MEET SAVE THE WATTS GUY

Favorite hobby: helping folks save energy
Favorite dance: “The Electric Slide”
Favorite food: anything cooked in a microwave
Vanity license plate: SAVENG

Get lots of energy-saving ideas at savethewatts.com.

COULD THE FUTURE OF ENERGY BE IN YOUR FUTURE?

Do you...
- Care about protecting the earth?
- Have a head for science?
- Prefer hands-on, problem-solving activities?

If so, you might enjoy a future in energy. Today, more than ever, our country needs smart, dedicated young people like you to start making a difference for the environment and our growing energy needs. Learn more about what it’s like to work at Progress Energy at progress-energy.com.

Progress Energy is working today to develop earth-friendly energy options for the future. The company is meeting our area’s growing energy needs with a balanced mix of energy sources, including renewables and nuclear power, as well as energy-efficiency programs and other new technologies. You can help by becoming more aware of your energy choices and their impact, and by taking steps to be more energy efficient.

Learn more about the energy you use every day and Progress Energy’s commitment to reliability and the environment at progress-energy.com.
Everybody needs energy. Think about it: Every time you ride in a car, power up your computer, turn on the television or play a video game, you’re using energy. Without gasoline or electricity, what would your life be like? These days, people are thinking more about their energy use. That’s because there are more cars and homes, electronics and gadgets than ever before – and they all need energy. But getting and using energy affects the environment. That’s why so many people today – including scientists, elected officials, power companies and even kids like you – are interested in earth-friendly energy options like:

- Solar
- Wind
- Biomass
- Geothermal
- Hydroelectric power
- State-of-the-art nuclear
- Electric cars
- New energy-efficiency technologies

Meeting our country’s growing energy needs will take the right mix of energy sources.

Renewables:
Renewable energy is any energy source naturally created over and over by nature. Solar power, wind power, water flow and some kinds of plant and animal waste are examples of renewable energy.

What’s good: Cleaner. Earth-friendly. Won’t run out.

What’s not-so-good: Not available all the time or in all places. May require new technology or equipment, which can be expensive.

Fossil Fuels:
Fossil fuels – like oil, coal and natural gas – have to be mined or drilled from deep in the earth. These energy sources are abundant but not renewable because there is only a certain amount in our planet. Once we use them all, they’re gone for good.

What’s good: Dependable and proven. Produces lots of energy 24/7. Affordable.

What’s not-so-good: Removes resources from our earth. Has to be mined or drilled. Burning these fuels creates greenhouse gases that contribute to global climate change.

Nuclear Power:
Nuclear power uses special types of the uranium atom. When split apart, these atoms release large amounts of energy that can be used to run a power plant. You can learn more about how nuclear power plants work on page 11.

What’s good: No greenhouse gas emissions. Reliable, affordable power 24/7.

What’s not-so-good: Nuclear power plants require time and resources to build. Nuclear waste must be carefully regulated and stored.

Learn about great earth-friendly energy options for the future – including ways you and your family can start making a difference in your energy choices for our environment NOW!
Wasting energy wastes our natural resources. Plus, it creates extra greenhouse gases and other damage to the environment. So using energy wisely is one easy way we can all do something good for Planet Earth. Are you doing YOUR part?

Do you?

- Turn out the lights when you leave the room?
- Use the microwave instead of the oven when possible?
- Remember not to linger with the fridge door open?
- Turn off the TV, radio or computer when you’re not using them?
- Use fans to help you cool off instead of lowering the thermostat?
- Take shorter showers?
- Remind your parents to buy energy-efficient CFL bulbs?
- Unplug chargers (like for your cell phone) when you’re not using them?
- Help keep doors and windows shut when the air conditioning is on?
- Turn off the hot water when you’re finished?

Add up your “YES” answers.

8 to 10 YES You’re a true friend to the earth. Keep up the good green work!

5 to 7 YES You’re friendly but you could do more. Just a few little changes could make a big difference.

Less than 5 Oops! Maybe it’s time to revisit your earth relationship. Start paying attention to how you use energy every day. You’ll probably find it’s easy to be more green.


Do your parents need energy-saving help too? Tell them to complete a free energy-use questionnaire at progress-energy.com/cher.

Are you an earth FRIEND or FOE?

YOUR ASSIGNMENT:
Find out if your family could cut back on their energy use.

YOUR METHOD
✓ Put signs in your house next to the fridge, the television, light switch – anywhere you think your family needs reminding to be more energy aware. Visit savethewatts.com for ideas.
✓ Have a family meeting. Remind everyone how important it is to conserve energy. Point out the signs and ask if they have questions.
✓ Use your parents’ last few energy bills to get an idea of how much energy your family typically uses.
✓ After a few months, look at the new bill. Did the reminders help? Did your family cut back? Need more clues? Get a free Customized Home Energy Report from Progress Energy that helps you assess your family’s electric usage and get tips about where to cut back. Visit progress-energy.com/cher.

True or False?

1. Electricity was first created by Ben Franklin when he went kite flying during a storm.
2. Most power plants produce electricity using the same basic method.
3. Electricity is measured in jolts per second.
4. The U.S. can currently meet all its energy needs with renewable energy.
5. For the most part, electricity has to be generated as it is used because it cannot be stored.

(Rewords on next page)

RU Wired In?

Take our quizzes!

Answers:

1. FALSE! Electricity was first created by Ben Franklin when he went kite flying during a storm.
2. TRUE! Most power plants produce electricity using the same basic method.
3. FALSE! Electricity is measured in watts, named for James Watt, the 18th century inventor. A kilowatt is one thousand watts. The average household in N.C. uses about 200 kilowatt hours (kWh) each month.
4. FALSE! Most renewable energy sources – think solar and wind – are only available part of the time – like when the sun is shining or the wind is blowing.
5. TRUE! New energy storage systems are being developed, but right now, most energy storage units (think batteries) are too small to hold much electricity.

ACTIVITY: Solve the mystery – Be an energy detective.

RU Wired In?

October 13, 2009

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Did you know? The sun gives off more energy in one second than people have used for thousands of years.

Plugging into that energy to run our homes and cars isn’t as easy as it may seem. Today’s solar technology is expensive and unreliable since it’s pretty much only available when the sun is shining.

**QUIZ: Are You Solar Savvy?**

1) Is solar power free?
2) How many light bulbs would an average solar rooftop system power?
3) Do power companies have solar power plants?
4) Can you use solar power at home?

Answers:

1. Unfortunately, no. While it is true that sunlight doesn’t cost anything, the technology to convert it into electricity can be expensive. Plus, solar panels only work when the sun is shining, so you’d need some other kind of power or electric storage system for times when there’s no sunlight.

2. It depends on the time of day and how sunny it is. During the sunniest time of day, an average home solar power system generates about 2,400 watts, enough to power 24 incandescent light bulbs of 100 watts each (or 76 energy-efficient CFL bulbs!).

3. YES! There are basically two kinds. One makes electricity using lots of solar electric panels. The other works more like a typical power plant, only instead of using coal or gas to boil water, it uses mirrors to focus the sun’s rays, which boil water to turn a turbine.

4. Again, YES! You may not be able to power your whole home just from solar energy, but you can make use of solar power at home with:
   a. Solar Water Heating. Uses the heat from the sun to warm water in your home.
   b. Solar Energy Panels (also called photovoltaics or PVs). Panels that convert the sun’s energy directly into electricity.

**ACTIVITY: Cooking with solar**

You don’t need a solar energy PV panel to start using solar energy. You can make a solar oven out of a simple pizza box and use it on a sunny day.

You’ll need:
• 1 pizza box
• Black construction paper
• Aluminum foil
• Clear plastic wrap
• Glue, tape, scissors
• One wooden dowel rod

Start cooking! Find a sunny spot and put your food – like s’mores or English muffin pizzas – inside the box.

You can find lots more solar oven ideas at www.solarcooking.org.

1. Trace an 8½” by 11” square on the pizza box top. Cut out three sides and fold the flap back along the uncut edge.
2. Cut a piece of foil to fit on the inside flap. Glue in place.
3. Cut a piece of plastic to fit over the window you made when creating the flap. Tape the plastic in place, making sure it’s airtight.
4. Line the inside of the box with foil; glue in place. Cover the foil on the bottom with black paper; glue in place.
5. Prop open the oven flap with a wooden dowel.

Share your cooking experience on Facebook at the SunSense schools program page.
The good news? You can have both! You don’t have to give up electricity to be good to the earth. Here’s a renewable energy option that will really put you a step ahead: hydroelectric shoes. These shoes have water in the soles that moves as you walk, creating electricity that can be used to power an iPod, cell phone or other small gadget. So step out, in earth-friendly style!

See: http://science.howstuffworks.com/hydropower-plant4.htm

Your planet or your iPod?

Right now, 9 percent of the electricity our country uses comes from renewable sources. We also get another 21 percent from nuclear energy – which, unlike fossil fuels, produces no greenhouse gases.*

Many states are looking to increase those percentages. For example, North Carolina has set the goal of having 12.5 percent of all electricity come from renewable sources and energy-efficiency programs by 2021.

U.S. energy sources

- Coal 51%
- Natural Gas 17%
- Nuclear 21%
- Renewable 9%
- Petroleum 1%

*Source: www.eia.doe.gov

What’s Your Energy Type?

1. It’s time for school! Are you ready?
   a. Absolutely. You’re always on time.
   b. Well, usually – except on rainy days.
   c. Only if someone makes you.

2. You’ve got a test tomorrow. Have you studied?
   a. Definitely. A half hour a night for the past week.
   b. Maybe. Who can sit inside when the weather outside is beautiful?
   c. You crammed all afternoon.

3. Your friends want to ride the crazy new rollercoaster. Will you join them?
   a. Probably not. You like to keep both feet on the ground.
   b. You might. You do love the wind in your hair.
   c. Absolutely. You love those ups and downs.

If you chose mostly a’s, you’re:
  Steady and dependable. Like a nuclear power plant that runs 24/7.

If you chose mostly b’s, you’re:
  Free-spirited and natural. You’re like wind or solar power – sometimes on, sometimes not.

If you chose mostly c’s, you’re:
  Energetic and always available in a pinch. Like a peaking power plant – the kind that kicks up when needed and shuts off when not.

The basic principle of using wind energy hasn’t changed. But windmills definitely have a new look – not to mention new performance! No wonder wind is the FASTEST GROWING form of renewable energy in our country.
Nuclear power has many of the same advantages as renewable energy – no dependence on fossil fuels, no greenhouse gas emissions, stable fuel costs. Unlike solar or wind energy, nuclear power is available when you need it – 24/7. Nuclear power plants do create waste that must be carefully regulated and stored. Some countries generate a significant part of their electricity using these plants. For example, France gets more than 70 percent of their electricity from nuclear power. Today, many people think that nuclear energy should become a bigger part of our country’s energy supply. What do you think?

ACTIVITY: Match the energy type with its description

Energy Types:  
1. Nuclear Power  
2. Biomass  
3. Geothermal  
4. PHEVs  
5. Hydroelectric Power  
6. Hydrogen Fuel Cells

Descriptions:  
a. Stands for plug-in hybrid electric vehicles – cars that use a mix of gas and electricity to get up to 100 miles per gallon. Wow!
b. A type of energy storage that uses hydrogen and oxygen to create electricity when needed.
c. Burning of plant or animal waste to create electricity.
d. Using the energy inside the earth, for example, to heat and cool indoor spaces.
e. Using the energy of splitting atoms to heat water, create steam and turn a turbine.
f. Using the naturally occurring energy in the flow of water to create electricity.

Q. What’s the difference between a nuclear power plant and any other kind of power plant?

A. A nuclear plant works much the same way as any other power plant. Energy is used to heat water, creating steam. Steam turns the turbine, which spins the generator, creating electricity. The only difference is that, instead of using coal, oil or other fuels to heat the water, we use nuclear fission.

Q. Nuclear say what?!

A. Nuclear fission. That’s a fancy way to say the release of energy through the splitting of atoms in a chain reaction.

Q. Translation, please.

A. Sure. During nuclear fission, an atom is split apart by a small particle called a neutron. This releases heat plus more neutrons, which then go on to hit other atoms, splitting them apart and so on.

Q. OK. But how does this result in electricity?

A. The splitting atoms produce heat that is used to boil water and create steam. The steam turns the turbine, which spins the generator. Simple, right?

HANDS-ON ENERGY
You don’t have to be a nuclear engineer or high-tech researcher to get hands-on experience with today’s newest energy breakthroughs. Check out all the great experiments and energy-related activities at www.eia.doe.gov/kids.

Or see all the energy-saving activities at progress-energy.com/learningcenter.

How Much Fuel?

One uranium fuel pellet this size in a nuclear power plant can produce as much energy as:

- 149 gallons of oil
- 1 ton of coal
- 1 cord of wood (2.5 tons)
- 17,000 cubic feet of natural gas

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