



# HOLA



## The Family House Outdoor Lighting Audit Challenge!!!

We use lots of natural resources like coal to make electricity to turn on our lights, watch TV, play our wii games, cook our food, do our laundry, and many other things. We need to lower our energy use so we have enough for the future. One way we can conserve energy is by learning to light responsibly.

What can you and your family do? Take the House Outdoor Lighting Audit challenge! The HOLA challenge helps you figure out how much energy and money are spent on lighting the outdoor lights at your house.

- Draw the shape of the boundary of your house on a piece of graph paper. (It should follow the shape made by the outside walls of your house.) Make the drawing to scale (as much as possible). Be sure to write the length and width of your house on the drawing.
- On your drawing of your house, draw the location of the outdoor lights. **OPTIONAL:** Take a picture of each light, getting close enough to identify them later.
- Next to each light bulb, write down the color of the light (ex. yellow, orange-ish, greenish-white, bluish white...). **OPTIONAL:** Can you or your family tell what kind of light it is (regular or "incandescent bulb", a fluorescent light, a compact fluorescent light, a halogen light, etc.)
- Next to each light bulb, write down how many Watts it is (ex., 75, 100, 150, 200 Watts, etc.).
- Write on your drawing which outdoor lights have "shields". That is, do they have a cap on top of them so that the light does not go up into space where it is not used? If they do have shields, do the shields go as low as the bottom of the light bulb? If so, then at a distance you will not see the light bulb and this reduces glare.
- OPTIONAL:** Go outside your house at night with an older family member (and before bedtime!) and look at how the light from the light bulbs falls onto the ground. On your drawing, circle the light bulbs that are doing a good job. That is, is the area that is supposed to be lit, lit just the right amount - not too much and not too little?
- OPTIONAL:** Ask your parents or older family members or perhaps observe yourself whether the lights are on timers or on light sensors (dusk to dawn) or motion sensors. If they are, then you are already saving energy!

Ask your parents or older family members for two numbers:

1. the number of hours per year (on average) that the outdoor lights on your house are on: \_\_\_\_\_
2. the cost per "kilowatt-hour" or dollars per "kilowatt-hour" that your parents get charged on their monthly electric bill. Typically it is about \$0.12 or 12 cents for households: \_\_\_\_\_

Now you are ready to figure out how much energy and money is spent on your home outdoor lighting each year!

Add up the watts for all of the outdoor light bulbs: \_\_\_\_\_

Multiply that number by the number of hours per year (on average) the outdoor lights on your house are on: \_\_\_\_\_

Divide this by 1000 to change the units to kilowatt-hours: \_\_\_\_\_

**CONGRATULATIONS!!!** You have determined how much energy has been consumed by the outdoor lights on your house each year!

Multiply the energy you just got by the cost per kilowatt-hour (e.g., \$0.12): \_\_\_\_\_

**CONGRATULATIONS!!!** You have determined how much cost has been spent on lighting the outdoor lights on your house each year!

The amount of carbon dioxide greenhouse gas generated to make electricity ranges from 1.4 lbs to 2.8 lbs. per kilowatt-hour, depending on whether or not the electricity is produced from coal, nuclear power or hydropower.

Multiply the energy you got by 2: \_\_\_\_\_

**CONGRATULATIONS!!!** You have determined how much greenhouse gas is created when the electricity is made to power the outdoor lights.

**EXTRA CREDIT: Play a mind game:** Pretend to take away the lights that you do not need and replace the rest with compact fluorescent lights that have the equivalent wattage (or less). Recalculate the energy, cost and tons of greenhouse gas. Subtract them from the last 3 numbers you got above. How much energy, money and tons of greenhouse gas would your family save each year?

The amount of energy you would save: \_\_\_\_\_

The amount of money you would save: \_\_\_\_\_

The amount of greenhouse gas you would save: \_\_\_\_\_

**NOW YOU KNOW WHETHER YOUR FAMILY MIGHT WANT TO CONSIDER MAKING THE OUTDOOR LIGHTING AT YOUR HOUSE MORE EFFICIENT AND MORE "TASK-ORIENTED"!**