

Renewable Energy and Sustainability



HIGHLIGHTS

- New energy sources are being used today
- Earth is a spaceship
- Renewable energy use is sustainable
- Global warming can upset the balance of life
- Sustainable energy is the fuel of the future—starting now

THE AGE OF NEW ENERGY

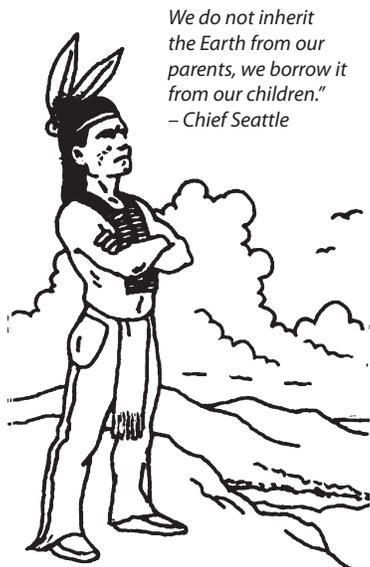
New sources of energy are being used every day. Many types of energy that we use today were not on hand 20 years ago.

Instead of getting electricity from a power plant that burns coal, your home may have a roof with special shingles or panels that change sunshine into electricity.

Out in the countryside, you may see something new in the pastures and fields. Among the cows and crops are

huge towers with slow-turning propellers that change wind energy into electricity. Fields with these towers are called wind farms.

Your house may have large, south-facing windows that gather free light and heat from the sun. And your new refrigerator and other appliances may only use one-half to one-fourth the energy that they used 20 years ago.

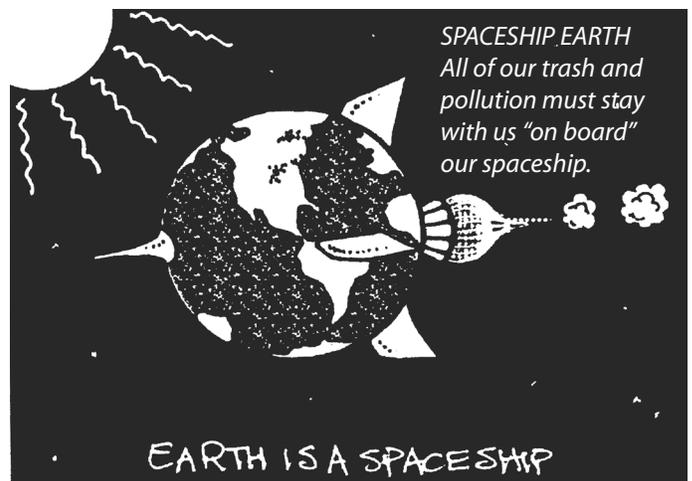


Although today we rely mostly on fossil fuels (coal, oil and natural gas) things are changing. There is only a limited supply of fossil fuels. Once they are used up, they are gone forever. In other words, coal, oil, and natural gas are non-renewable resources. Fossil fuels also create pollution when they are burned. Pollution is harmful to plants, animals, and people.

New sources of energy are found in sunlight, the wind, and water. These sources are called renewable energy because they cannot be used up. They do not make pollution when they are used. This type of energy is also known as sustainable energy.

EARTH IS A SPACESHIP

As the Earth travels around the sun through space, our planet carries a limited supply of air, fresh water, coal, oil and natural gas. All of our trash and pollution must stay with us “on board” our spaceship. As more and more people live on Earth, we use more of these limited supplies. Pollution also increases.



Spaceship Earth is so huge that in the past, people believed that its resources would never run out. Some also thought that it could not be hurt by pollution. Recently, many people have decided that we are treating the Earth badly. This is not fair to the people living in the future who will inherit this planet.

SUSTAINABILITY

Non-renewable energy sources were formed millions of years ago, when dinosaurs walked the Earth. Oceans covered most of the Earth. They were filled with tiny sea plants and animals. When the plants and animals died, they sank to the bottom and were covered by sand and mud. Layers of dead plants, animals, sand and mud built up over time. Heat and pressure turned these layers into fossil fuels such as:

- coal
- oil
- natural gas

Eventually, we will run out of non-renewable energy supplies like coal, oil and natural gas. Long before that happens, the pollution caused by using these energy sources will become a serious problem.

Sustainability means that we make sure we meet our energy needs now without stopping the people in the future from meeting theirs. Renewable energy sources are sources that we will not run out of. They are always being re-made by nature.

Renewable energy sources are:

- solar thermal
- solar electricity
- wind
- biomass
- hydroelectric
- geothermal
- energy efficiency

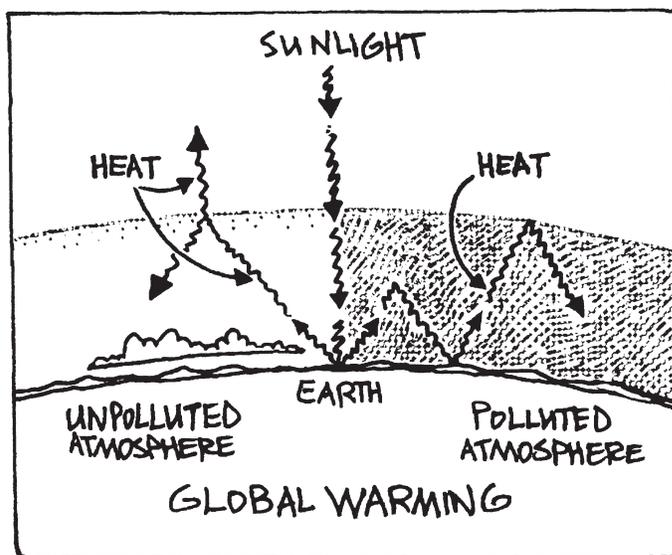
GLOBAL WARMING

A blanket of air that traps heat from the sun covers our Earth. Without this blanket, the Earth would be so cold people could not live here. But too much trapped heat would make it too hot to live here as well.

Sometimes this blanket can act like the glass on a greenhouse when light from the sun hits the Earth and changes into heat, and the blanket traps the heat. Light can pass through the atmosphere (or glass), but heat cannot escape as easily. This causes a slow warming on our planet as heat builds up. This is called global warming. It can change the fragile balance for life on Earth.

We add to the problem by burning fossil fuels. They produce gasses like carbon dioxide (CO₂) that trap more heat and cause more global warming.

Some scientists suggest that we change the way we use energy. They say that we could cut our energy use in half just by making lights, machines, buildings and cars more efficient. In addition, half of this reduced amount could come from renewable resources such as the sun and wind.



GLOBAL WARMING Pollution in our atmosphere traps more of the sun's heat energy causing global warming.

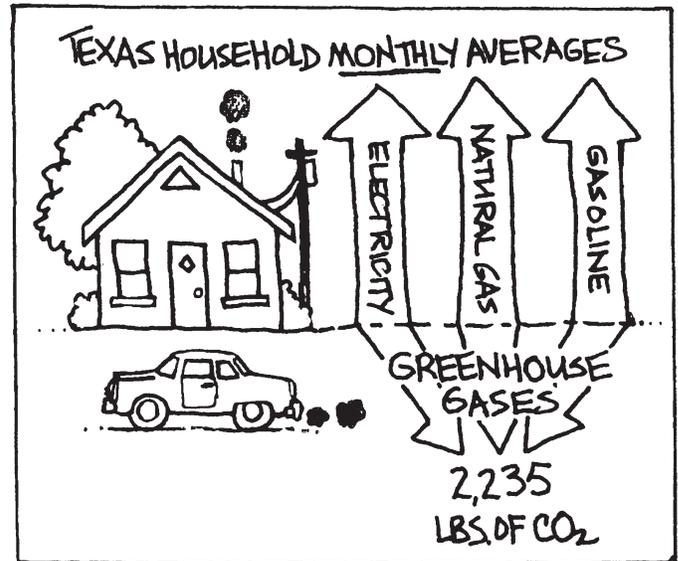
NEW ENERGY TOOLS

Energy helps us do things every day. It gives us light. It warms our bodies and homes. It helps us bake a cake and keeps our milk cold. It runs our TVs and our cars. Cars run on the energy stored in gasoline. Many toys run on the energy stored in batteries.

We are starting to change the way we use energy by using less of it. New energy tools are available today to help us do that. For example, compact fluorescent light bulbs use one-fourth the energy of a typical light bulb. Plus, they save more than \$30 over their lifetime.

We are also starting to use energy coming from different sources. Wind farms make energy for less money than burning fossil fuels. Solar panels that make electricity directly from sunshine are available now, too.

A new age of energy is starting now. Energy efficiency and clean energy from sources that will not run out may totally power your future.



CARBON DIOXIDE FROM YOUR HOME 96% of the energy we use in Texas makes greenhouse gases, the cause of global warming.