

SESSION FOUR

Topic: “*Welcome to GrowingFast, U.S.A.*”

Description: In the imaginary town of GrowingFast, U.S.A., students will chart population growth, calculate the increasing need for electricity, and create posters representing businesses and electrical usage in the town.

Curriculum Components:

- **Math:** Constructing line graphs and pie charts, calculating and projecting energy and population growth
- **Science:** Identifying energy sources, comparing energy consumption
- **Social Studies:** Identifying essential community services (water plant, hospital, stores, etc.) and analyzing their energy needs
- **Art:** Dimensional drawing, lettering/labeling, line drawing

Materials List (For Teacher to Provide):

- Copies of handouts for each student in the class
- Poster board
- Markers

Handouts (Masters for Copying)

Grades 3 - 5

Handout #1: The Town of GrowingFast
Handout #2: Charting population growth
Handout #3: Charting electricity uses

Grades 6 - 8

Handout #1: The Town of GrowingFast
Handout #2: Charting population growth
Handout #3: Charting electricity uses

Classroom Procedure:

Setting the Stage (All Grades)

- Distribute Handout #1 “The town of GrowingFast” and read aloud.
- Distribute Handout #2, read directions aloud, and assist as necessary as students complete the graph and answer the questions.
- Distribute Handout #3, read directions aloud, and assist as necessary as students complete the chart.

Activity: Building the Town of GrowingFast

- A. Divide the class into four to six groups. Distribute one piece of poster board to each group.
- B. Guide each group in choosing one kind of building or structure — a baseball stadium, a hospital, a school, a fastfood restaurant, an office building — to draw and illustrate with appropriate electricity use. Underneath the picture, have students list all the ways they can think of that electricity is typically used in this setting.
- C. Instruct the students on the following: Each drawing must have at least 4 (four) windows or lights — colored solid in DARK colors, as though the buildings or lights were dark. These poster windows will be “lit up” (with yellow Post-It stickers) in a later part of the course.
- D. When the posters are completed, have students mount them on the walls, attached at the end of the previous day’s “timeline” strings as though the timeline strings are power lines.



DAY FOUR: HANDOUT #1 (Grades 3 - 5)

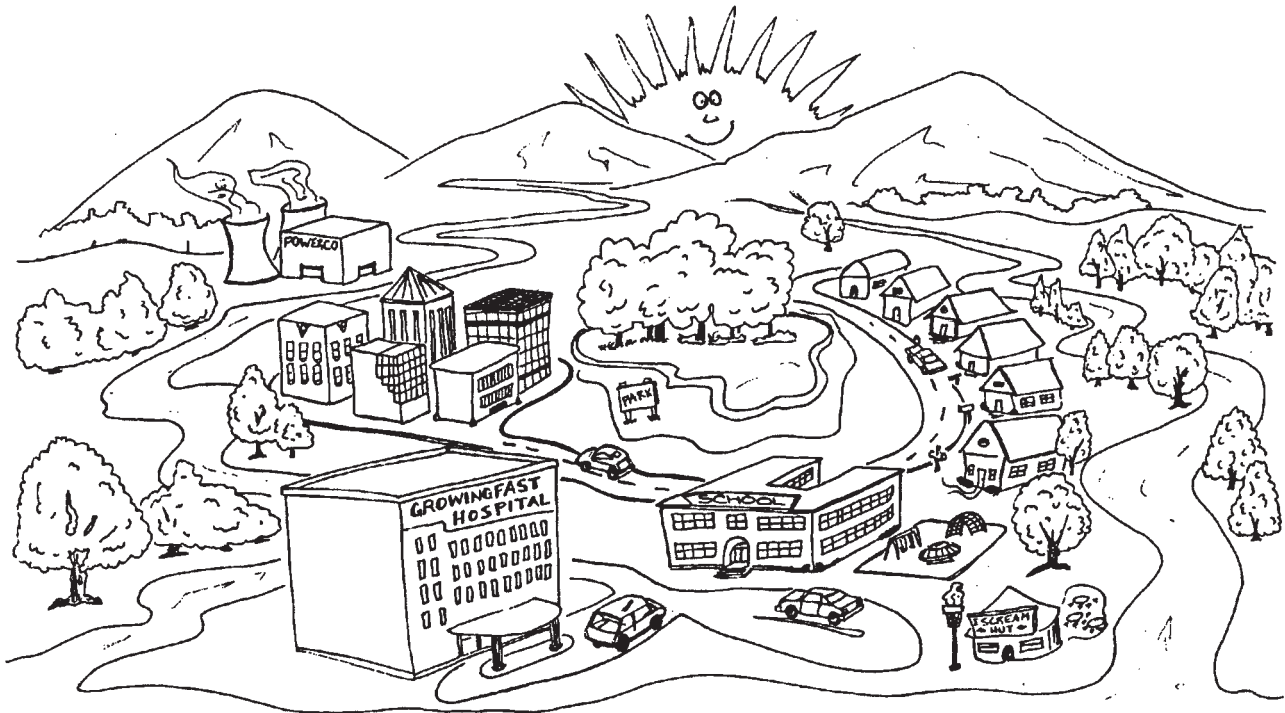
THE TOWN OF GROWINGFAST, U.S.A.

The town of GrowingFast, U.S.A., is a great place to live. There are mountains on the north, two beautiful rivers on the east and south sides, and a plain with a smaller river and several factories to the west.

GrowingFast used to be surrounded by farmland. Now, most people work in factories and office buildings. They have their houses and apartments in the eastern half of the town. The children have lots of room to play in neighborhoods with rolling hills and tall trees.

One of the things people like best about GrowingFast is its “quality of life.” The words “quality of life” mean different things to different people, but for most of us, it means being able to live in a clean, safe, well-kept community with good schools, hospitals, and other things everybody needs.

Here is a map of GrowingFast. Circle five things that make this town a nice place to live. How many of these things use electricity?



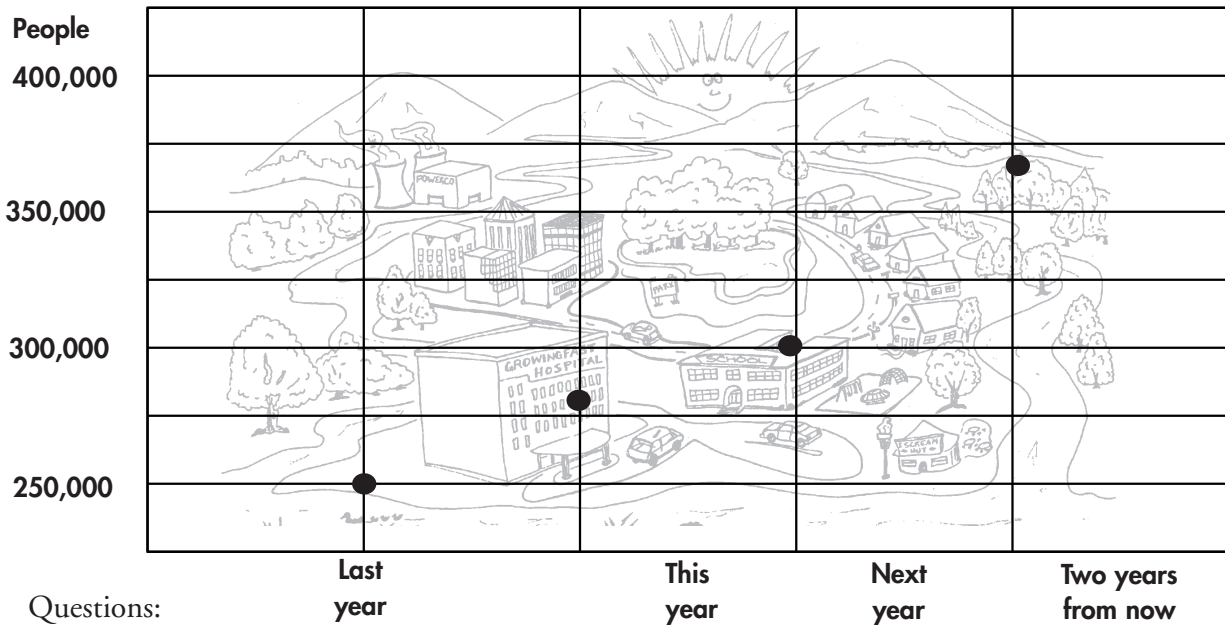
SESSION FOUR: HANDOUT #2

(Grades 3 - 5)

CHARTING POPULATION GROWTH

GrowingFast is growing fast!! A town gets more people in two ways: (1) Babies are born; and (2) New families move to town. Both these things are happening in GrowingFast.

Connect the dots on the graph below to see how the town's population (number of people) keeps growing every year. Then answer the questions at the bottom of the sheet.



Questions:

1) How many people are living in Growingfast this year?

2) How many people will live in Growingfast next year?

3) Between last year and next year, how many new people will have come to Growing Fast?

Next year's population _____ people

Last year's population _____ people

(Subtract)

Population growth: _____ new people

Now pretend that you are the president of the Growingfast Electricity Company. Remember: Every new person in Growingfast — even the new babies! — will need food, clothes, a bed to sleep in, clean water, heat to stay warm, and many, many other things that require electricity. Are you ready?



SESSION FOUR: HANDOUT #3

(Grades 3 - 5)

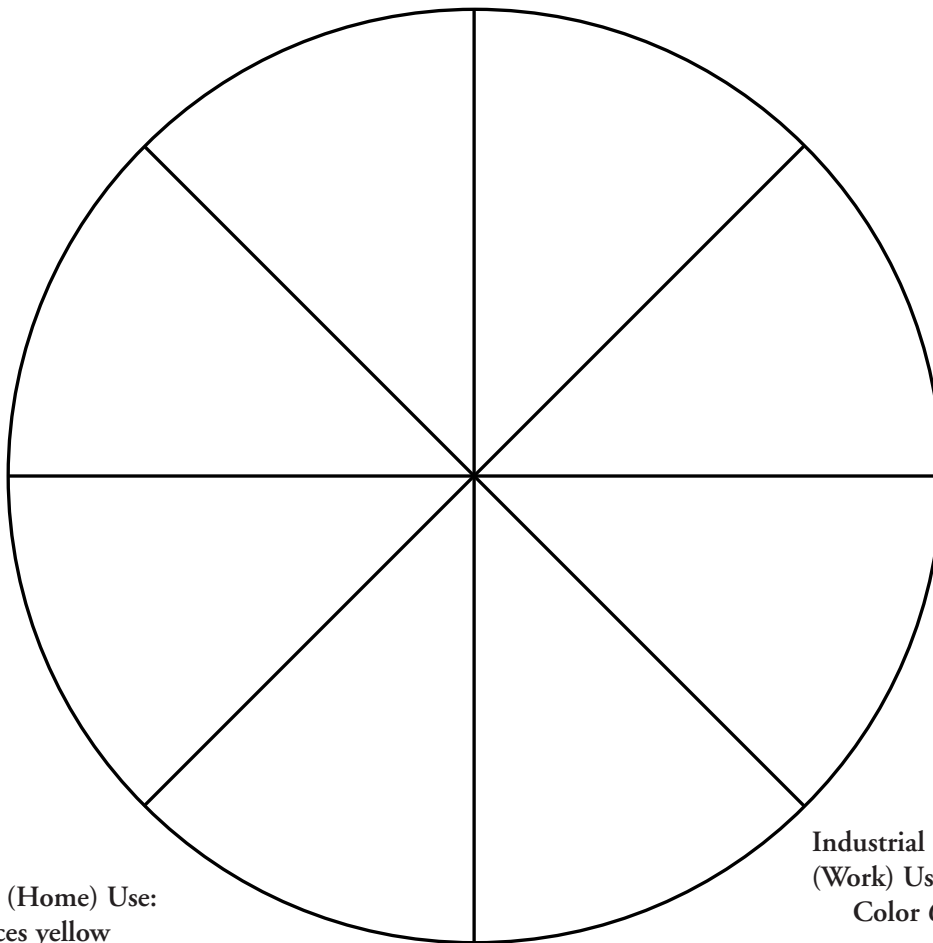
CHARTING ELECTRICITY USE

Like all of us, the people in Growing Fast use electricity at home AND at work. Electricity use in the home is called residential use, and electricity use at work, at school, in stores and factories is called industrial and commercial use.

You may be surprised to learn that more electricity is used AT WORK than at home. That's because all our nation's factories, office

buildings, schools, shopping malls, grocery stores, and restaurants use electricity in hundreds of different ways to serve millions of people — often all day and all night long.

Complete the pie chart below to learn how much of Georgia's electricity is used at home and how much is used at work.



Residential (Home) Use:
Color 2 slices yellow

Industrial and Commercial
(Work) Use:
Color 6 slices blue

Approximately one-fourth of all the electricity produced in the United States is used in the home, and the remaining three-fourths is used in industrial and commercial (work) settings.



SESSION FOUR: HANDOUT #1 (Grades 6 - 8)

THE TOWN OF GROWINGFAST, U.S.A.

The town of GrowingFast, U.S.A., is a great place to live. There are mountains on the north, two beautiful rivers on the east and south sides, and a plain with a smaller river and several factories to the west.

GrowingFast used to be surrounded by farmland. Now, although there are still a few farms, most people make their living by working in GrowingFast's factories and office buildings. Most people have their houses and apartments in the eastern half of the town, where the children enjoy playing in neighborhoods with rolling hills and lots of trees.

One of the things people like best about Growing Fast is its "quality of life." The words "quality of life" mean different things to different people, but for most of us, a good quality of life means being able to live in a clean, safe, attractive community where most things — from traffic lights to schools to the local hospital — work well most of the time. GrowingFast is such a place.

In the census* taken last year, GrowingFast had a population of 250,000 people. This year, 50,000 more people (about 13,000 new families) moved into the town. The newcomers needed a total of 10,000 new houses and 500 new apartment buildings, and (for the grown-ups), 20,000 new jobs.

Next year, ten percent more people will move into GrowingFast. And 5,000 babies will be born!

Two years from now, the growth rate is expected to be the same as in previous years — except for one major addition. A big new manufacturing plant will open, bringing 3,000 new jobs and about 12,000 new people (workers and their families).

Every new household in GrowingFast will use an average of 10,000 kilowatt-hours of electricity a year. In modern cities, having enough electricity is a vital part of a good "quality of life" — but producing it involves pollution, high-voltage transmission lines, and expensive use of natural resources.

How will GrowingFast produce enough electricity to provide a good quality of life for its growing population... without harming its quality of life in the long run?

** Every ten years, the U.S. government conducts a national census to count how many people live in our country. The national head count helps our society plan for future needs.*



SESSION FOUR: HANDOUT #2

(Grades 6 - 8)

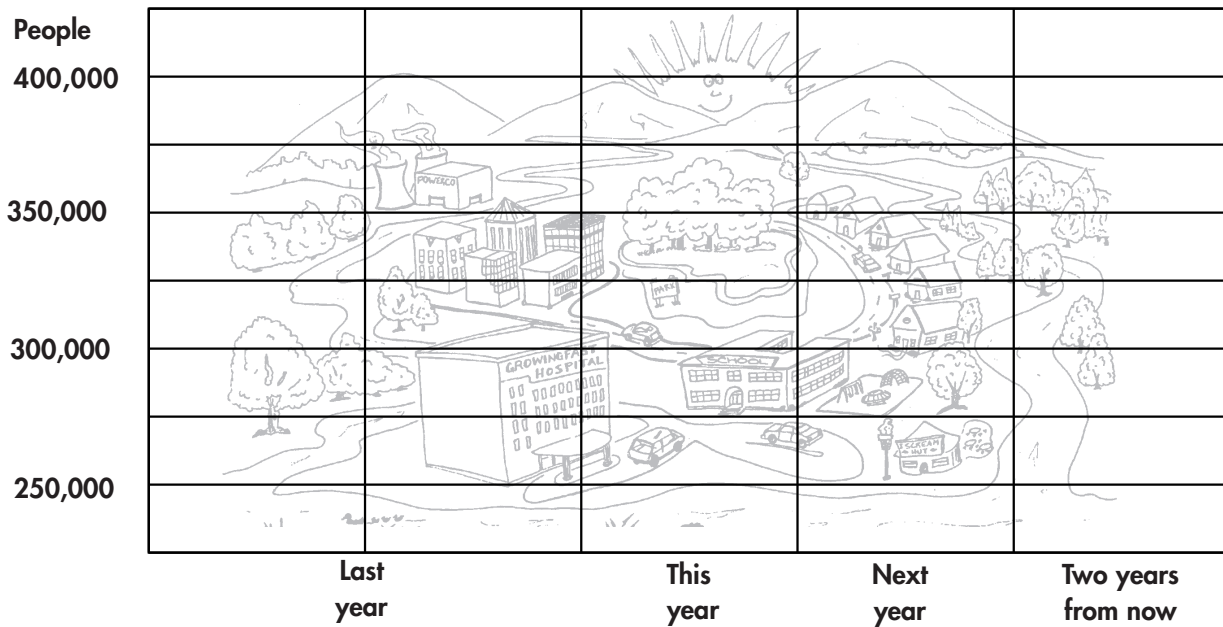
CHARTING POPULATION GROWTH

GrowingFast is growing... fast!!

A community's population changes in four ways:

1. Babies are born
2. New families move to town
3. Some people move away
4. Some people die

Use the information in "The Town of GrowingFast" to chart population growth on the graph below. Approximately how many people will GrowingFast have two years from now? (Assume the town loses only 2,000 people per year.)



Now pretend that you are the president of the GrowingFast Electricity Company. Remember: Every new person in GrowingFast — even the new babies! — will need food, clothes, a bed to sleep in, clean water, heat to stay warm, and many, many other things that require electricity. Are you ready?



SESSION FOUR: HANDOUT #3

(Grades 6 - 8)

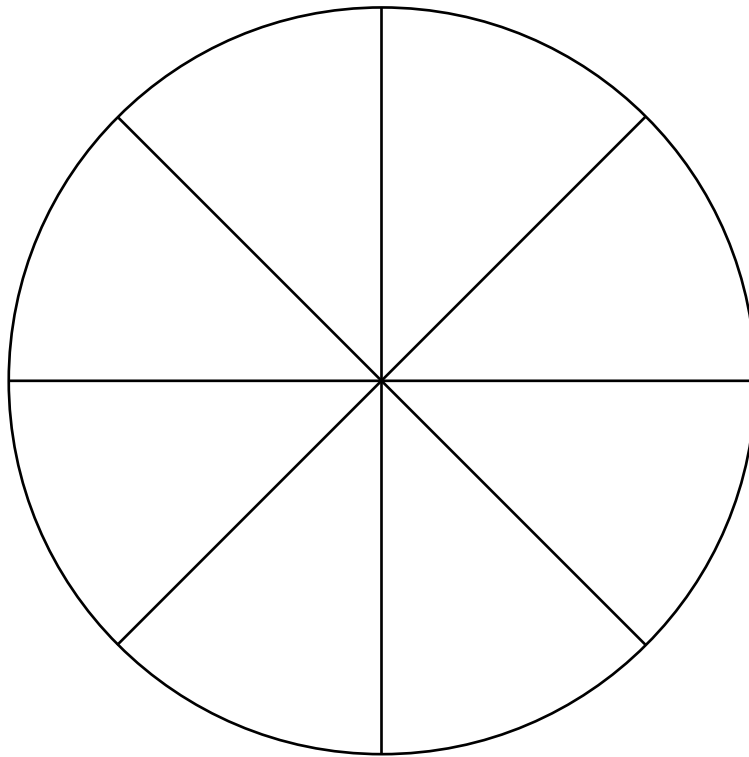
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You may be surprised to learn that more electricity is used AT WORK than at home. That's because all

our nation's factories, office buildings, schools, shopping malls, grocery stores, and restaurants use electricity in hundreds of different ways to serve millions of people — often all day and all night long.

Complete the pie chart below to learn how much of Georgia's electricity is used at home and how much is used at work.



Fill in the pie slices with different patterns to represent different electricity uses. Make a legend to explain your use of pattern/symbols.

Residential (Home) Use: 25 percent
Industrial (Factory) Use: 50 percent
Commercial and institutional use: 25 percent
(office building, schools, etc.)

- Residential Use
- Industrial Use
- Commercial Use



SESSION FOUR:

SUGGESTIONS FOR FURTHER STUDY

1. Invite your school's chief maintenance person, technology coordinator, or even the principal, to the classroom for an interview about all the ways he or she relies on electricity during an ordinary school day. Some points to consider: heating, cooling, lights, computer systems, lunchroom.
2. Debate: Should schools have emergency generators in case of emergency? Why or why not? Does your school have one? What type of businesses might invest in this equipment?
3. Debate: Should electricity used for recreational or non-essential services cost more than electricity for basic, essential services such as refrigeration? Why or why not? What would be the consequences of such a pricing policy?
4. Some utilities charge less for electricity that's consumed in the middle of the night. Why? Would paying less for electricity at 2:00 a.m. encourage you to save money by running your dishwasher or clothes dryer then?
5. Ask if any members of the class have ever lived in or visited a place where electricity was often rationed or available only some of the time. Where did this shortage occur? Why? (Note: these kinds of problems almost never occur in the continental United States – except perhaps after a major hurricane. Some island nations or lesser-developed countries may experience these difficulties, however, why?)

