

Josh and Sarah's
ELECTRIC
ADVENTURE



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Josh and Sarah's Electric Adventure is brought to you by Lake Country Power, an electric cooperative providing electricity and other energy related services to more than 41,000 members in northeastern Minnesota. Lake Country Power is a Touchstone Energy Cooperative.

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Josh and Sarah were visiting their Grandpa, who lived in the country. They played in the grassy fields. They threw rocks in the stream. They even chased butterflies and picked flowers.



As the sun began to set and the children had done every fun thing they could possibly think of, Sarah and Josh went inside. “Grandpa, we’re bored,” Sarah said.

“HMMMMM,” said Grandpa. “How would you like to play ‘pretend’?”

“Okay!” the kids shouted.



“Let’s pretend it was a long time ago, when I was a little boy,” said Grandpa.

“We can pretend we live in the country before we had electric power. How does that sound?”

“Cooooool!”

CLICK!



Grandpa turned out the lights, and it was dark in the house.

“Oooooooooooooohh,” said Josh and Sarah.

At first, it was very exciting having no lights in the house. It was a little scary, but they knew they were safe with Grandpa.



Grandpa lit three candles, one for each of them. Josh and Sarah held theirs carefully. The children loved the flickering flames of the candles and how different everything looked compared to when the bright electric lights were on.

“Now what would you like to do?” Grandpa asked.



“Let’s watch TV!” Josh said.

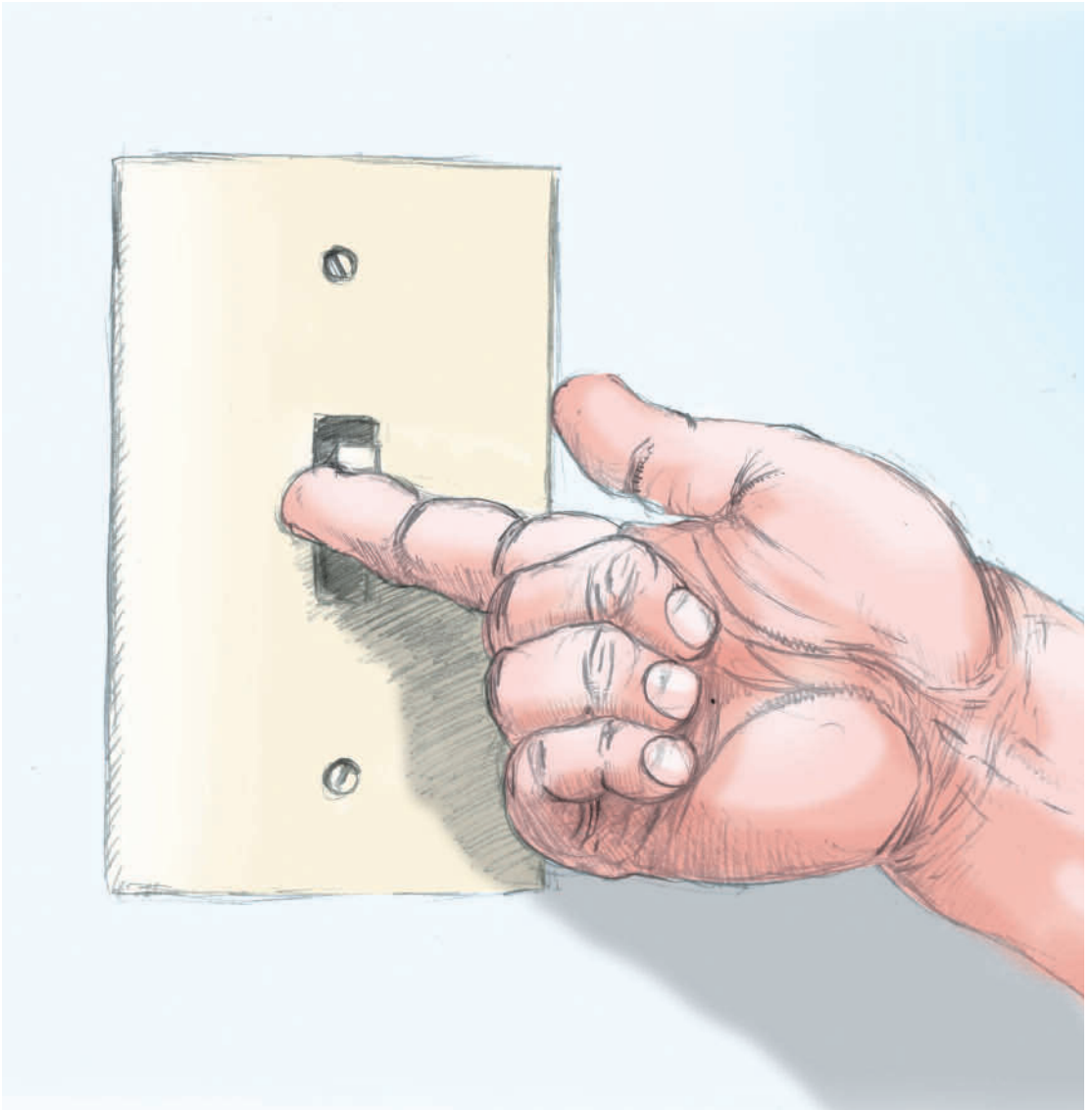
“Sorry,” said Grandpa. “A TV needs electric power to work. And besides, I didn’t have a TV when I was a boy.”



“I know!” said Sarah. “Let’s make popcorn in the microwave!”

Grandpa shook his head. “The microwave needs electricity, too. In the old days, we’d have to make a fire in the stove to pop popcorn.”

All of a sudden, the children began to think differently about their new game. Maybe life without electricity wouldn’t be as fun as they had imagined.



“Grandpa,” asked Josh, “can we turn the lights on?”

“Yes, Grandpa,” said Sarah. “It’s no fun without electricity.”

Grandpa turned the lights back on and said, “Well, I bet if you used your imagination, you’d think of lots of fun things to do without electricity. But having electric power sure does make it easier to cook and to heat our houses. It certainly makes it easier to see at night!”



Grandpa took a photo album from the bookshelf and sat down in his favorite chair.

“These are pictures of the house where I grew up,” Grandpa told Josh and Sarah. “This picture shows how we had to build a fire in the stove to cook our food. And here is something called a kerosene lamp, which had a flame instead of a light bulb. And that,” Grandpa continued, “is a wash tub and a washboard for washing clothes by hand.”

“By hand?” Josh exclaimed.

“Sure,” Grandpa answered. “Without electricity, things were a lot different than they are today.”



Grandpa turned the page of the photo album and pointed to another picture.

“This is a picture of the first electrical poles and power lines that brought electricity to houses in the country. Those people are friends and neighbors who worked together to make sure everyone who wanted electric power could have it. It was called a cooperative, or co-op for short.”

“Like cooperation!” said Sarah.

“That’s right,” Grandpa smiled.



“But where does the electricity come from?” asked Josh.

Grandpa thought for a minute and then he said, “Would you like me to show you? It would take a few hours to get there so we would have to leave early in the morning, but it would be a fun adventure....”

“Can we?” asked Josh.

“No kidding?” Sarah chimed in with excitement.



The next morning Sarah, Josh and Grandpa got into Grandpa's truck and began their journey. They drove by sparkling lakes and tall trees. They drove through many small towns and farms.

Gradually the scenery changed as the wooded countryside gave way to flat, grassy lands that Grandpa called prairie.



Along the way, they saw a giant wind turbine that looked like an airplane propeller on the end of a long metal pole. Grandpa told the children the wind turbine made electricity from the energy in the wind. He went on to explain that wind, sunlight and even plants can be used to make electricity.



Finally, Grandpa's truck slowed down and stopped. "Here we are kids," he said.

"This is a coal mine. Coal is a mineral that has stored up energy from plants and animals that lived many, many years ago," he explained.

"And," Grandpa continued, "the area behind us used to be a mine."

"Really Grandpa?" Josh asked. "That doesn't look like this coal mine at all!"

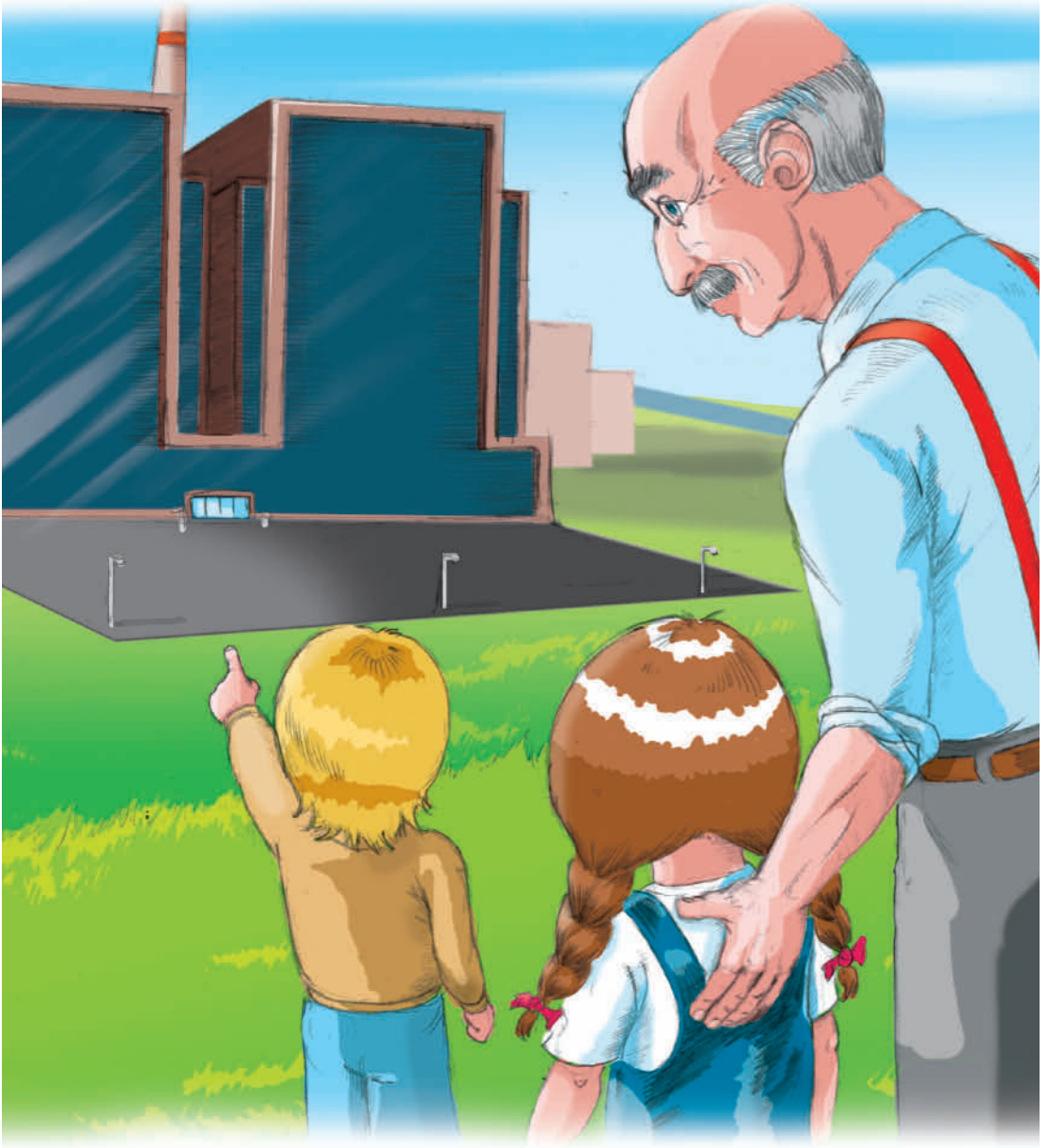
Grandpa responded, "That's because once the coal is all gone they fill the hole with soil and plant new grass to return the area to its natural condition. It's a little like you two picking up after yourselves so you don't leave a mess."



Josh and Sarah watched as tons of black coal were loaded into a gigantic truck by a machine called an electric shovel. The scoop on the electric shovel was bigger than Grandpa's truck! The truck dumped the coal onto a conveyor belt, which carried the coal in the direction of what looked like a small building on the horizon.

"But where does all that coal go?" asked Sarah.

"Come on and I'll show you," Grandpa replied.



Josh, Sarah and Grandpa got back into Grandpa's truck and drove towards the building on the horizon. The closer they got, the bigger the building appeared. It got bigger and bigger and bigger, and bigger!

"Wow!" exclaimed Josh. "That's the biggest building I've ever seen!"

"The chimneys reach way up into the sky!" Sarah added excitedly.

"Those are called smokestacks," Grandpa explained. "And the buildings make up what we call a power plant. This is where most of our electricity is made."



With that, Grandpa took the children by their hands and strolled right up to the power plant and through the large metal doors where they were greeted by a woman named Miss Montgomery. She shook Grandpa's hand and said hello to Josh and Sarah. Then, she gave everyone hard hats and safety glasses to wear for protection.

"Ready for your tour?" Miss Montgomery asked.

Josh and Sarah nodded eagerly.



“Who are those people on our hats?” Sarah wondered.

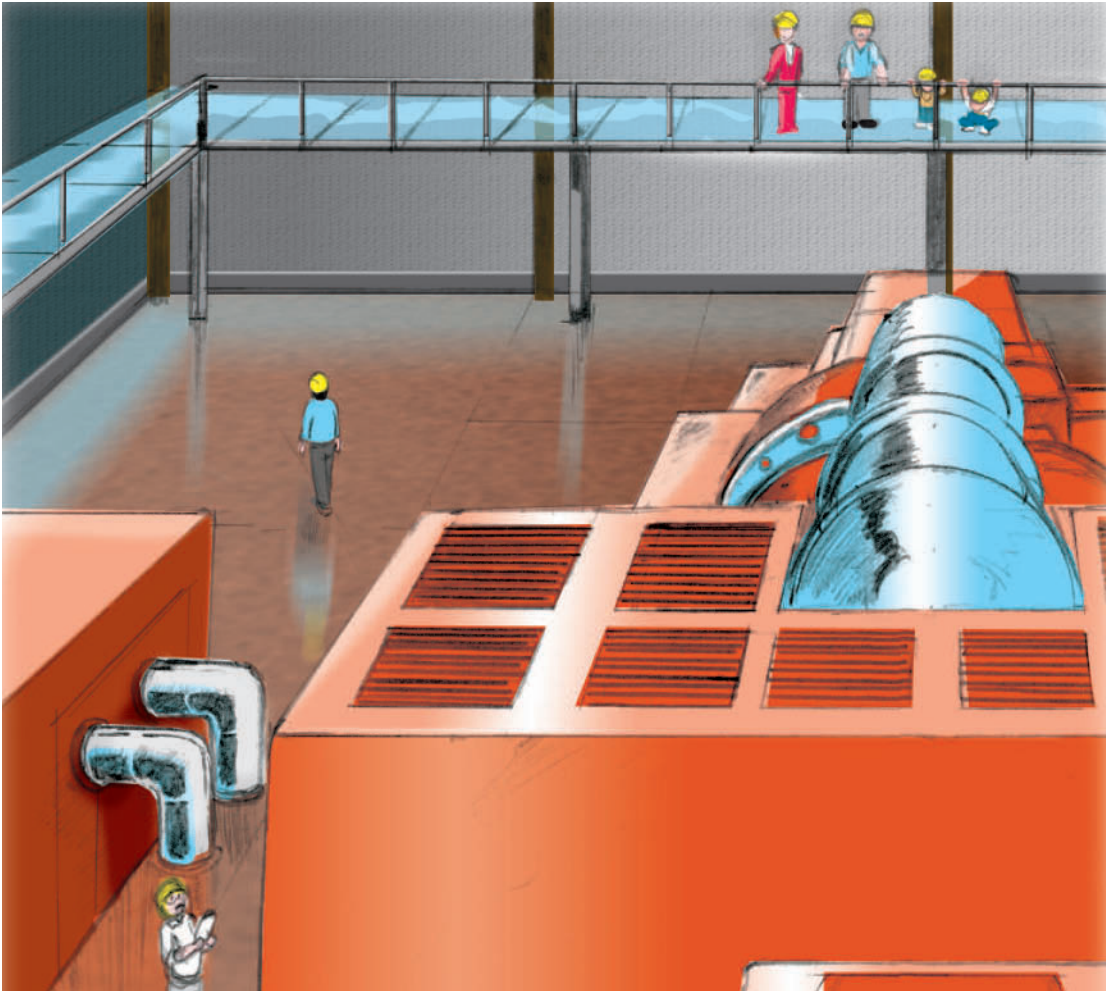
“Those people are good friends,” Miss Montgomery explained. “They represent groups of men and women who work together to bring electricity to houses and businesses.”

“Those groups are called co-ops,” said Josh.

“That’s right!” Miss Montgomery exclaimed. “You’ve been listening to your Grandpa.”

Josh smiled proudly.

“Most electric co-ops are members of something called Touchstone Energy, and Touchstone Energy helps co-ops be the best they can be: honest, helpful and smart, just like you.”



Miss Montgomery led them into a very large room. Josh and Sarah's school could fit inside it!

"Where's that humming noise coming from?" asked Josh. "It sounds like a bazillion bees buzzing!"

Miss Montgomery explained that inside the large, oddly shaped boxes on the floor, giant wheels called turbines were spinning very fast, and that's what was making the noise.

"Over there," she continued, "is our boiler. Water inside is heated by fires made from coal. When it gets hot enough, the water turns into steam."



“What does the steam do, Grandpa?” asked Sarah.

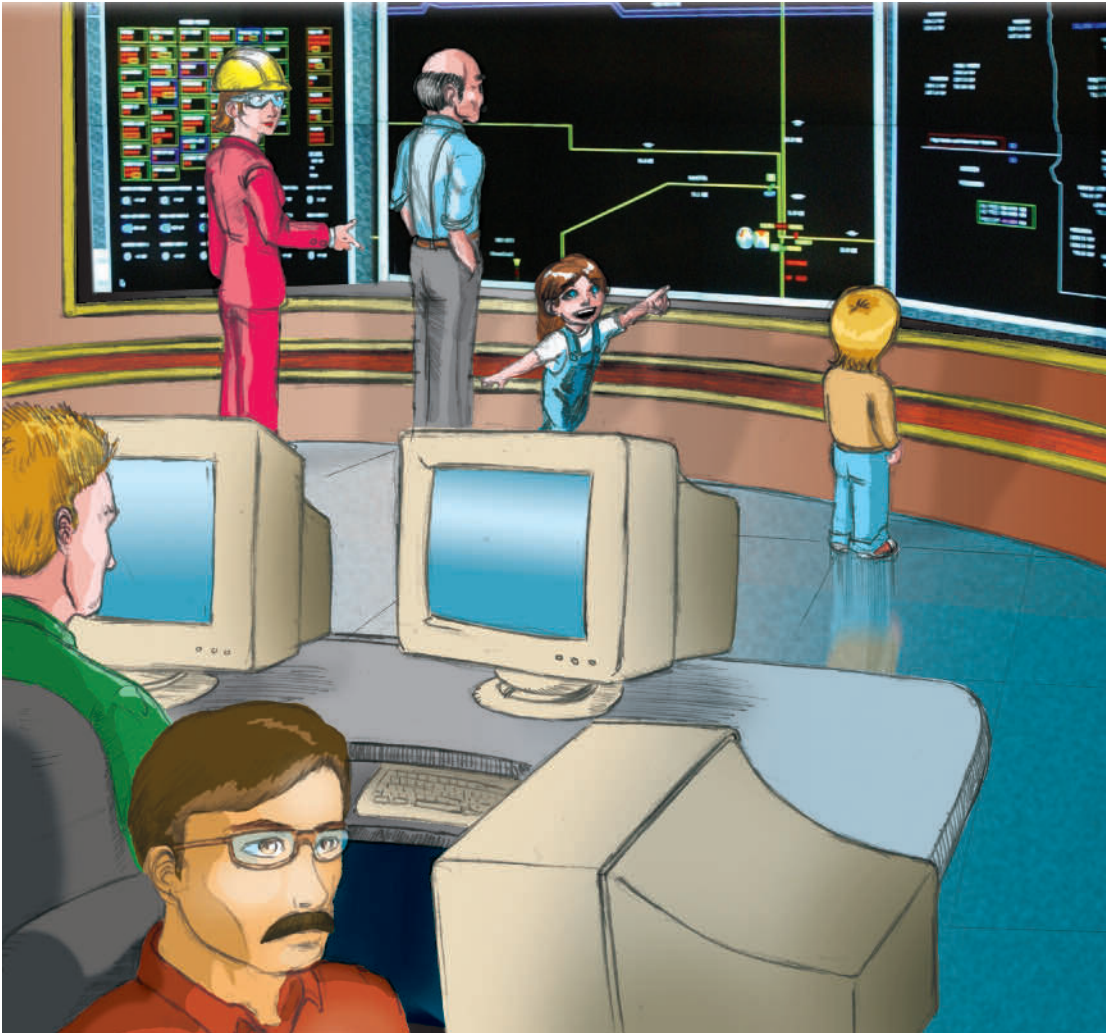
“The steam is pressurized so it can spin the turbine to change heat energy into motion energy,” Grandpa explained. “It’s kind of like when you run around the yard chasing butterflies – you are sending energy from inside your body, out into the air.”

“Mom says we’re full of energy,” said Josh.

Grandpa laughed. “You sure are!” he said.

“Then what happens?” asked Sarah.

“The energy created by the turbines is turned into electrical energy that we call *electricity*,” said Miss Montgomery.



Miss Montgomery then led them to another large room filled with computers and a large screen with flashing lights.

“And this map shows where the electricity goes when it leaves the plant.”

“Wow!” said Josh and Sarah as they looked at the huge grid display with its colorful lighted lines and dots.

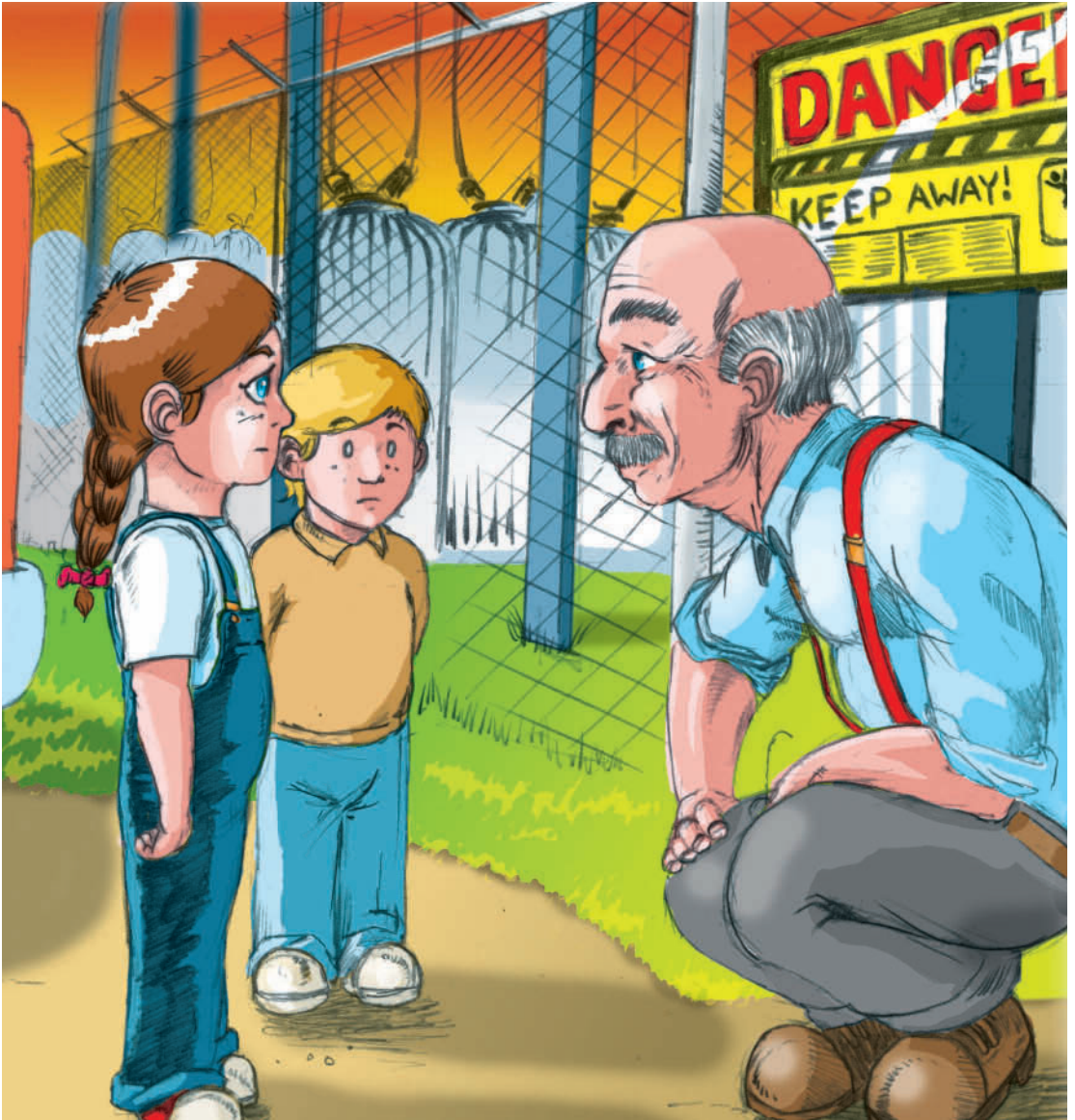
“But how does the electricity get all the way to your house, Grandpa?” Josh asked.



“I’ll show you on the way home,” Grandpa replied.

They thanked Miss Montgomery and went back to Grandpa’s truck, where Grandpa pointed to the many wires leading from the plant.

“Those are called transmission power lines,” he said. “There are power plants all over the country, all with their own power lines, which carry electricity across the country.”



Later, they drove by a fenced-in area filled with large pieces of equipment and poles and wires crossing every which way.

“That’s called a substation,” Grandpa said. “This is where the electricity gets split up from a few large wires to many smaller wires that carry electricity to homes, schools and businesses in our area.”

“And the fence is there for our protection,” Grandpa added seriously. “You should never climb on the fence, or try to get inside. It’s very important to always stay away from power lines, especially if you see one on the ground. Go tell an adult right away!”



Grandpa and the kids were almost home. “What did you like best about our day?” Grandpa asked.

“I liked the grid display,” Josh said, yawning. “It shows where all the electricity goes when it leaves the power plant.”

Grandpa nodded. “Sarah?”

“I think it’s good that people helped each other make electric co-ops, so everyone in the country could have electricity,” said Sarah.

“Me too,” said Grandpa.

“I know,” said Josh, smiling sleepily. “Tomorrow let’s play co-op so we can work together to build something of our own.”

Grandpa thought that was a very good idea.

