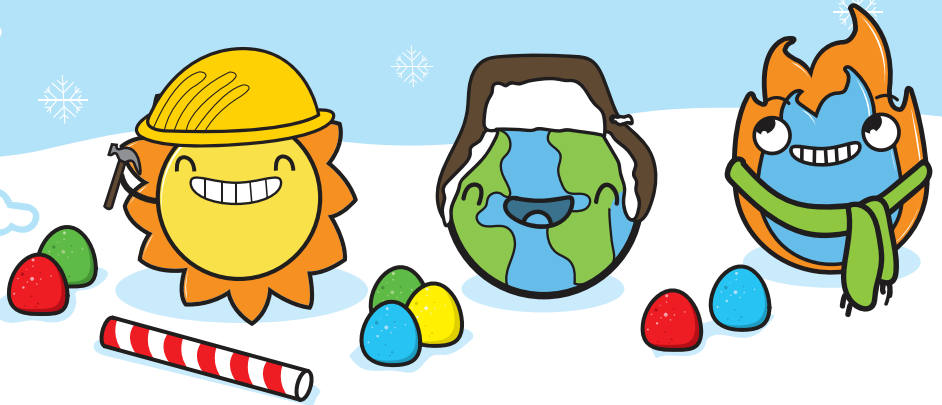


# ENERGY EFFICIENT GINGERBREAD HOUSE BUILDING ACTIVITY!



## ARE YOUR STUDENTS COUNTING DOWN THE DAYS UNTIL WINTER BREAK?

Try this “sweet” way to incorporate energy efficiency education with a traditional holiday activity!

### EACH TEAM OF STUDENTS WILL WORK TOGETHER TO BUILD AN ENERGY EFFICIENT GINGERBREAD HOUSE.

- Students should use sweets to symbolize energy efficient and renewable energy technologies and materials on and around their gingerbread house.
- Students should make a key to indicate what each sweet item represents on their home. (see suggestions below)

**Alternative activities:** Have a team work together to design the blueprints for a gingerbread house. Then, discuss energy efficiency and have the students “remodel” their design homes to become more energy efficient.



### BUILDING CODE:

- You must have at least one door on your house.
- You must have at least two windows on your house.
- You must use at least two energy saving items on your home.



### Vocabulary



- |                   |             |             |                   |
|-------------------|-------------|-------------|-------------------|
| building envelope | convection  | conduction  | energy efficiency |
| insulation        | radiation   | R-value     | smart meter       |
| solar energy      | smart meter | solar panel | weatherization    |



### Materials Suggestions:



**Foundation** (graham crackers, homemade gingerbread)

**Weatherstripping** (pull and peel licorice, pretzel sticks)

**Solar Panels** (chocolate squares, square pretzels, rectangular fruit candies)

**Smart meter** (peppermints, gummy rings, round candies)

**Insulation** (gumdrops, marshmallows, assorted icing colors)

Examples: Pink = fiberglass batting,

White = foam insulation, Blue = cellulose insulation

## Vocabulary Definitions:



<b>building envelope</b>	The transfer of heat, air, and moisture into and out of the home is largely governed by the building envelope, which is made up of all the components that separate the inside of the home from outdoors. Siding, windows, doors, and roofs have an important role to play, as does how tightly the various parts of the building are sealed to one another.
<b>energy efficiency</b>	involves the use of technology that requires less energy to perform the same function. Focuses on the equipment or machinery being used
<b>R-value</b>	a measure of a material's resistance to heat flow in units of Fahrenheit degrees x hours x square feet per Btu; the higher the R-value of a material, the greater its insulating capability
<b>insulation</b>	a material used to separate surfaces to prevent the transfer of electricity, heat, or sound
<b>conduction</b>	the transfer of thermal energy between objects that are in contact with each other
<b>convection</b>	the transfer of thermal energy between currents of moving fluid (air or water)
<b>radiation</b>	the transfer of thermal energy from rays or waves
<b>solar panel</b>	a group of solar cells put together to create a larger amount of electricity at once
<b>solar energy</b>	the energy of the sun, which can be changed into other forms of energy, such as heat or electricity
<b>smart meters</b>	digital meter that communicates to the electric company daily so electricity usage can be monitored by consumers more closely
<b>weatherization</b>	to make a house better protected against the effects of weather



Be sure to check out NEED's "Building Science" guide - students investigate the science behind keeping building occupants healthy and comfortable and buildings energy efficient. Hands-on activities and simulations help students to evaluate building performance and their own home energy use! Visit [www.NEED.org/shop](http://www.NEED.org/shop)

