



Dr. John D. Barge, State School Superintendent
"Making Education Work for All Georgians"

Georgia Department of Education
Grade 3 Career Development Activity
Energy Systems
Estimated Time: 45 minutes

Goal

- Students will identify **Energy** as Georgia career cluster

Objective

- define a career cluster as a grouping of occupations with common skills and knowledge
- identify sample occupations aligned with the **Energy** career cluster

Aligned Indicators and Standards

National Career Development Guidelines Indicators

- CM3.K4 Identify several ways to classify occupations
- PS2.A1 Demonstrate effective communication skill
- ED2.A7 Demonstrate participation in informal learning experiences

American School Counselor National Standards

- C:B1.4 Know the various ways in which occupations can be classified
- PS:A2.6 Use effective communication skills
- PS:A1.9 Demonstrate cooperative behavior in groups
- A:A3.5 Share knowledge

Related Georgia Performance Standard (GPS) and Common Core GPS

- S3P1 Students will investigate how heat is produced and the effects of heating and cooling, and will understand a change in temperature indicates a change in heat
- ELACC3RI7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur)
- ELACC3SL1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 topics and texts, building on others' ideas and expressing their own clearly

Materials

- Georgia's Career Clusters chart and questions (print front and back) NOTE: **Energy** is a Georgia specific career cluster
- occupational frame (There is no national frame for occupations aligned to this Georgia specific cluster)



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Activity

- Say: "Today we are going to think about occupations in the **Energy** cluster. Can anyone tell me the definition of a career cluster?" *Allow students to answer. Remind students: "A career cluster is a large grouping of occupations that are similar. You have learned about other career clusters in the 1st and 2nd grade." Distribute Georgia's Career Cluster chart. Ask students to find those clusters they have explored previously. Ask students to locate the **Energy** cluster and read the definition for that cluster. Say: "It's important that you begin to think about what you want to be when you grow up. There are thousands of occupations and you will need to begin to explore and narrow your choices by learning about different occupations in each of Georgia's 17 Career Clusters."*
- Say: "There are many forms of energy like wind, solar (sun), and water. There are many occupations that require a person working in the **Energy** cluster to know about producing and using different forms of energy. One form of energy is heat. We can create heat. Let's make some heat. Rub (move) your hands together really fast. What do you feel?" *Allow students to answer. "Right, you feel your hands getting hot (HEAT)! We take for granted our ability to turn the thermostat up in our homes and cars to produce heat to warm our bodies."*
- Say: "Now, do this. Place a small piece of paper on your desk. Blow on that paper. What happens?" *Allow students to answer. Say: "Right, the paper moves because of the energy you produced by blowing the paper like WIND."*
- Say: "Okay, let me ask you a question? Can water produce energy?" *Allow students to answer. Say: "Right, it can. WATER can move mountains like in a flood---that's not good. But moving water in the right direction and in the right way, we can produce energy and that is good. People use moving or heated water to create energy."*
- Say: "Energy is defined as the ability to do work. When we move something by pushing or pulling, we are doing work like rubbing your hands together. Energy is necessary for anything to move or change. Many people refer to energy as power. What changed when we moved our hands together?" *Allow students to answer.*
- Say: "Let's watch this short video about careers in Energy." *Show the Southern Company's video "Energy Careers" at http://www.southerncompany.com/careerinfo/video_player.html. If the classroom is not equipped with a LCD projector, have students gather around your computer to watch the video. It is short and fast. You may want to watch it twice.*
- Say: "Okay, let's see what you learned from the video?" *Distribute the handout, "Energy Careers". Allow students to work together in pairs to answer the questions on the handout. Lead a Q & A to review their answers to the questions.*
- Say: "You can learn more about energy occupations at <http://www.georgiapower.com>." *Write the web site on the board. "There are lots of interesting activities at this website including games and an electronic coloring book. There is also information for parents on that site as well." Ask students to copy the web address on their handout to take home. Encourage them to show their parents the website.*



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Evaluation

- Students will be evaluated on their participation and completed handout of what they learned about the various careers in the **Energy** cluster

Enhancement

- Facilitator should consult with the media specialist at the local school to help select books related to the career cluster being taught. This will ensure books are appropriate for the grade level and the learner.
- If computers are available, allow students the opportunity to research energy careers at the following web sites:
 - *Get into energy* at <http://www.getintoenergy.com/> This web site has a special section on Careers for Women in the energy field. Students will be led to the Association for Women in Energy. This information will assist young women who may pursue the nontraditional occupations where salary is usually higher.
 - *What Do You Like?* at <http://www.bls.gov/k12/>
- Science experiment: "Hair Raising Results"
http://www2.ed.gov/parents/academic/help/science/part_pg7.html#home-10

What You Need

- ✓ A cool dry day
- ✓ 2 round balloons (inflated and tied)
- ✓ Two 20-inch pieces of string
- ✓ Wool or acrylic sock
- ✓ Mirror

What to Do

- ✓ Have students tie a string to each inflated balloon. Then tell them to rub a balloon on their hair for about 15 seconds—help them to rub around the whole balloon. Have them take the balloon away and see what happens to their hair! Then have them observe what happens when they bring the balloon back close to their hair.
- ✓ Next, have them separate into pairs. They should stand a few feet away from each other and facing each other. Have one student rub the balloon on their hair again. Tell each student to hold the string to their balloon, letting it hang freely but without letting it touch anything. Slowly move the two balloons toward each other, but don't let them touch. Have the students tell you what's happening: Do the balloons push away from each other, or do they pull toward each other? Have a student place her hand between the two hanging balloons. What happens?

All materials contain millions of tiny particles, called protons and electrons that have electric charges. Protons have positive charges, and electrons negative ones. Usually, they balance each other, but sometimes when two surfaces rub together, some of the electrons rub off one surface onto the other, and we can have static electricity. Materials with like charges (all positive or all negative) move away from each other; those with opposite charges attract each other.



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- ✓ Give the student a sock to place over one hand. Tell that student to rub the balloon with the sock, and then let the balloon hang freely. Ask the student move her sock-covered hand near the balloon. What happens? Permit the student to rub both balloons with the sock and then let them hang near each other. What happens now?

DISCLAIMER

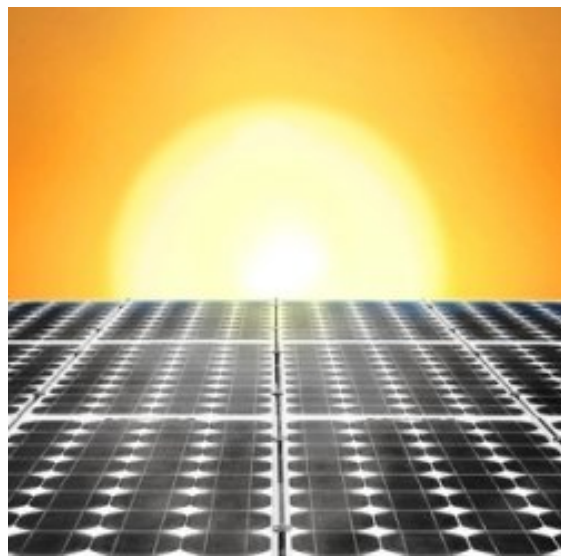
The sources and web links listed in the activities may be of help to you as you consider the career awareness activities. While these sources are provided to assist you in your search, it is your responsibility to investigate them to determine their value and appropriateness for your situation and needs. These sources are provided as a sample of available resources and are for informational purposes only. THE GEORGIA DEPARTMENT OF EDUCATION DOES NOT MONITOR, EVALUATE, OR ENDORSE THE CONTENT OR INFORMATION OF THESE RESOURCES. NONE OF THESE RESOURCES SHOULD BE CONSIDERED THE ADVICE OR GUIDANCE OF THE GEORGIA DEPARTMENT OF EDUCATION.



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Energy Careers



Energy Careers
• Telecommunication Technicians
• Equipment, Cable, Line Repairers/Installers
• Electrician
• Boilermaker
• Electronics Technician
• Power Plant Operator
• Electrical Engineer
• Mechanical Engineer
• Aeronautical Engineer
• Geothermal Engineer
• Geologist
• Chemical Engineers
• Electronics Engineering Technician
• Engineering Technician
• Mining Engineer
• Petroleum Engineer
• Hazardous Waste Technician
• Pipefitters/Pipe layers
• Valve/Regulator Repair Person
• Meteorologist
• Windsmith



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What three forms of energy are represented in the three pictures on the back?

Watch the video, ENERGY CAREERS. What occupations did you see?

Do you think you might want to work in this type of industry? _____

Why or why not?



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<u>Georgia's Career Clusters:</u> Groupings of occupations with common knowledge and skills	
Cluster	Cluster Description
Agriculture, Food & Natural Resources	Careers with common knowledge and skills related to production, processing, marketing, financing, distribution, and development of agricultural commodities and resources. These commodities include food, fiber, wood products, natural resources, horticulture, and other plant and animal products/resources.
Architecture & Construction	Careers with common knowledge and skills related to the designing, planning, managing, and building of structures.
Arts, A/V Technology & Communications	Careers with common knowledge and skills related to designing, producing, exhibiting, performing, writing, and publishing multimedia content including visual and performing arts and design, journalism, and entertainment services.
Business, Management & Administration	Careers with common knowledge and skills related to the preparation of students with computer skills for future college and career plans. Cluster skills mastered include planning, organizing, directing, and evaluating as well as owning and operating a successful business.
Education & Training	Careers with common knowledge and skills related to planning, managing, and providing education and training services as well as related learning support services.
Energy	Careers with common knowledge and skills related to preparing individuals for careers in the design, planning, maintaining, generating, transmission and distribution of traditional and alternative energy.
Finance	Careers with common knowledge and skills related money management, including planning, investing, and spending. Students gain career development skills for the finance world with opportunities that expand beyond basic business skills into financial literacy, banking, investing, insurance, and risk management.
Government & Public Administration	Careers with common knowledge and skills related to the planning and performing of government management and administrative functions at local, state, and federal levels. Careers are available in national security, foreign service, revenue, and regulations.



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Health Science	Careers with common knowledge and skills related to planning, managing, and providing services in therapeutics, diagnostics, health informatics, support areas, and biotechnology research and development
Hospitality & Tourism	Careers with common knowledge and skills related to the management, marketing, and operations of restaurants, and other food services, lodging, attractions, recreation events, and travel related services.
Human Services	Careers with common knowledge and skills related to family and human needs such as nutrition and food science, counseling and mental health services, family and community services, personal care, and consumer services.
Information Technology	Careers with common knowledge and skills related to the preparation for careers that create, use, modify, and engage technology skills. Graphics, multimedia animation, web design, game and application development, networking, and computer repair are all possibilities.
Law, Public Safety, Corrections & Security	Careers with common knowledge and skills related to employment in emergency and fire services, legal services, protective services, and homeland security.
Manufacturing	Careers with common knowledge and skills related to the processing of materials into intermediate or final products and related professional and technical support activities, such as production control, maintenance, and process engineering.
Marketing	Careers with common knowledge and skills related to the process of anticipating, managing, and satisfying consumers' demand for products, services, and ideas. The Marketing career cluster generates the strategy that underlies advertising and promotional techniques, business communication, and business development.
Science, Technology, Engineering & Mathematics	Careers with common knowledge and skills related to planning, managing, and providing scientific research and professional and technical services.
Transportation, Distribution & Logistics	Careers with common knowledge and skills related to planning, managing, and moving people, materials, and goods by road, pipeline, air, rail, and water, and also includes other related professional and technical support services.