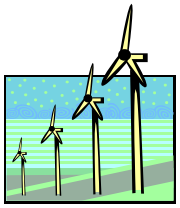


Student Fact Sheet E-1

Energy—Our Powerful Future

We all need Energy

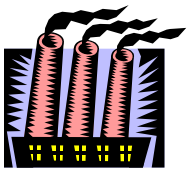
When we bake a birthday cake, ride a roller coaster, or fly in an airplane, we are using **energy**. Energy is what we need to makes things we use work. Energy can come in many forms like gasoline to run our cars, gas to heat our homes, or electricity to light our streets and freeze our food. Without being able to use energy in this way, our lives would be very different! Think about the things we use every day that require energy: computers, televisions, CD players, video games, radios, cars, buses, telephones, refrigerators, stoves and lights.

Energy from Fossil Fuels

Right now, most of the energy we use around the world comes from **fossil fuels**. Fossil fuels are found deep under the ground and come from the ancient fossils of plants and dinosaurs that lived on earth millions of years ago. Some common fossil fuels are gasoline, oil, coal, and natural gas. We use fossil fuels to drive cars and trucks, heat our homes, make electricity, and run factories.

Fossil fuels are **non-renewable**, which means that nature only contains a certain amount. Once they are gone, that's it—there won't be more for us to use. It is likely we will run out of fossil fuels in our lifetimes and will need to get energy from other sources. That's why it's important to start looking for different ways to get energy before we run out of fossil fuels. These different ways to get energy are called **alternative energy** sources.

Air Pollution



Although fossil fuels give us energy, using them creates problems for the environment and our health. Burning fossil fuels makes air pollution, which dirties our air. Many people get sick from air pollution and develop **asthma**, (pronounced AZ-muh) which is a disease that makes it very difficult to breathe. In some cities like Los Angeles and New York, the air pollution is so bad sometimes that it turns the air brown and gives it a sour smell.

Acid Rain

Not only does burning fossil fuel create air pollution, it also creates **acid rain**. Acid rain falls when it rains in areas that have air pollution. The rainfall brings the pollution down from the air and onto the earth, rivers and oceans. When acid rain falls on forests, it damages the soil, the water, the plants and the trees that are found there. This creates problems for animals that live in the forest and depend on a healthy forest to survive. Burning coal, diesel fuel and other fossil fuels is the main cause of acid rain.

Global Warming

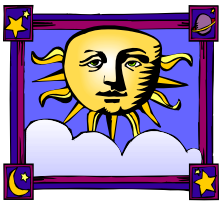
Another problem that comes from burning fossil fuels is **global warming**. Global warming is what happens when we put too much **carbon dioxide** into the air. Carbon dioxide is a gas that traps heat from the sun. If too much carbon dioxide is in our air, then too much heat gets trapped from the sun, and it warms up our planet. If the planet gets warmer by

just a few degrees, it changes the weather patterns or **climate** around the world. That means summers may get hotter, winters may get colder and storms may be stronger. Global warming may make it difficult for animals, fish, and people to live where we do now because it may be too wet, dry, hot or cold. Burning fossil fuels is the main reason global warming is happening.

Earth-friendly Energy

So how can we get the energy we need without harming the environment? The first solution is to try to use less energy and be smart with the energy we do use. For instance, we can turn off the lights when we leave a room and we can install **energy efficient** light bulbs that use less energy to begin with. We can save gas by driving our cars less, carpooling more, taking the bus, and we can buy cars that use less gas. We can put on a sweater when it's cold instead of turning up the heat, and we can **weatherize** our homes by sealing cracks in windows and doors so that cold air can't come inside. There are also ways to get energy from other sources that don't harm the environment.

Energy from the Sun



Even though burning fossil fuels is bad news for the planet and our health, the good news is that we can get energy from many other things besides fossil fuels! One clean, safe form of energy comes from the sun. This is called **solar power**. The sun's energy is **renewable**, which means nature can provide it again and again. Since the sun will never stop shining, we will have this clean source of energy forever. Solar power can be used for just about anything. Over a million homes in the United States get heat or electricity from solar power, and even the space station uses solar energy in outer space!

Energy from the Wind

The wind is a powerful source of energy that's been used for thousands of years. The ancient Polynesians used wind to power their sailing boats across the seas, and windmills were first developed in Persia in 500-900 AD to grind grain and pump water. Today, we still capture the power of the wind for energy. This is called **wind power**. Like the sun, wind is renewable, which means it will never run out. California and Texas **generate** or make most of the wind power being used in the United States. In California, it is possible to see wind generators on hillsides. They look like giant pinwheels!

Energy from Ocean Tides

The ocean is a powerful, renewable force that can also be used to create energy. In San Francisco, the tides of water that flow back and forth in the bay under the Golden Gate Bridge could make enough energy to light 15,000 homes! This safe form of energy is called **tidal power**. San Francisco will be one of the first cities in the world to use this new type of tidal power.

Our Beautiful Future

One day, the whole world will use clean, safe, renewable sources of power to meet all our energy needs. Human beings will stop burning fossil fuels, and we will get enough energy from the sun, the wind and the ocean. Learn more about these alternative types of power. Using clean, renewable sources of energy will help protect our environment and our way of life.