

Electric Utility Careers What Do You Need to Know?

What do today's high school and middle school students know about careers in electric utilities? Every year electric utilities hire large numbers of people into a wide range of jobs with competitive

pay, good benefits and opportunities for advancement. Students who are aware of these job openings can start working now to obtain the qualifications they will need to launch a successful career.

- What jobs are there for people who like to work outdoors?
- If you like to work with people, what jobs would suit you?
- What careers are open to people who like to work with computers?
- What jobs could you apply for if you had a high school diploma or GED?
- What jobs require an associate degree? What associate degree would be useful?
- If you had a bachelor's degree, what careers would be open to you? What bachelor's degrees are specified?
- What summer intern opportunities are offered to college students?

Online Job Postings

For a flavor of the jobs available at FirstEnergy, students can visit our Web site at www.firstenergycorp.com and click on "Career Center." Exploring the employment section of the site gives kids the opportunity to see the wide variety of jobs available in the organization.

The postings often include entry-level jobs such as Electric Distribution Dispatcher. This employee must monitor a local distribution system and respond when there is an outage. Other openings are for experienced engineers in substation management, power station operations, and distribution systems. Accountants and other financial professionals can often find openings in administration that require their skills and experience.

Preferences and Qualifications

To help students focus on their work preferences and on the qualifications necessary for various electric utility jobs, have them answer these questions as they explore the FirstEnergy online Career Center:

Building Job Skills

As they explore the site, students should also take note of the skills commonly required in a wide range of positions:

- Knowledge of how electricity is generated and distributed
- Writing and math skills
- Oral communication skills
- Leadership ability
- Customer relations skills, including friendliness and courtesy
- Computer and keyboarding skills

Many students may be surprised to know that these skills are necessary in jobs ranging from meter reader to industrial hygienist. More importantly, these are skills students can start building now – and know that they are already working toward a successful career.

continued on page 2

- 1 Electric Utility Careers
- 2 Summer Safety Outdoors
- 3 The Cutting Edge
- 4 Educational Resources

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Akron, Ohio 44308
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Electric Operating Companies:

- Ohio Edison
- The Illuminating Company
- Toledo Edison
- Metropolitan Edison
- Pennsylvania Electric
- Penn Power
- Jersey Central Power & Light

Summer Safety Outdoors



Spring is here – and summer comes not far behind. Once school is out, children have time to explore the world around them. At times that world can pose dangers to curious minds and active bodies. The children in your class can benefit from a lesson on recognizing and avoiding electrical dangers – both indoors and out!

High levels of electrical power travel through tall transmission lines to be stepped down for use in homes, factories and stores. High levels of power mean high levels of danger for children playing outdoors near a transmission line.

Children need to know what a substation looks like, and to understand how dangerous it is to explore nearby or try to climb inside.



Power lines are dangerous, too. Birds can sit on them because their feet do not touch the ground.

If a child touches a power line accidentally when a kite gets blown into it, dangerous electrical energy can run down the kite string and electrocute him. It is essential that children understand it is dangerous to fly kites near power lines!



A big storm can blow a tree or its big branches down across a power line, bringing it to the ground. The ground then becomes charged with electricity. Children (and adults) need to know what to do:

- Keep away
- Call the electric company, police or fire department for help

Many houses and business buildings have outdoor electric meters. Even if children have been learning to read their family's electric meter, they should never tamper with one.

A *Danger - High Voltage* sign means this is very dangerous place! Children



should recognize this sign – and never play near equipment bearing one.

For more information and resources to help teach children of all ages about elec-

trical safety, visit www.firstenergycorp.com/education. *Louie's Safety Universe* offers items for children through grade 4. *The Electric Avenue* has two safety areas: "Play It Safe!" and "Outdoor Safety" for higher elementary and middle-school

grades. Also visit the Literature and Video Library areas of the FirstEnergy site for videos, materials and booklets that are free to teachers in our communities, including the electric safety board game "It's Watt You Know," the activity book "Don't Get Zapped," and the informational booklet "What Everyone Should Know About Electrical Safety,"



for grades 6 and up. Thanks for helping to keep children safe around electricity!



continued from page 1

Power Systems Institute

Electric utility companies across the U.S. are experiencing a shortage of line workers and substation electricians. In response to this need, FirstEnergy has partnered with seven colleges in Ohio, Pennsylvania and New Jersey to create the Power Systems Institute (PSI) and prepare students for these careers. PSI students earn an Associate of Applied Science Degree in Electric Utility Technology. For more information about PSI, visit the FirstEnergy Web site at www.firstenergycorp.com and click on "Career Center" under "Lineworkers/Substations Positions."

The Cutting Edge

Electronic Energy Drain

Major appliances such as electric dryers, air conditioners and refrigerators still account for most home electricity consumption, but personal electronics use a significant amount of energy – even when they are switched off. A high-definition television can consume more than 10 watts when it is not turned on. Add a VCR and a DVD player, and the figure can reach 24 watts – even before the devices are switched on. Power adapters also consume a little electricity all the time, even when they are not in use to charge a cell phone or other device. Personal electronics now account for 15 percent of electricity use, up from 5 percent in 1980.

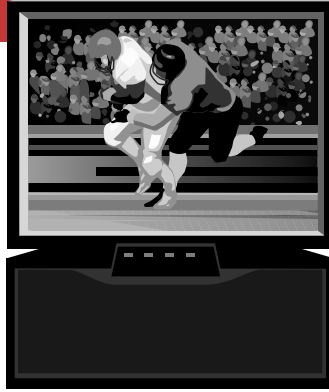
Akron Beacon Journal, January 8, 2006

Inflatable Wings

Imagine an aircraft that could fit into a backpack. Engineers believe they will soon create such a small plane – thanks to inflatable wings. In 2001 NASA inventors successfully dropped an aircraft from 1,000 feet and watched its wings inflate during descent. That design lacked flight controls, but designers are now building steering mechanisms – and folding photovoltaic cells to provide power – into the wings. Eventually aircraft like these may be used in dangerous environments, such as in the smoke-filled sky over a forest fire, and in exploration of distant planets. www.scientificamerican.com, January 16, 2006

A New Spin on Transistors

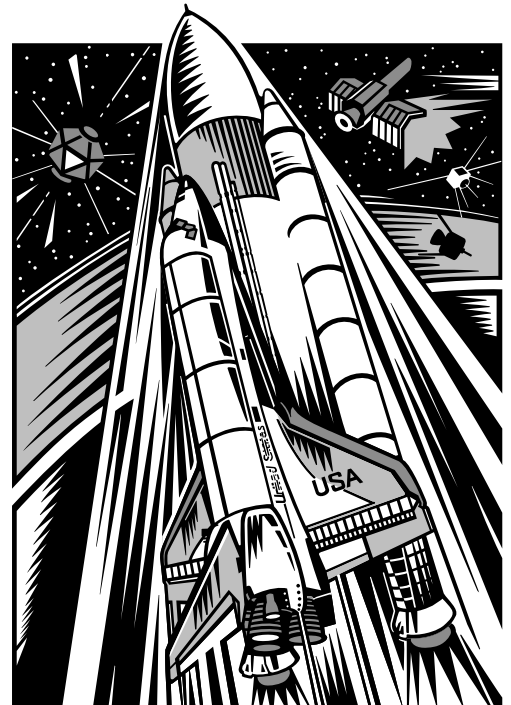
The electron possesses two important properties: charge and spin. While charge provides electricity, spin is responsible for magnetism. Information technology has traditionally used charge to handle data processing and spin to handle data storage. However, researchers in the new field of spintronics are starting to design transistors that work on spin rather than charge. Transistors in a microprocessor



chip control the stream of data in the form of binary ones and zeros, with a flowing current representing one and an absence of current representing zero. A group headed by Alexandra Imre of the University of Notre Dame has constructed a group of transistors made out of nanomagnets. Instead of current, the magnets use their polarities to process data. Unlike electronic transistors, these spintronic arrays can retain information when they lose power. *The Economist*, February 15, 2006

Multiplying Space Junk

Space junk is a growing hazard, warns Dr. Jer-Chyi Liou of NASA's Johnson Space Center in Houston. A collision can disable a satellite costing between \$10 million and \$100 million. The US Space Surveillance Network currently tracks around 9,000 medium to large objects orbiting Earth. Even if no more rockets are launched, this number will grow to 11,000 in 200 years because objects collide and break into pieces. Of the objects floating around today, 17 percent consist of used rocket bodies from launches, 31 percent comprise operational and defunct satellites, and 13 percent are debris such as bolts and other parts from spacecraft. Dr. Liou looked at possible methods of destroying the objects or returning them to Earth, but concluded that all methods are prohibitively expensive. *Guardian Unlimited* (www.guardian.co.uk), January 27, 2006



Visit our Web site at
www.firstenergycorp.com/education

Educational Resources Available



⚡ Material to help educators prepare for **International Polar Year 2007-2008** is available from a National Science Foundation Web portal at www.us-ipy.gov.

⚡ For printable classroom activities based on a **dinosaur research expedition**, visit www.projectexploration.org/niger2000/teacher.htm. The activities are designed for grades 5-8, and each one takes about 45 minutes.

⚡ Looking for proven ways to bring **environmental education** into the classroom? *Taking Action: An Educator's Guide to Involving Students in Environmental Projects* costs \$6.95 from Acorn Naturalists. Visit www.acorn-naturalists.com/store and enter "taking action" in the search field, or call (800) 422-8886.

⚡ Find free **printable monthly bookmarks** for kids to color at www.abcteach.com/directory/teaching_extras/bookmarks/months/.

⚡ The Pennsylvania Department of Environmental Protection offers **free posters and stickers** to Pennsylvania teachers. Visit www.dep.state.pa.us/dep/deputate/enved/free_teachers.htm or call (717) 783-6994.

⚡ Students can learn about the **human skeleton** by viewing x-rays from the National Health Museum at www.accessexcellence.org/RC/VL/xrays/index.html.

⚡ To order the EPA's **free safety posters** on poison prevention and radon protection, visit <http://epa.gov/teachers/order-publications.htm>.

⚡ Students who have mastered sudoku **number puzzles** may be ready to move on to kakuro. Find printable puzzles at www.kakuro.net/print-puzzles/.



⚡ Print out free **math worksheets for grades K-5** from www.onlineworksheets.org/math_worksheets.htm.

⚡ The National Postal Museum provides **free K-12 curriculum guides** for download at www.postalmuseum.si.edu/educators/4b_curriculum.html. Subject areas include history, ESL, language arts and art.

⚡ Students can find information about **earth science**, including videos of meteorologists discussing their careers, at www.riverdeep.net/earthscience/data/earthscience/earthsciencecenter.html.

⚡ For an explanation of **what it takes to strike oil**, students can explore Chevron's online Petroleum Prospecting Primer at www.chevron.com/products/learning_center/primer.

⚡ "Forensics in the Classroom" is a free program for **middle and high school science students** developed by Court TV and the American Academy of Forensic Sciences. Each realistic mystery conforms to national science standards. For more information, go to www.courttv.com/forensics_curriculum/about.html.

⚡ The U.S. Environmental Protection Agency provides a **library of free educational materials** through its National Service Center for Environmental Publications (NSCEP). Materials range from coloring books for early grades to toolkits for high school classrooms. View the catalog online at www.epa.gov/ncepihom/, write U.S. EPA/NSCEP, P.O. Box 42419, Cincinnati, Ohio 45242-0419, or call 1-800-490-9198.



"Somewhere, something incredible is waiting to be known."

-Blaise Pascal