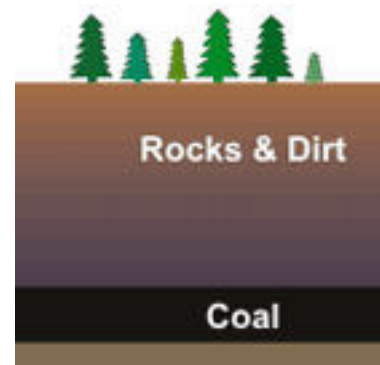




**Black Diamonds:** Coal takes millions of years to create. Coal is a combustible sedimentary rock composed mostly of carbon. It is the most abundant fossil fuel produced in the US. It is sometimes called “black diamonds,” because both diamonds and coal are mostly carbon.

Before the dinosaurs, 300 million years ago, much of the earth was covered with swampy forests. Then, about 100 million years ago, an inland sea then came in and covered much of what is now Alabama, Western Georgia, Mississippi, and the Florida Panhandle. The water covered the dead plants, and then dirt and sand covered them. Upheavals pushed Lookout and Sand Mountains up, pushing the sea back into the Gulf of Mexico, and covering the dead plant deposits. Over millions of years, heat and pressure formed the plants into the coal deposits we find here today.



Coal was first used in China in 4,000 BC for carvings. The British used coal during the Bronze Age (3,000 to 2,000 BC) in funeral pyres, but it was not until about 200 AD that people used coal for fuel. Coal replaced the water wheel as primary power during the Industrial Revolution (18<sup>th</sup> and 19<sup>th</sup> Centuries).

Most of the coal mined on the US today is used to generate electricity. It takes a ton of coal to keep a 100-watt light bulb burning for ten hours. Birmingham became the steel center of the Southern US, because coal, iron ore, and limestone, the three essential ingredients to making steel, were found within the city limits. Coal is still used for home heating today, but most that is not used for making electricity is used in other industries.

Coal mining is dangerous and harmful to the environment in many ways. Surface mining was once used to remove deposits of coal near the surface. Americans' hunger for the fuel has moved surface mining deeper and deeper underground. Now entire mountaintops are removed to access coal deposits deep inside. The process destroys trees and grasses leaving bare earth to pollute our streams and rivers. Washing the coal leaves coal slurry in retention ponds; these sometimes rupture and destroy everything for miles downstream. Deep mining produces many of the same problems albeit on a smaller scale. Watch the DVD *Kilowatt Ours*

([www.kilowattours.org](http://www.kilowattours.org)) for more on mountaintop removal. Read Homer Hickam's novel *The Red Helmet* for more appreciation of deep coal miners.

Burning coal pollutes the air. I got a vivid view of this in 2003 when I visited Nanchang, China. The sun rose every day through a brown haze as shown in the picture to the right. China depends more heavily on coal to produce electricity than do we. The coal dust in our air is already causing increased asthma attacks and other breathing problems. If we don't switch to cleaner technology to meet our ever increasing power demands, we might end up with skies like those of China.

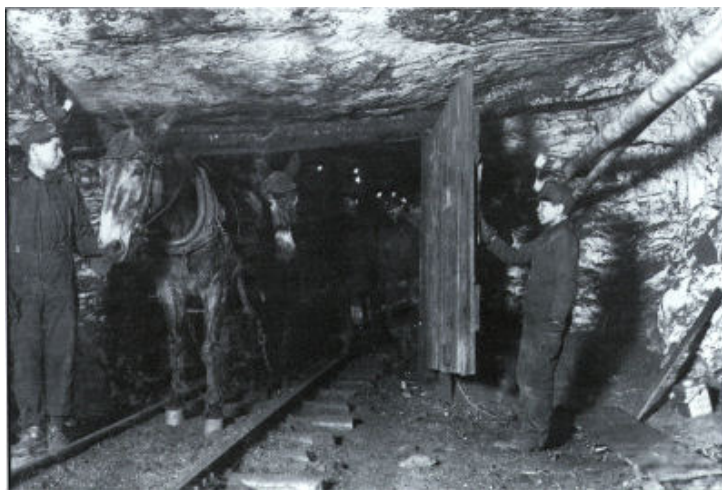


If you were a young child in Northwestern Alabama when we first became a state, you might have been a coal miner. Boys as young as eight worked the mines in the early 1800's. The youngest worked as "nippers."

The nipper's job was to open the heavy door when a coal car approached, and then quickly close it after the load passed. The mine door was essential to keep the mine ventilated and free of poisonous gasses, so it had to be opened as little as possible.

The fastest boys worked as "spraggers." They controlled the speed of the mine cars as they rolled down the slope. Working in pairs, each boy had about twenty or thirty wooden sprags. As the mine cars rolled downhill the spraggers ran alongside the cars and jabbed the sprags into the wheels to slow the cars down. The job was quite dangerous. An out-of-control car could jump the track and crash into the mine wall without proper spragging.

The most exciting job for the boys was mule driver, usually a boy in his early teens. He traveled throughout the mine coupling full cars together and leaving empties behind. The boy started out with one mule and then worked up to a six-mule team. He sat on the front bumper of the coal car and used his voice to direct the mules. A good mule driver was respected by both the miners and bosses. He had no problem obtaining a job as a miner when he was older.



## What's Your Carbon Footprint:

You've probably heard people talking about reducing our carbon footprint, but what do they really mean? The carbon footprint is simply the total amount of greenhouse gases that a system releases into the atmosphere. Greenhouse gases contribute to global warming while reducing the percentage of oxygen in our air.

Let's say you are working at your computer with a 100-watt light bulb turned on overhead. Let's say your computer uses 300 watts of power. You are using one kilowatt of power for each 2½ hours you work.

Now consider getting your parents to buy you a new 100 watt EnergyStar® computer. That alone would reduce your energy consumption and your carbon footprint by 50%, but you can do more. Just turn off the overhead light and use a 40-watt desk lamp instead. This puts more light on your work area with less energy use, and you have now saved 65 percent, but you still can do more. Change the 40-watt incandescent desk light bulb for an 8-watt compact fluorescent bulb producing the same light. Now you have saved 73 percent, but there is still more you can do.

Light Emitting Diode (LED) bulbs work well in desk lamps, as they shine mostly in one direction. A 1.5 watt LED gives as much light as a 40-watt incandescent bulb or an 8-watt compact fluorescent lamp. They are rather expensive to buy, but they will likely last until after you complete college. You are now reducing energy consumption and your carbon footprint by a whopping three-quarters. How green is that?

Now, if you could happen to connect your computer and desk lamp to a photovoltaic panel or a windmill, you would still save 75 percent on total energy consumption, but you would also reduce your carbon footprint to zero. This is why engineers suggest you adopt conservation measures before connecting to "green" power.

### Here are five simple things you can do to reduce your energy consumption and your carbon footprint:

1. Look for the EnergyStar® label when shopping for new electronics.
2. Take shorter showers.
3. Turn off lights, computers, sound systems, and games when not in use.
4. Dress warmly in winter, and then ask your folks to turn the thermostat cooler.
5. Replace incandescent light bulbs around the house with compact fluorescent or LED bulbs.

Use whatever energy you need, but **only** what you need.

Each of us using less electricity will greatly reduce coal pollution to our air and water.