

# The Long Bus Ride To Big Foot

“Living is easy with eyes closed,  
Misunderstanding all you see...” --Lennon/McCartney

*Sierra and Lila were riding the bus on the way home from school and got into an interesting conversation...*

**Sierra:** Hey Lila, I heard you moved into one of those big new houses down by Tullock Lake. It must be awesome to have a huge house like that!

**Lila:** Aw, you know, its pretty cool, the house is big, but the area of our lot is a quarter acre, the same as most of the other houses. It *is* a big house, but we don't really have more space overall.

**Sierra:** Yeah? I guess you're right. Our house is on a quarter acre lot too, but we have half the rooms you do. You do get more stuff with a house like that though, it must be cool. You could have a TV in every room, and more air conditioners, many more cool lights, music systems, wow, how cool.

**Lila:** Yeah, but my parents sometimes complain. Since we have to heat and cool such a big house and have so many more light bulbs, our electricity bills are HUGE. We do use a lot of electricity. And we need a ton more stuff to fill up the rooms, you know--furniture and stuff. My dad loves lava lamps, he has four of them in four different rooms! Mom has an electric massage chair with its own TV! We even have a gym downstairs . . . and...

**Sierra:** No way! That's SO awesome, but when you think of it then, you really are using a lot more space than other smaller houses, even if your yard area is the same size.

**Lila:** How so? What do you mean? I'M on a quarter acre, YOU'RE on a quarter acre, ITS THE SAME SIZE!!!

**Sierra:** Well, if you just think of it that way, maybe you're right, but the stuff you use comes from all kinds of places that aren't in your yard, and *they* take up space out in the earth outside your yard. And I read a story the other day about where our electricity comes from and...

**Lila:** Oh yeah! It's SO cool—they run water over dams and turn generators that make electricity. I saw a picture of it once! And the way our water cycle keeps on going, going 'round and 'round and 'round, it just seems like we get free electricity, it goes on forever....except we do have to pay for it I guess...

**Sierra:** Well....actually... a very small amount of electricity is made that way..

**Lila:** Wha...?

**Sierra:** No, really, that's called hydroelectric power, only a small fraction of our electricity is actually made that way. Really. Most of it comes from burning "fossil fuels", ancient fuels in the earth, coal and natural gas.

**Lila:** Burning COAL? No way! We use that in our bar-b-que! How does that make electricity?

**Sierra:** No, no, no, what you use in your bar-b-que is *CHAR*coal, something completely different. Coal was made millions of years ago from decayed and fossilized plants and animals. It burns really hot. It's that black chunky stuff they used to use for trains and to heat houses. Today about about 24% of our electricity comes from burning coal. The number is different in different states around our country and is actually going down.

**Lila:** Whoa, I still don't get it. How do chunks of coal make electricity?

**Sierra:** Its like this: Up in the mountains huge pit mines open up the earth and machines dig out thousands of tons of coal. Trucks or trains bring the coal all the way down to the power plant, sometimes hundreds of miles away. In the power plant they burn the coal to boil water. The steam from the boiling water turns generators to make electricity. The electricity comes through power lines to your house, eventually. They say along the way in the process a lot of energy is lost.

**Lila:** That's wild. If coal burning makes about 24% of our electricity, where does the rest come from? My dad says it comes from water and dams!

**Sierra:** Lila, come on, you know that adults don't always know everything, especially about this. Think about it, when they grew up no one paid attention to energy.

**Lila:** Well, mom and dad do seem a little clueless sometimes...

**Sierra:** Ok, so this is what's happening with the rest of our electricity--about 38% comes from burning natural gas that boils water and does that thing the way coal does, and about 20% comes from nuclear power plants. The other 18% is from renewable fuels--solar, wind, geothermal, and of course, hydroelectric.

**Lila:** How did you get to know all this stuff? Are you sure you know what you're talking about?

**Sierra:** Oh yeah, I KNOW, believe me, my teacher at school Mr. Gill showed us this article in Science magazine and some cool videos. Critical thinking is a big thing in his class. Then we checked a lot of other sources to see if it checked out.

**Lila:** Sounds like a lot of trouble, my mom and dad just listen to the news, they advertise that its fair and balanced . . .

**Sierra:** Yeah, but you can't really learn a lot about the whole picture from television news, or the internet, you know, "Google", you have to research for yourself and get real sources. Now listen, get this, there's a lot more to it. When you burn coal and gas you create smoke that has carbon dioxide

in it. From what I know, carbon dioxide is a “greenhouse gas” that holds heat in the atmosphere to keep our planet temperature in a good place. But since we started burning coal and other fossil fuels, the amount of carbon dioxide has risen to super high levels, making the planet warmer and causing the climate to change a lot. This is affecting sea levels, growing seasons, extreme weather patterns, species extinctions and much more. Scientists say its a huge problem we have to fix.

**Lila:** Wow. That sounds like a bummer. I hope someone is doing something about it!

**Sierra:** Wait, it doesn’t stop there. The smoke from coal burning also has mercury in it that turns into methylmercury that is getting into all the fish in the oceans and lakes. The Environmental Protection Agency, we call it the EPA, says that you and I should only eat 6 oz of tuna each week, and we should NEVER eat swordfish or shark, if we want to be safe from the mercury.

**Lila:** Sierra, you are REALLY starting to bum me out now. First of all, tuna sandwiches are my favorite, and we had swordfish last week. We just bar-b-qued it with that stuff we make electricity from....

**Sierra:** Hold on a minute Lila, the stuff you use in your bar-b-que is *charcoal*. It’s like wood that’s already been burned a little. Coal for electricity is what we talked about before, you know, the fossilized plants and stuff...

**Lila:** Ok, ok...so what does mercury do to you anyway? Look at me, do I look sick? I’m just fine thank you!

**Sierra:** Weeeelllll...mercury in the body of a young person with a growing nervous system (yes, the brain) or a baby in a mother’s womb can slow down the growth of the brain and nervous system. It has been shown to reduce the intelligence of babies born from mothers with too much mercury in their blood. If its in your blood it can affect your intelligence. Its said that today, 1 in 6 women in America have mercury in their blood that will affect the healthy growth of their babies.

**Lila:** How could this be happening? This can’t be happening! I’m sure if the EPA is warning us about this that the government is doing something about it. You shouldn’t really worry...

**Sierra:** Lila, the government often depends on YOU to show your concern before they act. You can’t just sit around and wait for them to do something. But there is another thing--the smoke from coal burning also has a chemical called sulphur dioxide in it. This does something up in the atmosphere that changes the rain and makes it more acidic. This acid rain is really harmful to forests, and wildlife in lakes. Actually many lakes in America don’t have any fish because of acid rain! But the good news is that is something we have almost fixed, people demanded it, and new

technologies are in place in many coal plants that remove the sulphur dioxide!

**Lila:** Awesome! Whoohoo!! So that means we can fix the other problems too!!

**Sierra:** That's riiiggghht...

**Lila:** hmmm....

**Sierra:** So you know something Lila, when you think about all of the earth out there that is used to make electricity--the coal mines, the powerplants, and the sky and oceans that have to absorb all that stuff in the smoke, it's a fact that people who use more electricity are using more of the earth—they're taking up more space! Do see where I'm going with this.....?

**Lila:** Wait a minute, are you saying that all our electricity use actually takes up more space on the planet, so even though we both live on a quarter acre, I'm actually taking up more *planet* space because I use more electricity?

**Sierra:** I didn't say that, but what do you think? Learn to see what's in front of you Lila...THINK about it...

**Lila:** Well if you start thinking that way, I'm going to really get guilty. Our huge house uses twice as much wood as yours, and that means we have to cut down twice as many trees, so I guess I use that space.

**Sierra:** And don't forget what trees do Lila, when they're gone, what they do doesn't get done anymore.

**Lila:** You mean give us wood?

**Sierra:** Don't trees breathe?

**Lila:** Oh yeah, I guess there will be less oxygen.

**Sierra:** Yes, but that's what they breathe out. What do they breathe in? What do they take out of the air?

**Lila:** Hmm, I don't know...let's see...oh yeah!...carbon dioxide—yikes, this seems to go on and on. Everything affects everything, this is crazy... that must mean my big house is affecting global warming more than yours, even if I turn off the electricity!

**Sierra:** Now don't get freaked out Lila. You're not going to turn off your electricity, you just need to find ways to balance your big house in other ways, like eating stuff and buying stuff that doesn't take up a lot of planet space.

**Lila:** Wow, this is a lot to think about right now. What are you doing after school tomorrow? Ya wanna talk about this some more?

**Sierra:** Sure. If you can handle it...

**Lila:** Get out...

**Sierra:** Yeah, we can walk down to the lake and hang out.

**Lila:** I have some thinking to do for sure. I still can't get over the fact that I am taking up so much more space on the earth than you because of my big house. I just thought about the area of our yard and stuff like that, and

we both have two cars. I guess we have to think about the space it took to make all the stuff in my house, and then I'm really a space hog, right?

**Sierra:** Hold on, don't beat yourself up here. What are you having for dinner tonight?

**Lila:** Oh man, my mom and dad are health freaks, sometimes it drives me nuts, you know, all the food has to be really fresh, grown around here, "organic," and we never eat meat. We're vegetarians.

**Sierra:** Ok, I think you got me there...

**Lila:** What do you mean?

**Sierra:** At my house we eat a lot of meat, and a lot of those mixes and stuff like Hamburger Helper and all. Its good, but if we look at the big picture and really start taking score, we might find out that we don't really take up different amounts of space after all!

**Lila:** Cool, let's talk about the food thing tomorrow. I'm not really sure about that. But I can see one thing, maybe we can learn from each other, and shrink our footprint on the planet.

**Sierra:** Exactly. And this reminds me of something that really freaks me out. I read that we have 7.2 billion people on the earth right now, and by 2050 there will be about 10 billion. How will all those people fit?

**Lila:** Well, if the earth isn't getting any bigger, the people will have to get smaller which doesn't make sense, but wait a minute—this is what will have to happen—all the people will have to shrink THE SPACE THEY TAKE UP on the planet. It's like a footprint. They will have to shrink their footprints!

**Sierra:** That can work!

**Lila:** And you know Sierra, my Social Studies teacher Ms. Crista said that a big way things have gotten better in the past is when people elect government officials who understand these things and want to change them!

**Sierra:** That is SO true! Let's get busy....Awesome, see you tomorrow!

**Lila:** Great, bye Sierra.

*Energy use numbers from the United States Energy Information Administration.*