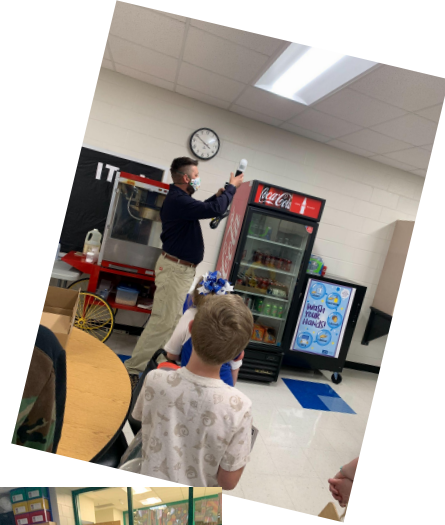


Isaac

GOAL 3: SCHOOL ENERGY AUDIT



We investigated energy usage inside of our school building. We learned how to use different types of measurement tools and used them to audit our energy usage. We used this information to help our school find new ways to conserve energy.



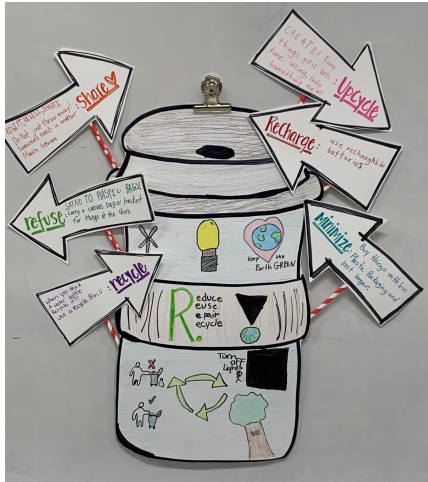
School Energy Audit



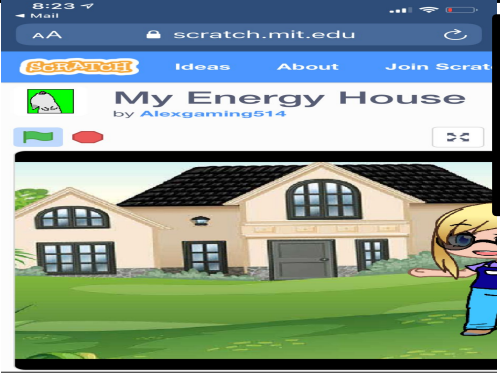
Some of the tools that we used were a light meter, a thermo-hygrometer, a thermometer, a plug load meter, and a infrared thermometer.



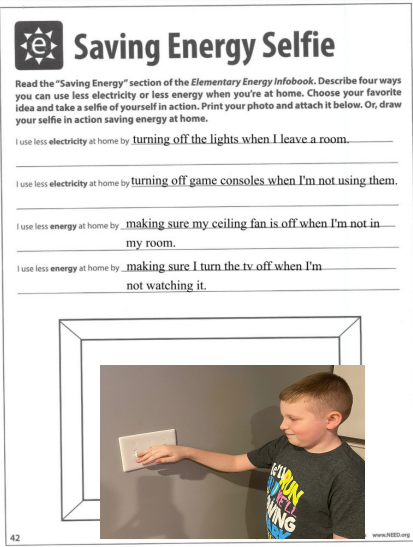
What did we learn this year on the FIRST ever Bremen Elementary Student Energy Team?



We wanted to share what we have learned this year on Student Energy Team with our school and community by creating awareness projects!



Click here to watch "My Energy House" Video!



Our projects are on our SET webpage!
<http://teachingwithtoomey.weebly.com>

Our projects are on display in our media center!

Our projects have been shared with our district PR representative!