

Energy Everywhere

EME Effectiveness Top-Notch

Energy and Man's Environment (EME), a non-profit energy education organization that has been "promoting energy literacy" for the last ten years, received high marks from an evaluation of its teacher training workshops. Like other recent surveys in energy education (see the October 83 and December 82 issues of *E&E*), the results speak well for energy education in general and EME programs in particular.

Sopris West, Inc., a Denver educational research firm, developed the survey and analyzed the data. Teachers in 15 states who had attended an EME workshop in 1982 (or in a few cases, 1981) were asked to evaluate the session's format, content, and impact. Thirty-nine percent responded.

Format items received a very high rating. Apparently EME presenters were clear, organized and prepared, effective, and used media appropriately. These items were rated on the average from 4.3 to 4.5 on a five-point scale. Slightly weaker, but still above the middle of the scale, were the length of the workshop, the provision for audience input, and the degree to which the workshops were value-free.

Respondents' opinions of workshop content were also quite high. They reported workshops to be informative,

useful, practical, interesting, and worthwhile, rating each descriptor very near 4.5.

Data on workshop impacts were most dramatic. Following workshop attendance, nearly 36% of the respondents reported that they "often" incorporate energy concepts into their classroom instruction, compared to 16% who did so before workshop attendance. Moreover, the proportion of teachers who "never" incorporate energy concepts into their teaching fell from 12% before the workshop to 4% afterwards.

Eighty-six percent felt that the workshops had increased their awareness of the nation's energy problems, and 63% said that it had directly affected their outlook on energy use.

The survey results are all good news for EME which reached more than 17,600 teachers through workshops in 1982. EME programs, funded primarily by energy business and industry, are organized on the state level. Each state's program is tailored to its needs.

For a full survey report, contact Dr. Edward Dalton, President, EME, 4980 West Amelia Earhart Drive, Salt Lake City, UT 84116, 801/539-1406.

PEEC Materials

The National Science Teachers Association, with the generous assistance of the Edison Electric Institute, has rescued some of the "embargoed"

packets of the Project for an Energy-Enriched Curriculum from the scrap pile at Oak Ridge. These titles: *Bringing Energy to the People: Washington, DC and Ghana* (grades 6-7); *Community Workers and the Energy They Use* (grades 2-3); *Energy in the Global Marketplace* (grades 9-11); *Transportation and the City* (grades 8-9); *Two Energy Gulfs* (grades 6-7); *U.S. Energy Policy: Which Direction?* (grades 11-12); and *Western Coal: Boom or Bust?* (grade 11) can be obtained from NSTA for the cost of shipping. **PACKETS MUST BE ORDERED BY THE BOX**; a box contains 80-90 packets. This offer is good for a limited amount of time—the packets won't last long. Call Debbie Watkins, 202/328-5800 x39.

Call for Summer Workshops

Summer workshops for teachers remain one of the most sought-after commodities in the energy education market. Because no central source of information is available, *Energy & Education* will serve as an informal source of information on summer energy workshops for teachers. If you are planning a summer program, or know of one being planned, please contact *E&E* (202/328-5800 x47 or at the address on page 2) with information on place, date, title, sponsor, director or teacher, eligibility, and cost **BY MAY 10, 1984**. Notices will be carried in the June 84 issue of *E&E*.

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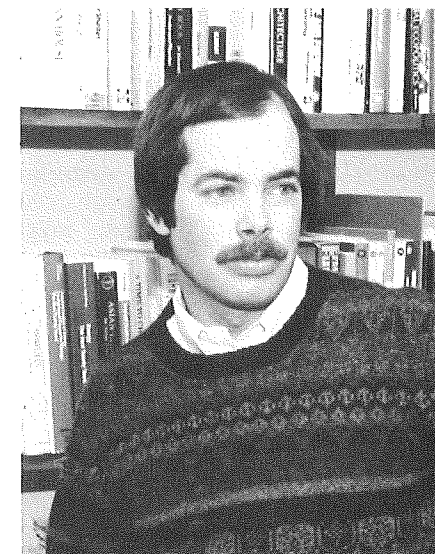
Energy & Education

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Guest Editorial



Christopher Flavin

Christopher Flavin is a Senior Researcher at Worldwatch Institute in Washington, D.C., a private, nonprofit research organization devoted to the analysis of global issues. His academic background is in economics, biology, and environmental studies, and he has been conducting research on energy policy issues for the past four years. He is the author of several Worldwatch papers and is coauthor of *RENEWABLE ENERGY: THE POWER TO CHOOSE* (W.W. Norton, 1983).

Although oil prices have fallen and official Washington has given less than full support, renewable energy development has made important steps forward in the United States in the last several years. Wind farming has become a commercial electricity source in California. Electricity from sunlight draws closer to reality each year as the cost of photovoltaic cells declines. Wood fuel, solar collectors, geothermal energy, and alcohol fuels are among the new energy sources that continue

to advance at a prodigious pace.

Yet renewable energy has not made many headlines recently. This is due in part to the "oil glut psychology" that has affected journalists as well as politicians, keeping renewable energy out of the news. Casual observers see that government support is unraveling and assume, not illogically, that the renewable energy industry can't be far behind.

In fact, renewable energy as a whole is doing quite well. Buoyed by continuing technological progress and the emerging economic viability of many of the technologies, investors are sinking unprecedented sums into renewable energy. Other signs of change include the 4,000 wind machines that have been erected in California since 1981, and the tenfold growth in annual solar cell production since 1978. Firewood has been the fastest growing heating fuel in U.S. homes, up 50% since the mid-seventies.

The combination of shrinking government support and burgeoning private investment marks a turning point for the renewable energy industry: it has matured enough to lead rather than follow the government's efforts. The Reagan administration will doubtless take credit for this and claim that its policy of less than benign neglect has reinvigorated the renewable energy industry. This is clearly not the case. The cutbacks in government programs have sapped the momentum of many renewable energy development efforts, making it more difficult for companies to obtain capital and build commercial plants.

Although progress has continued, it would have been speedier with more consistent government support. Furthermore, the renewables industry would have been decimated were it not that Congress has opposed the

administration's more drastic budget-saving measures. Beginning in 1983, the Department of Energy has been slightly more supportive of renewable energy, but that support does not extend to the White House and Treasury Department, which are calling for a 1985 budget that is lower than last year's. The administration has also failed to actively support extension of the tax credits which has been one of the keys to the renewable energy industry's performance in the last few years.

An impressive foundation has been laid, but governments, industries, and private citizens must all work to ensure that the momentum of renewable energy development does not stall during this period of stable oil prices and limited government support. Despite the record-breaking oil exploration efforts of the early eighties, oil reserves will continue to decline, and there is no indication that the Persian Gulf region will soon become a bastion of political stability. The roller coaster nature of U.S. energy policy is a national disgrace and is a key barrier to progress in the future.

Last year, Daniel Deudney and I projected in our book, *Renewable Energy: The Power to Choose*, that renewable energy use could rise 75% by the end of the century, but only if we take advantage of the remaining years of the oil age to establish the infrastructure of the coming renewable energy age. Thanks in large measure to government research and development programs begun in the mid-seventies, the United States has been a world leader in developing renewable energy. Whether we retain that position and lead the way to reliance on renewable energy will be determined, at least in part, by how well government and industry work together in the future.

Cornhuskers De-energized

State-sponsored energy education in Nebraska is taking the downturn postponed by the influx of oil-overcharge rebates a year ago. At the end of the 1983-84 school year the \$150,000 allocated to the Nebraska Energy Office to revive the program—one of the best in the country—will run out.

During this year of reprieve the Nebraska Energy Office has tried to update their extensive curriculum and reorient their program to emphasize "the social and economic factors of the energy situation instead of the technical science issues. We tried what you might call the civics approach—how do people in a free system deal with the effects of production or scarcity or price?" says Kandra Hahn, Director. To that end they have added the twelfth and thirteenth items to their curriculum—two volumes on *Energy and Economics*—developed in cooperation with the Nebraska Council for Economic Education.

Response to these new units has been overwhelming, according to Bill Walstad, Director of the Center for Economic Education at the University of Nebraska-Lincoln. He has had to turn people away from teacher training workshops on the units he co-authored.

These economics units join a long list of materials including the *Basic Teaching Units on Energy* (BUT's) for grades 7-10 and the Nebraska adaptation of Iowa's *Energy Conservation Activity Packets* (ECAP's) for elementary grades.

The future of energy education in Nebraska is murky at the moment. But less funding surely means less program. One program alternative might be to leverage funds already earmarked for teacher training to make that training in energy. Another alternative might be to offer formal energy education only in response to requests from communities through the Community Energy Management program.

In either case, energy education will

become just one of the many responsibilities of Nebraska Energy Extension Chief, Gary Lay. Despite its demotion, Energy Office Director Hahn believes that energy education "ought to have a shape, goals, a commitment;" but she recognizes that in order to be effective, the state program will have to be very selective. And consequently, public expectations will have to be lowered.

Curriculum materials will be distributed until supplies are exhausted by the Nebraska Energy Office, Box 95085, Lincoln, NE 68590-5085, 402/471-2867.

Minerals and Energy

Denver's Mineral Information Institute (MII) is the catalyst for a new set of energy education materials on the mining and minerals industry. The natural resources programs, one for elementary, one for high school, have been developed by educators to give students "... a solid understanding of (the) energy and mineral resources that are, in essence, the basic building blocks of our science and technology," says Al Hoyl, President of MII.

The elementary program, *Mining, Minerals, and Me*, is based on a model curriculum developed by Arizona elementary teacher, James Larry McBiles, for the Arizona Mining Association. Instructional materials include a teacher's guide and a student activity kit containing film strips, posters, a hand puppet, games and experiments. Lessons are infusible.

Mining, Minerals, and Me has been picked up in two states as a basis for state-specific natural resource education programs. In Alaska, the Alaska State Department of Mining and the Alaska Mining Association are funding writer McBiles through MII to adapt the curriculum. In Wyoming, adaptation is supported by the Wyoming Mining Association, the Petroleum Association of Wyoming, and the Wyoming Mining and Metals Section of the American Institute of Mining and Metallurgical Engineers (AIME).

The high school program, *Energy, Resources, and Environment*, presents practical aspects of the natural sciences and their applications. This text and lab manual, developed by Denver high school teacher, John Christensen, and published by Kendall-Hunt several years ago, emphasize the need to use available energy and mineral resources and give students an opportunity to analyze future energy options. MII and Christensen are updating and expanding the set in preparation for a new printing.

This program will undergo a two-year evaluation "to show that scientific literacy and good science skills are inherent in this energy program," says Christensen.

MII is an independent non-profit organization that evolved from the Colorado Section of the Society of Mining Engineers of AIME. To find out about all their information dissemination programs, contact Donald Ferguson, Executive Director, MII, 425 S. Cherry Street, Suite 200, Denver, CO 80222, 303/393-7211.

ENERGY & EDUCATION

Janet A. White, Editor

Energy & Education is published five times during the academic year by the National Science Teachers Association. This newsletter began as part of the NSTA Project for an Energy-Enriched Curriculum, whose staff is listed below:

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The National Science Teachers Association, founded in 1944, is a nonprofit educational organization.

Directory of Energy Education Materials



Photo by Steve Proehl. Courtesy of U.S. Windpower, Inc., San Francisco, CA.

Introduction

Despite declining budgets and waning public interest, energy education materials continue to be published with vigor and regularity. Materials come from many familiar sources—curriculum development companies and projects, governments, industry, public interest groups, and individual teachers. New partnerships of government, education, and industry are also generating new materials, as are organizations of all kinds whose energy programs include an energy education component. This second *Directory of Energy Education Materials* again reflects the range and depth of what's available.

This is not an exhaustive listing. Materials were not sought or selected for inclusion systematically, nor were the materials evaluated or reviewed. Entries were invited through *Energy & Education* and other energy education projects we have undertaken or participated in at NSTA. No one was omitted intentionally.

To make this chart concise, several groups of codes were used. Types of materials are designated by number and supplementary resources by letter as listed at right. Grade level is denoted by number and/or letter.

Energy education went out with the gas lines, didn't it? Or did it? Readers of *Energy & Education* don't think so, as this *Directory* shows. They hear about excellent, unusual programs, instructional materials, background references, and teacher training opportunities. In addition to the *Directory*, they have access to teaching strategies, funds, data, and experts across the country.

E&E strives to present a balance and diversity of views and encourages network building by facilitating information exchange between readers.

E&E costs \$9.00 per year and is available from the National Science Teachers Association, 1742 Connecticut Avenue, NW, Washington, DC 20009. (\$10.00 per year outside the U.S.; bulk discounts available.)

TYPES OF MATERIALS

Program or curriculum project	1
Teaching unit(s)	2
Course text or lab manual	3
Activity or student booklets (including spirit masters)	4
Library resources, reading supplements, magazines	5
Reference or background material (including books)	6
Informational posters or cards (for classroom use)	7
Game or simulation	8
School or home energy audits	9
Contests	10
Teacher resource guides	11
Classroom strategies for designing and building energy equipment or models	12
Workshops, networking	13
Evaluation of energy programs	14
Curriculum framework for developers	15

SUPPLEMENTARY RESOURCES

Activity or worksheets for students	A
Audiotape	AT
Computer software	C
Catalog available	CA
Filmstrips and other film media	F
Games or simulations	GS
Home activity sheets (including picture or skill cards)	H
Kit	K
Posters and charts	P
Records	R
Samples (coal, etc.)	S
Pupil tests, answers keys	T
Transparencies	TR
Videotape	V

Name	Material	Title (TG = Teachers Guide Available)	Level	Price	Supplementary Resources
Alabama Department of Economic & Community Affairs Energy Division 3465 Norman Bridge Road Montgomery, AL 36105 (205)284-8937	2	1. <i>Energy Conservation</i> , TG	3-6	\$20.00*	C
	2	2. <i>Fossil Fuel Facts</i> , TG	3-6	20.00	
	2	3. <i>Alabama State Facts</i> , TG	3-9	20.00	
	2	4. <i>United States Energy Use</i> , TG	4-9	20.00	Each Energy Education Software folder contains a 5 1/4 diameter diskette for the Apple microcomputer and teacher's guide.
	2	5. <i>World Energy Facts</i> , TG	4-12	20.00	
	2	6. <i>Alabama Energy Facts</i> , TG	6-12	20.00	
	2	7. <i>55 MPH Sign of the Times</i> , TG	7-9	20.00	
	2	8. <i>Alabama Fossil Fuels</i> , TG	7-12	20.00	*Alabama schools with Apple pay \$10.00 per folder.
	2	9. <i>Energy Crossword</i> , TG	7-12	20.00	
	2	10. <i>Energy Hangman</i> , TG	7-12	20.00	
	2	11. <i>Solar Energy Economics</i> , TG	9-12	20.00	
		Energy Arithmetic Software: <i>Energy Addition</i> , TG	3-7	20.00	
		<i>Energy Subtraction</i> , TG	3-7	20.00	
		<i>Energy Word Problems</i> , (two programs), TG	6-9	20.00	
American Gas Association Educational Programs Department 1515 Wilson Boulevard Arlington, VA 22209 (703)841-8664	2	<i>Natural Gas Energy Kit</i> , TG	6-12	\$ 5.00	A,P,TR,CA
	4	<i>Experiments: Properties of Gas and Heat Energy</i>	9-12	3.50	A,CA
		<i>America's Changing Energy Story</i> , TG	9-12	3.50	F,AT,CA
		<i>For Safety's Sake</i> , TG	K-3		Single copies of the above are available free to teachers in most parts of the country through the courtesy of the local gas utility.
American Nuclear Society Public Communications Department 555 N. Kensington Avenue La Grange Park, IL 60525 (312)352-6611	8	"Energy Chase" board game	5-Adult	\$ 4.50	C,S
	4	<i>Earth . . . (A Booklet on Energy & Technology)</i>	7-9	1.50*	V,F (on loan)
	4	<i>Personal Radiation Dose Chart</i>	6-Adult	0.15*	V,F,C (on loan)
	5,6	<i>Nuclear Energy Facts-Q&A</i>	6-Adult	0.70*	V,F (on loan)
	5,6	<i>Energy's Future Rests in Your Hands</i>	6-Adult	0.32*	V,F,C (on loan), S
	13	<i>Nuclear Energy Teacher Workshops</i>	Adult	Free*	
11	<i>Career Guide</i> (162 pp, 1982 ed.)	9-Adult	30.00	V,F (on loan) *Single copies free. Orders for \$10.00 or less must be prepaid; bulk discounts available on most items. Catalog available.	
American Petroleum Institute Educational Services 1220 L Street, NW Washington, DC 20005 (202)682-8118	5,6	<i>Facts About Oil</i>	7-Adult	Free*	
	5,6	<i>Looking for Energy: A Guide to Information Resources</i>	7-Adult	Free*	CA
	5,6	<i>Movies About Energy</i>	K-Adult	Free*	CA
	5,6	<i>Myths and Misperceptions: Exploring the New World of Energy</i>	7-Adult	Free*	
	5,6	<i>Supplementary Energy Sources</i>	7-Adult	Free*	
		<i>Two Energy Futures</i>	9-Adult	Free*	
Antioch/New England Graduate School Attn: Mitch Thomashow Keene, NH 03431 (606)357-3122	1,2,4	<i>Know Nukes: A Nuclear Power Issues Curriculum Guide</i>	7-12	\$ 4.00	
	13	Workshops and consulting on use of material.			
Atomic Industrial Forum, Inc. Publications Office 7101 Wisconsin Avenue Bethesda, MD 20814 (301)654-9260	6	Teachers Packet	K-6	Free*	Information packet including publications, facts and figures, graphics, etc.
	6	Teachers Packet	7-Adult	Free*	Information packet including publications, facts and figures, graphics, etc.
	6	<i>A Selected Bibliography of Books on Energy and Nuclear Power</i>	7-Adult	Free*	
	6	<i>Working With the Atom-Careers for You</i>	7-Adult	\$ 1.25**	Career information booklet.
	7	<i>Power in the Making</i>	5-Adult	2.75***	Oversized booklet with foldout posters showing various types of electrical generation. *Single copies **10 or more copies \$1.10 each. ***5-99 copies \$2.50 each; 100 or more copies \$2.00 each. Prices shown are AIF member prices. Teachers may order AIF materials at these prices. Shipping will be added to cost.
Professor Albert A. Bartlett Department of Physics Campus Box 390 University of Colorado Boulder, CO 80309 (303)492-7016 (303)492-6952	5,6	<i>Forgotten Fundamentals of the Energy Crisis</i> (paper)	10-Adult	\$ 1.00	Also available as videotape (1984, 54 min). Paper available from Dr. Bartlett. Video rental or purchase prices and information from Educational Media Center, Stadium 310, Campus Box 379, University of Colorado, Boulder, CO 80309, (303)492-7341.

Name	Material	Title (TG = Teachers Guide Available)	Level	Price	Supplementary Resources
Bullfrog Films Oley, PA 19547 (215)779-8226		<i>The Attached Solar Greenhouse</i>	7-Adult	\$100.00	V,F
		<i>Bill Loosely's Heat Pump</i>	7-Adult	60.00	V,F
		<i>Building the Brookhaven House</i>	7-Adult	95.00	V,F
		<i>The Cooling of Summer Heat</i>	7-Adult	42.00	V,F
		<i>Decision: Energy for the Future, TG</i>	4-Adult	65.00	V,F,A
		<i>Energy and Morality, TG</i>	9-Adult	60.00	V,F,A
			Rental		
		<i>Equal Rights to the Sun, TG</i>	7-Adult	95.00	V,F,A
		<i>The Four Corners</i>	7-Adult	85.00	V,F
			Rental		
		<i>Go</i>	1-4	60.00	V,F
		<i>Harness the Wind</i>	5-Adult	65.00	V,F
		<i>The Home Energy Conservation Series, TG</i>	7-Adult	275.00	V,F,A (3 or half-hour programs)
		<i>The How To's of Weatherstripping</i>	7-Adult	69.00	V
		<i>Kilowatts from Cows, TG</i>	7-Adult	95.00	V,F,A
		<i>The Man Who Loved Machines, TG</i>	4-Adult	60.00	V,F,A
		<i>New Alchemy</i>	7-Adult	100.00	V,F
		<i>No Act of God</i>	7-Adult	100.00	V,F
	<i>Pedal Power</i>	3-Adult	75.00	V,F	
	<i>A Portrait of Small Hydro</i>	7-Adult	100.00	V,F	
	<i>Radiation: Impact on Life, TG</i>	7-Adult	95.00	V,F,A	
	<i>Small is Beautiful</i>	7-Adult	100.00	V,F	
	<i>The Solar Promise, TG</i>	7-Adult	100.00	V,F,A	
	<i>Toast, TG</i>	3-Adult	65.00	V,F,A	
11		<i>Bullfrog Film and Video Catalogue, 1984/5</i>	1-Adult	Free	A comprehensive collection of 50 energy video and film titles, some of which are listed above.
Carolina Biological Supply Company 2700 York Road Burlington, NC 21215 (919)584-0381		Wide range of materials.	6-Adult		C,G,S,F,K,P,TR,S, books, apparatus. Write for catalog.
Center for Economic Education University of Nebraska—Lincoln College of Business Administration Lincoln, NE 68588-0400 (402)472-2333	2	<i>Energy and Economics: A Curriculum Unit for Senior High Schools, by Joyce Gleason and William Walstad, TG</i>	9-12	Free*	*Nebraska teachers only; \$5.00 outside the state. Order from Nebraska Energy Office, PO Box 95085, Lincoln, NE 68509-5085, (402)471-2867.
	2	<i>Energy and Economics: A Curriculum Unit for Junior High Schools, by Joyce Gleason and William Walstad, TG</i>	7-9	Free*	
	13	Workshops available in Nebraska			
Channing L. Bete Company, Inc. 200 State Road South Deerfield, MA 01313 (413)665-7611	4	<i>Save Energy Coloring and Activities Book</i>	K-Adult		More than 50 clear, informative 16-page booklets and coloring books covering many different energy topics. Books used in hundreds of energy education programs throughout the country. Minimum order 100. Bulk discounts available. Write for catalog of prices and sample review copies.
	4	<i>Electric Safety Coloring and Activities Book</i>	K-Adult		
	4	<i>About Energy Coloring and Activities Book</i>	K-Adult		
	4	<i>Let's Learn About Electricity Coloring and Activities Book</i>	K-Adult		
	4	<i>About the Environment Coloring and Activities Book</i>	K-Adult		
	4	<i>ABC's of Electricity</i>	K-Adult		
	4	<i>About Energy</i>	K-Adult		
	4	<i>About Coal</i>	K-Adult		
	4	<i>About Alternative Energy Sources</i>	K-Adult		
	4	<i>ABC's of Oil</i>	K-Adult		
	4	<i>About Natural Gas</i>	K-Adult		
	4	<i>About Hydropower</i>	K-Adult		
	4	<i>About Solar Energy</i>	K-Adult		
	4	<i>Conserve Energy At Home</i>	K-Adult		
4	<i>About Home Energy Audits</i>	K-Adult			
4	<i>Energy Efficient Home</i>	K-Adult			
4	<i>Wind Power</i>	K-Adult			
4	<i>Natural Gas Safety</i>	K-Adult			
4	<i>Play It Safe</i>	K-Adult			
4	<i>Electric Safety</i>	K-Adult			
4	<i>Water Conservation</i>	K-Adult			
Charles Edison Fund John Venable, Trustee 101 South Harrison Street East Orange, NJ 07018 (201)675-9000	2	Each Edison teaching kit consists of 7 how-to booklets: 1. <i>Energy Conservation, TG</i> 2. <i>Alternative Energy Sources, TG</i> 3. <i>Environmental Experiments, TG</i> 4. <i>Simple Experiments in Magnetism and Electronics, TG</i> 5. <i>Useful Science Projects, TG</i> 6. <i>Selected Experiments and Projects, TG</i> 7. <i>Nuclear Experiments, TG</i>	5-9	\$1.00	K Prepaid orders only.

Name	Material	Title (TG = Teachers Guide Available)	Level	Price	Supplementary Resources
Conoco Inc. 5 Greenway Plaza East Houston, TX 77046 (713)965-3119	8	Oil Where You Find It	9-12	Free	Live presentation Order Attn: Mary Kate Hogg, Speaker Services, Public Relations. You can call collect.
Conservation and Renewable Energy Inquiry and Referral Service (CAREIRS) PO Box 8900 Silver Spring, MD 20907 (800)523-2929 In PA: (800)462-4983 In AK and HI: (800)523-4700	5	<i>Renewable Energy Overview</i>	6-12	Free	Adult material available for all types of renewable energy.
	5	<i>Solar Energy & You</i>	3-7	Free	
		<i>Solar Energy Reading List for Young Adults</i>	6-12	Free	
		<i>Solar Energy Reading List for Children</i>	K-6	Free	
Conservation Consultants 417 Thorn Street Sewickley, PA 15143 (412)741-3533	7	<i>Energy Conservation Wheel</i>	4-12	\$ 0.75	A,T (A process guide for community/school projects.) A,T (Social Studies, Chemistry, Physical Science, Earth Science, Life Science, Biology.)
	7	<i>Acid Rain Packet</i>	4-12	3.50	
	1	<i>Making a Difference: A Guide for the 80's, TG</i>	7-12	3.50	
	2	<i>Acid Rain Packets, TG</i>	7-12	9.00 ea.	
	2	<i>Energy Sleuth: Save a Watt, TG</i>	4-6	2.00	
	2	<i>Energy is Necessary for Survival, TG</i>	3-5	2.00	
	2	<i>The Alternative Energy Suite, TG</i>		15.00	
	2,5	<i>Electricity Unit, TG</i>	6-9	1.75	
	5,6	<i>Alternative Energy Packet</i>	4-12	2.00	
	5,6	<i>Coal Packet</i>	4-12	2.00	
	5,6	<i>Energy Management Packet</i>	4-12	2.00	
	5,6	<i>Gas/Oil Packet</i>	4-12	2.50	
	5,6	<i>Nuclear Energy Packet</i>	4-12	2.50	
	5,6,7	<i>Recycling Packet</i>	4-12	2.00	
5,6	<i>Solar Energy Packet</i>	4-12	3.00		
7	<i>Energy Conservation Posters</i>	4-7	1.25	Set of four. Add \$2.00 for postage and handling in U.S.	
7	<i>Energy Technology Chart</i>	9-12	4.50		
7	<i>Eye Catching Chart on Energy</i>	4-7	1.50		
Crystal Productions PO Box 12317 Aspen, CO 81612 (303)925-8160	1,2,3,11	Energy, Environmental, and Science Teaching Materials, TG	6-12, Adult		K,C,AT,P,F,S Write for catalog for specific listings and prices.
Edison Electric Institute 1111-19th Street, NW Washington, DC 20036 (202)828-7587	5,6	<i>Even Edison Didn't Imagine</i>	5-9	\$125.00*	A,H
	5,6,8	<i>Electricity Serves Our Community, TG</i>	1-6	3.60	GS
	5,6	<i>The Electric Timeline</i>	5-Adult	125.00*	A,H
		<i>Energy Now and in the Future, TG</i>	5-9	25.00	A,AT,F
	7,8	<i>Electric Safety In and Around the Home, TG</i>	5-9	22.00	A,AT,F
		<i>Food and Energy, TG</i>	5-8	15.00	A,AT,F,P
		<i>Keeping the Lights On, TG</i>	5-9	2.56	A
	8	<i>Lifestyles in an Electric Economy, TG</i>	6-9	25.00	A,AT,F,T
	<i>Energy-Environment Game, TG</i>	9-Adult	25.00	AT,F	
					*Per 100 copies. In most cases, a complimentary copy of the booklets is available.
Electric Power Research Institute Communications Services Department PO Box 10412 Palo Alto, CA 94303 (415)855-2147	1,2,4, 5,6,11	<i>Energy Reporters, TG</i> "Acidic Precipitation" "Conservation" "Electricity from Coal" "Electricity from Fuel Cells" "Electricity from Geothermal Energy" "Electricity from Hydroelectric Power" "Electricity from Nuclear Fission" "Electricity from Nuclear Fusion" "Electricity from the Sun" "Electricity from Wind" "Electricity Overview" "Electricity Transmission and Distribution" "Solar Heating and Cooling" "The Electric Vehicle" <i>Electricity: Today's Technologies, Tomorrow's Alternatives, TG</i>	9-12	Free*	A,T,GS Each Reporter is available as a classroom set—35 Reporters and one Teacher's Guide. *From participating utility or \$7.50/set.
			9-Adult	\$ 7.95	T Bulk discounts available. Catalog available.

Name	Material	Title (TG = Teachers Guide Available)	Level	Price	Supplementary Resources
Energy & Man's Environment 4980 W. Amelia Earhart Drive Salt Lake City, UT 84103 (801)539-1406	5-6	1984-85 Energy Calendar <i>Energist</i> Newsletter	1-Adult 9-Adult	\$ 2.00 1.00	P (23" x 33", both sides) Topical content and activities. Two issues: coal, natural gas.
	6	<i>Energy Glossary</i>	6-Adult	4.50	Over 900 terms.
	7	<i>Energy Source</i> Posters	K-Adult	3.00 ea.	Topics: coal, oil, natural gas, water, nuclear (24" x 35").
	7	<i>Energy Source</i> Mini-posters	1.6	2.50 ea.	Topics: coal, oil, natural gas, water. Pads of 30, b/w, 11" x 17".
		<i>Energy Quiz</i>	7-Adult	0.75	T
	5,9	<i>Energy Saver's Guide</i>	4-Adult	2.00	Conservation tips.
		<i>Energy Eyechart</i> Poster	4-Adult	1.00	P (Energy message)
	8	<i>Gushers 'n Dusters</i> , TG	6-Adult	49.95	Educational simulation on exploring for oil and natural gas.
	11	<i>Energy and Humanities Activity Guide</i> , TG	K-Adult	5.00	
	2	<i>The Adventures of Mini-Volts and Wastey Watts</i> , TG	K-3	24.95	Classroom teaching kit.
	4-5	Natural Gas Storybook & Color Sheets Teaching Kit, TG	K-3	4.95	Content information, student activities.
	4-5	Natural Gas Student Newspaper, Set of 30	6-9	4.50	Content information, student activities.
	4	<i>Quick Energy</i> (Primary), TG	K-3	5.00	A (Student energy activities that can be done with little teacher preparation and in less than 15 minutes.)
4	<i>Quick Energy</i> Intermediate), TG	4-6	5.00	A (Student energy activities that can be done with little teacher preparation and in less than 15 minutes.)	
13	Workshops and in-service programs available.			Quantity prices on all materials are available. All prices are subject to the addition of 10% shipping/handling.	
Energy Management Center PO Box 190 Port Richey, FL 34288-0190 (813)848-4870 (813)848-4881	1,2,4	<i>Let's Learn About Energy</i> , Student Module	4-6	\$ 0.90	
	1,2,4	<i>Nature's Energy</i> , Student Module	4-6	0.90	
	1,2,4	<i>Man and Energy</i> , Student Module	4-6	0.90	
	1,2,11	<i>Elementary Energy Education</i> , Teachers Method Book	Adult	8.25	T
	11	<i>Guide to Conducting Preservice Training</i>	Adult	8.25	T
	12	<i>Guide to the Construction of Miniaturized Alternative Energy Source Equipment</i> , TG	6-Adult	12.00	Includes blueprints.
	13	Solar cooker. Kit Directions <i>Energy Education for the Elementary Classroom</i> Workshops available	K-Adult Adult	0.25 Free	K Catalog available.
Energy Source Energy Education Program 5505 E. Carson Street Suite 250 Lakewood, CA 90713 Beth Johnson, (412)374-4436 Teanna Boscon, (213)420-6814	1	<i>Offalot</i> Unit, TG	K	\$ 35.00	Materials in each unit for 35 students include: A,H,T,AT,P,F
	1	<i>Brightland</i> Unit, TG	1-2	35.00	
	1	<i>Fossil Fuel Junction</i> Unit, TG	3-4	35.00	
	1	<i>Power Switch</i> Unit, TG	5-6	35.00	
	1	<i>Energy Crunch</i> Unit, TG	7-9	75.00	
	1	<i>Energy in American History</i> Unit, TG <i>Energy Choices and Challenges</i> Unit, TG	7-9 10-12	75.00 100.00	
Enterprise for Education, Inc. 1320A Santa Monica Mall, #205 Santa Monica, CA 90401 (213)394-9864	1	<i>Energy 83</i> , TG <i>Teaching About Energy</i> (3 volumes), TG	7-9 7-9	Free Free	H,T A,T In-service training and materials provided free of charge to schools in funded areas.
	13	Workshops available.			
ERIC Clearinghouse for Science, Mathematics, and Environmental Education The Ohio State University 1200 Chambers Road Columbus, OH 43212 (614)422-6717	11	<i>Energy Activities for the Classroom</i> , TG	K-12	\$ 4.95	The ERIC system also has indexed several thousand documents, retrievable by computer searching, of use to energy educators. Orders under \$10.00 must be prepaid. Other orders must be made by purchase order. Checks payable to SMEAC Information Reference Center.
	11	<i>Energy Activities for the Classroom</i> , Vol. 2, TG	K-12	4.95	
	6	<i>Energy Education: A Bibliography of Abstracts from Resources in Education, 1966-1978</i> (annotated)	K-Adult	5.50	
	6	<i>Energy Education: A Bibliography of Abstracts from Current Index to Journals in Education, 1966-1978</i> (annotated)	K-Adult	5.50	
	5	<i>Energy Education Programs: Elementary School Programs and Resources</i>	K-6	1.50	
	5	<i>Energy Education Programs: High School Programs and Resources</i>	7-12	1.50	

Name	Material	Title (TG = Teachers Guide Available)	Level	Price	Supplementary Resources
Grey House Publishing, Inc. 229 E. 79th Street New York, NY 10021 (212)628-3633	6	<i>The Solar Energy Directory</i>	10-Adult	\$50.00	
	1	<i>Energy: Its Structure, Release, Control & Management</i> , TG	9-12	\$ 3.00	A
	2 3	<i>Energy and the Family</i> , TG <i>Energy Turns the World</i> , TG	9-Adult 6-9	3.00 8.00	A,H A,TR All orders must be prepaid.
Gulf State Utilities Consumer Services 350 Pine, PO Box 2951 Beaumont, TX 77704 (713)838-6631	1	<i>Energy: Its Structure, Release, Control & Management</i> , TG	9-12	\$ 3.00	A
	2	<i>Energy and the Family</i> , TG	9-Adult	3.00	A,H
	3	<i>Energy Turns the World</i> , TG	6-9	8.00	A,TR All orders must be prepaid.
Harcourt Brace Jovanovich, Publishers Trade Sales Department 1250 Sixth Avenue San Diego, CA 92101	5,6	<i>Geothermal Energy: A Hot Prospect</i> , by Augusta Goldin	7-12	\$10.95	
	5,6	<i>Oceans of Energy: Reservoir of Power for the Future</i> , by Augusta Goldin	7-12	9.95	
	5,6	<i>Water: Too Much, Too Little, Too Polluted</i> , by Augusta Goldin	7-12	12.95	
HRM Software 175 Tompkins Avenue Pleasantville, NY 10570 (914)769-6900	8	<i>Power Grid</i> , TG	6-Adult	\$59.00	C
		<i>Temperature Grapher</i> , TG	6-Adult	75.00	C
	9	<i>Personal Energy Inventory</i> , TG	6-Adult	39.00	C
	8	<i>Home Energy Savings</i> , TG	6-Adult	35.00	C
		<i>Energy Conversions</i> , TG	6-Adult	29.00	C
		<i>Electric Bill</i> , TG	6-Adult	25.00	C
					The software is part of NSTA's Project for an Energy-Enriched Curriculum (PEEC). All Programs are available for free 30-day preview. Catalog available.
Hubbard Scientific Company PO Box 104 1946 Raymond Drive Northbrook, IL 60062 (312)272-7810 (800)323-8368	1,2	<i>Energy and Society: Investigations in Decision Making</i> , TG	9-Adult	\$ 95.00	A,H,GS,F,CA
		<i>Energy: Back to the Source</i> , TG	4-Adult	25.00	Filmloop
		<i>Alternative Energy Sources</i>	4-Adult	8.00	H (activity cards)
		<i>Man and the Biosphere: Energy Uses and Reserves</i> , TG	6-Adult	19.25	F (12 slides)
		<i>The Energy Management Game</i> , TG	6-Adult	35.00	GS
		<i>Energy Relationships in My Environment</i> , TG	6-9	495.00	A,H,GS,K,AT,P,F,CA
		<i>Go and Grow</i> , TG	K-8	29.00	GS
		<i>Food Chain Game</i> , TG	6-12	2.95	GS
		<i>Seeking the Source</i> , TG	6-12	20.00	F (filmstrip)
		<i>Environmental Rummy</i> , TG	6-9	2.95	GS (cards)
		<i>Atomic Energy</i> , TG	7-12	46.00	TR
		<i>Ecosystem Nutrient Cycle</i> , TG	7-12	21.50	TR
	<i>Using Marine Resources</i> , TG	7-12	24.75	F (20 slides)	
	<i>Man, Technology, and Pollution</i> , TG	7-12	29.50	Filmloop	
	<i>What's Ecology?</i>	9-12	3.15	Book	
Innovative Communications, Inc. 2923 N. Main Street Walnut Creek, CA 94596 (415)944-0923	2,4,11	<i>Aunt Energina's Almanac</i> , TG	K-4	\$ 26.50	A,H,T
	11	<i>What Makes Things Go?</i> , TG	K-4	18.00	F,AT
	7,8,11	"Watt Not" Conservation card game, TG	K-6	6.00	GS
	2,4,11	<i>Water Fun</i> , TG	K-3	12.95	A,H
	2,4,9,11	<i>Adventures of Aunt Energina</i> , TG	4-6	32.00	A,H,T
	2,4,11	<i>Professor Wattensocket's Safety Book</i> , TG	4-6	28.25	A,H,T
	2,4,11	<i>Captain Hydro</i> , TG	4-6	16.25	A,H
	4,7,11	<i>Aunt Energina's Poster & Activity Pad</i> , TG	K-6	6.75	A,H,T
	2,4,9,11	<i>The Electric Gnu</i> , TG	7-9	28.25	A,H,T
	4,7,8,11	<i>Golden Moments in Radio</i> , TG	7-9	14.50	A,T,GS,AT
	5,6	<i>Electricity Choices</i>	7-12	39.50	
	2,11	<i>Electricity Choices</i> Teacher's Guide	7-12	2.00	A
2,4,11	<i>Enormics</i> , TG	9-12	59.50	A,H,T,AT,F	
2,4,8,11	<i>Politics of Energy</i> , TG	9-12	49.50	A,T,GS,C	
2,5,6,11	<i>Energy Reporters</i> , TG	9-Adult	7.95	T	
2,6,11	<i>Electricity: Today's Technology, Tomorrow's Alternatives</i> , TG	9-Adult	7.95	T	
					All materials are in class sets. Bulk discounts available. Write for catalog.
Iowa Energy Policy Council Dr. W. Tony Heiting Capitol Complex Des Moines, IA 50319 (515)281-4420	1,2,4,5,6	<i>Energy Conservation Activity Packets (ECAPs)</i> , TG	K-6	\$12.50 Set	A,GS,H
	1,2,4,5,6	<i>Iowa Developed Energy Activity Samplers (IDEAS)</i> , TG	7-12	36.00 Set	A,T,H
	1,2,4	<i>Energy Efficient Resource Guide for Driver Educators</i> , TG	7-Adult	Free	A,T
	1	<i>Iowa Energy Education Programs</i>	K-Adult	Free	Brochure

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John Wiley & Sons, Inc. Clayton Gordon, Marketing 605 Third Avenue New York, NY 10158 (212)850-6520	3	<i>Energy: Insights from Physics</i> , by Phillip DiLavore, TG	Adult	\$24.95 (tentative)	
	3	<i>The Sun: Our Future Energy Source</i> , second edition, by David McDaniels	Adult	18.95	
	3	<i>Energy: Its Physical Impact on the Environment</i> , by Delbert Devins, TG	Adult	34.50	
	3	<i>An Introduction to Solar Energy for Scientists and Engineers</i> , by Sol Wieder	Adult	28.95	
Joint Council on Economic Education 2 Park Avenue New York, NY 10016 (212)685-5499	1,2,8,11	<i>The Economics of Energy: A Teaching Kit</i> , TG	7-12	\$ 5.00	A,T,G,S Annotated bibliography of teaching materials included. \$4.00 for 10 or more, special discounts for 100 or more. On prepaid orders add \$2.00 for handling and shipping.
J.M. LeBel Enterprises Ltd. 10372 60th Avenue Edmonton, Alberta Canada T6H 1G9 (403)436-8205	3	ALCHEM 10, TG	9-12	\$3.65	*Energy education texts and materials.
	3	ALCHEM 20, TG	9-12	4.40	
	3	ALCHEM 30,* TG	9-12	4.50	
	3	<i>Nuclear Chemistry</i> ,* TG	9-12	2.90	
	3	<i>Analytical Chemistry</i> , TG	9-12	2.90	
	3	<i>Foods and Their Analogs</i> , TG	9-12	2.90	
	3	<i>Metallurgy and Corrosion</i> , TG	9-12	2.90	
	3	<i>Ethylene and Its Derivatives</i> , TG	9-12	2.90	
	3	<i>Athabasca Tar Sands</i> ,* TG	9-12	2.90	
	3	<i>Chemical Industries</i> , TG	9-12	2.90	
	3	<i>Solar Energy-Solar Education for the 80's</i> * TG	9-12	5.95	
Louisiana Department of Natural Resources, Energy Education Joanna Gardner PO Box 44124 Baton Rouge, LA 70804 (504)342-4498	11	<i>Teaching Energy Conservation</i> , TG	9-12	Free*	*Single copies free to general public. Multiple copies free only to Louisiana residents depending on availability.
	11	<i>9th Grade Home Economics Energy Conservation Curriculum</i>	9	Free*	
McGraw-Hill Book Company 1221 Avenue of the Americas New York, NY 10020 (609)426-5254	3,6,13	<i>Energy and the Environment</i> , second edition, by John M. Fowler	11-Adult	\$17.95	
Minnegasco 201 S. Seventh Street Minneapolis, MN 55402 (612)372-5007	9	<i>Home Energy Checkup</i> , TG	7-Adult	\$ 25.00	A, C, H Prepaid orders only. Factsheet, Slides Factsheet, Slides Slides, CA F,T,H, Factsheet V,T,H, Factsheet A, Slides Factsheet, Slides
	1	<i>Energy Efficient Home Interiors</i>	10-Adult	90.00	
	1	<i>Conserving Energy from Attics to Basements</i>	10-Adult	90.00	
	1	<i>Celebration of Seasons</i>	9-Adult	495.00	
	1	<i>Safe and Sound</i> , TG	9-Adult	395.00	
	1	<i>It's All in the Label</i> , TG	9-Adult	50.00	
	1	<i>Natural Gas Appliances-Meeting the Challenge of the 80's</i>	Adult	50.00	
Missouri Department of Natural Resources Division of Energy PO Box 176 Jefferson City, MO 65102 (314)751-4000	2,11	<i>Instruction Curriculum Environment Energy Conservation Activity Packet (I.C.E.C.A.P.)</i> , TG	K-12	Free	
	1,11	<i>Energy Challenge</i> , TG	5-8	Free	V,T
	13	Teacher training workshops available.			
National Association for the Education of Young Children 1834 Connecticut Avenue, NW Washington, DC 20009 (800)424-2460 (202)232-8777	11	<i>Science with Young Children</i> , by Bess-Gene Holt, TG	Pre-school-3	\$3.25	Add 10% postage.
National Association of Recycling Industries, Inc. 330 Madison Avenue New York, NY 10017 (212)867-7330	3	<i>Recycling Metals in the 1980's</i>	Adult	\$40.00	Includes bibliography listing over 100 important metals publications.
National Center for Appropriate Technology PO Box 3838 Butte, MT 59702 (406)494-4572	1,2,6,7,8,9,11,12,14	<i>Connections: A Curriculum in Appropriate Technology for 5th and 6th Grades</i> , TG	5-6	\$6.00	A,H,G,S,P

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National Coal Association Coal Building 1130-17th Street, NW Washington, DC 20036-4677 (202)463-2625	6	"Coal" (<i>World Book</i> reprint)	7-12	Free*	*Single copies only.	
	4	<i>Power from Coal</i> , TG	5-9	Free*		
	6	<i>The Great American Coal Challenge</i>	9-12	Free*		
	5	<i>About Coal Gasification</i>	4-12	Free*		
	5	<i>About Land Reclamation</i>	4-12	Free*		
	5	<i>ABC's of Coal Liquefaction</i>	4-12	Free*		
	6	<i>Consider Coal</i> , TG	9-12	Free*		
2,4,7	<i>Discovering Coal</i> , TG	K-3	\$8.95	A,AT,P,F,S		
National Energy Education Day Project PO Box 2518 Reston, VA 22090 (703)860-5029	1,5,6,10,11,13	NEED Local Participation Kit (includes Student Guide, Educator's Guide, Energy Play Script, and Resource and Activities Guide) Need Youth Awards Program <i>Energy Exchange</i> magazine	5-12	\$25.00	In many states NEED Network memberships are \$5.00 or free because of private sector sponsorship. Member schools are entitled to a kit, three issues of <i>Energy Exchange</i> , and are eligible for the Awards Program.	
National Energy Foundation 330 W. 58th Street New York, NY 10019 (212)246-8223	2,3	<i>In Search of Energy</i> , TG and Lesson Plans	7-12	\$3.50		
	12	<i>Projects and Experiments in Energy</i>	7-12	2.50	Contest for high school students in New York, Los Angeles, San Francisco, and Washington, DC. Seniors can win a \$40,000 college scholarship.	
	10	<i>SEER Competition on Energy and Other Technologies</i>	9-12			
3	<i>Food, Energy & Your Future</i> , TG	7-12	\$15.00	3-ring notebook. Perfect bound. Quantity prices available.		
National Food and Energy Council 409 Vandiver West, Suite 202 Columbia, MO 65202 (314)875-7155	4,6	<i>Food, Energy & Your Future</i>	7-12	1.50	Quantity prices available.	
	2,4	<i>Food, Energy & You</i> , TG	4-6	2.00	3-ring notebook. Ag-oriented.	
	11,14	<i>Farm Energy Analysis</i>	9-Adult	15.00	Ag-oriented.	
	2,11	<i>Agricultural Wiring Handbook</i>	9-Adult	3.60	A bit dated (1977); good resource.	
	6	<i>Food & Energy, II</i>	9-Adult	0.50		
National Geographic Society Attn: Carl W. Harmon 17th & M Streets, NW Washington, DC 20036 (202)857-7379 (800)368-2728	2,4	<i>Wonders of Learning Kit-Saving Energy</i> , TG	3-6	\$24.95	A,T,AT	
	2,4	<i>Wonders of Learning Kit-Energy from the Earth</i> , TG	3-6	24.95	A,T,AT	
	2,4	<i>Wonders of Learning Kit-Energy from the Sun</i> , TG	3-6	24.95	A,T,AT	
	2	<i>Energy and Everyday Life</i> , TG	1-5	79.95	AT,F	
	2	<i>Electricity and Magnetism</i> , TG	4-9	29.95	AT,F	
	2	<i>This World of Energy I</i> , TG	5-12	79.95	AT,F	
	2	<i>This World of Energy II</i> , TG	5-12	79.95	AT,F	
	2	<i>Harnessing the Sun</i> , TG	5-12	29.95	AT,F	
				Items can be ordered on 30-day approval. Catalog available.		
National Science Teachers Association 1742 Connecticut Avenue, NW Washington, DC 20009 (202)328-5800	8	<i>Playing With Energy</i>	7-12	\$ 5.00	All orders of \$15 or less must be prepaid. Add \$2.00 postage and handling. Bulk discounts available.	
	6	<i>Energy Environment Source Book</i> , by John M. Fowler	Adult	9.00		
	7	<i>Energy Search Poster Set (3)</i>	7-12	5.00		
		<i>Energy & Education</i>	Adult	9.00/Year		
	6	<i>Energy Education in the Schools: Results of a Survey of the Penetration of Energy Education into the Classroom</i>	Adult	Free		
		Project for an Energy-Enriched Curriculum Software:				
		<i>Power Grid</i>	6-Adult	59.00		C
		<i>Energy Conversions</i>	6-Adult	29.00		C
		<i>Personal Energy Inventory</i>	6-Adult	39.00		C
		<i>Temperature Grapher</i>	6-Adult	75.00		C
	<i>Home Energy Savings</i>	6-Adult	35.00	C		
	<i>Electric Bill</i>	6-Adult	25.00	C		
1	PEEC Instructional Packets on Energy:		1.00*	*1-5 copies; \$2.00 for 6 or more.		
2	<i>How a Bill Becomes a Law to Conserve Energy</i> , TG	9-12				
2	<i>Energy, Engines and the Industrial Revolution</i> , TG	8-9				
2	<i>Transportation and the City</i> , TG	8-9				
2	<i>Community Workers and the Energy They Use</i> , TG	2-3				
2	<i>The Energy We Use</i> , TG	1-2				
2	<i>Energy and Transportation</i> , TG	3				
2	<i>Mathematics in Energy</i> , TG	8-9				
2	<i>U.S. Energy Policy: Which Direction?</i> , TG	11-12				
2	<i>Energy Transitions in United States History</i> , TG	8-9				
2	<i>Bringing Energy to the People: Washington, DC and Ghana</i> , TG	6-7				
2	<i>Energy in the Global marketplace</i> , TG	9-11				
2	<i>Two Energy Gulfs</i> , TG	6-7				
2	<i>Western Coal: Boom or Bust?</i> , TG	11				

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National Technical Information Service U.S. Department of Commerce Springfield, VA 22161 (703)467-4650	15	<i>A Conceptual Framework for Energy Education, K-12</i> DE-82-020-151	Adult	\$14.50	Include document number with order, check payable to NTIS.
Nebraska Energy Office PO Box 95085 Lincoln, NE 68509-5085 (402)471-2867	1,4	<i>Energy Conservation Activity Packets</i> (ECAP's, 5 packets: K-2, 3, 4, 5, 6)	K-6	\$ 3.50 ea.	A,GS
	1,2	<i>Basic Teaching Units on Energy</i> (BTU's, 13 units): <i>Coal: Fuel of the Past, Hope of the Future</i> <i>Energy and Economics for Junior High Schools</i> <i>Energy and Economics for Senior High Schools</i> <i>Energy Conservation in the Home</i> <i>Energy from the Atom</i> <i>Energy: Yesterday, Today and Tomorrow</i> <i>Future Energy Technology</i> <i>Gasohol: An Energy Alternative</i> <i>Oil: Fuel of the Past</i> <i>Solar Energy in the Home</i> <i>Electrical Power Generation</i> <i>Fueling Around Could be Hazardous to Your Health</i>	7-12	5.00 ea.	A,GS
	2,4,6	<i>History of United States Energy</i> <i>Nebraska Home Economics Energy Management Guide</i>	9-12	12.50	A,H
	11	<i>Energy Efficiency for Vocational Industrial Trades</i> (5 guides): <i>Architectural Drafting</i> <i>Automotive</i> <i>Building Construction Technology</i> <i>Electrical Technology</i> <i>Heating, Ventilating, Air Conditioning</i>	9-Adult	2.00 ea.	Curriculum outline format.
	6	<i>Path to Passive, Nebraska's Solar Primer</i>	Adult	6.50	Solar design and construction reference. All prices include postage and handling.
New England Solar Energy Association PO Box 541 Brattleboro, VT 05301 (802)254-2386		"Residential Photovoltaics"	8-Adult	\$100.00*	Slides with script Slides with script Slides with script Slides with script *Purchase price. Rental price, \$30.00, can be used toward purchase. All orders may be postpaid.
		"Solar Hot Water"	8-Adult	100.00*	
		"Solar Greenhouses"	8-Adult	32.00	
		"Site-Built Solar Collectors"	8-Adult	53.00	
Nuclear Information and Resource Service 1346 Connecticut Avenue, NW Fourth Floor Washington, DC 20036 (202)296-7552	11	<i>Growing Up in a Nuclear World, A Resource Guide for Elementary Teachers</i>	K-6	\$ 5.00	Postage not included; bulk discounts available.
	1	<i>Nuclear Dangers, A Resource Guide for Secondary School Teachers</i>	7-12	5.00	
	4,11	<i>Teaching Nuclear Issues Kit for Secondary School Teachers</i> (includes Secondary Guide above), TG	7-12	20.00	
Pen & Podium, Inc. 40 Central Park South 9D New York, NY 10019 (212)759-8454	6	<i>Natural Gas: The New Energy Leader</i> , by Ernest J. Oppenheimer	9-12-Adult	\$10.00	Price of book(s) includes delivery. Quantity discounts are available. Payment should accompany orders.
Philadelphia Electric Company Energy Information and Education Division 2301 Market Street PO Box 8699 Philadelphia, PA 19101 (215)841-4107	1	<i>Adventures of NRG, TG</i>	K-3	\$60.00*	100 activity cards on 3 levels. Kit includes 30 student manuals, 3 filmstrips with cassettes, activity guide. *Free to educators in Philadelphia Electric Company or Conowingo Power Company service area.
	1	<i>Our World of Energy, TG</i>	4-6	75.00*	
	11	<i>Energy in Our Society, TG</i>	9-12	10.00*	
Pocono Environmental Education Center (PEEC) RD 1, PO Box 268 Dingmans Ferry, PA 18328 (717)828-2319	13	Energy Education Teacher Workshop	K-12	\$49.00	Curricular materials will be available at the workshop. Price includes program, meals, and lodging.

Name	Material	Title (TG = Teachers Guide Available)	Level	Price	Supplementary Resources
Project C.A.R.E. Schaumburg School District #54 Richard W. Ammenthorp 320 W. Wise Road Schaumburg, IL 60193 (312)893-1890	1	Project C.A.R.E. (Conservation, Awareness, and Responsibility for Energy), TG	K-6	Negotiable	A,H,T,GS,TR,S Complete energy education program for a school district. Write for more information on various components of the C.A.R.E. curriculum materials. Twelve 2-hour sessions with follow-up lessons and back-at-home assignments. Includes six lessons for K-6 grade students to peer-teach to fellow students. A five-day resident program in which students budget their energy consumption and participate in energy awareness activities.
		C.A.R.E. Curriculum			
		Back-At-School Peer Teaching Materials			
		Energy Encounter			
		In-service training on Project C.A.R.E.			
RAIN 2270-E NW Irving Portland, OR 97210 (503)227-5110	6	<i>Rainbook: Resources for Appropriate Technology</i>	7-Adult	\$ 7.00	CA
	6	<i>Energy-Efficient Community Planning</i>	7-Adult	11.50	Bulk discounts on posters.
	13	<i>Solar Water Heater Manual</i>	7-Adult	7.00	
	5	<i>RAIN: Journal of Appropriate Technology</i>	7-Adult	25.00	Bimonthly journal
	7	<i>Community Alert: Preparing for Energy Emergencies</i>	K-Adult	6.00	31" x 44" color poster
	7	<i>Stepping Stones Poster</i>	K-Adult	4.00	21" x 24" b/w poster
Schlorch Enterprises 353 River Street Waltham, MA 02154 (617)647-0567		<i>Photovoltaics: From Research to Reality</i>	9-Adult	\$175.00	V, purchase only. \$3.50 postage and handling. Previews for purchasers can be arranged.
Shelter and Energy Alternatives Educational Service Center 11299 Hanson Boulevard Coon Rapids, MN 55433 (612)755-8220	1,2,3	<i>Shelter and Energy Alternatives, TG</i>	7-9	\$28.00	A,GS Includes teacher manual with activity sheets for students. Activity based, hands-on interdisciplinary approach to energy education.
Social Issues Resources Series, Inc. (SIRS) PO Box 2507 Boca Raton, FL 33427-2507 (800)327-0513	5,6	<i>Energy, Vol. 1</i>	7-Adult	\$70.00	Catalog available.
		<i>Energy, Vol. 2</i>		70.00	
		<i>Energy, Vol. 3</i>		56.00	
	5,6	<i>Pollution, Vol. 1</i>	7-Adult	70.00	
		<i>Pollution, Vol. 2</i>		70.00	
		<i>Pollution, Vol. 3</i>		56.00	
	5,6	<i>Habitat, Vol. 1</i>	7-Adult	70.00	
	<i>Habitat, Vol. 2</i>		56.00		
5,6	<i>Transportation, Vol. 1</i>	7-Adult	70.00		
	<i>Transportation, Vol. 2</i>		56.00		
5,6	<i>Technology, Vol. 1</i>	7-Adult	70.00		
	<i>Technology, Vol. 2</i>		14.00		
Soft Energy Wares PO Box 14 Point Arena, CA 95468 (707)882-2015	1,5,6,9,10,11,14,15	<i>School Energy Action, TG</i>	Adult	\$ 4.95	Practical guide to set up energy education/management program. Energy experiments and projects; available 9/84. Science text; "Pro" conservation and solar; available 1/85. C; Atari (now) and Apple (as of 6/84) disks. C; Atari and Apple disks (9/84); save energy in a home game simulation. Catalog available 9/84 for \$1.00 credit fee. Money-back guarantee.
	1,3,12	<i>Hands on Energy</i>	7-Adult	7.95	
	3,5	<i>Energy Science</i>	9-Adult	9.95	
		<i>Space Heat, TG</i>	9-Adult	19.95	
		<i>Save NRG</i>	6-Adult	19.95	
Studio 2 6631 Muirwood Court Lisle, IL 60532 (312)961-3381	2	"The Alternative Energy Suite," TG	4-9	\$17.00	A,T,AT,CA (This teaching unit uses songs to teach about energy. It is highly motivational and contains everything you need to get students excited about energy.)
	5,6	Songs from "Transitions," a Mini-Series on Energy	4-Adult	6.50	AT (Four multiverse songs condense the ideas in "Out of the Caves," "Into the Furnace," "From Today to Tomorrow," and "Decisions, Decisions.")

Name	Material	Title (TG = Teachers Guide Available)	Level	Price	Supplementary Resources
Union of Concerned Scientists 26 Church Street Cambridge, MA 02238 (617)547-5552	6	<i>Planning the Solar Transition</i>	9-Adult	\$ 2.00	Book rate postage included in price; for first class and outside U.S. add \$2.00 per publication.
	6	<i>The Risks of Nuclear Power: A Second Opinion</i>	9-Adult	1.50	
	6	<i>Energy Strategies: Toward a Solar Future</i>	7-Adult	7.50	
	6	<i>Radioactive Waste: Politics, Technology and Risk</i>	7-Adult	7.00	
	6	<i>A Second Chance: New Hampshire's Electricity Future as a Model for the Nation</i>	9-Adult	3.00	
		<i>"Nuclear Energy in the '80s"</i>	7-Adult	15.00 Rental	V
		<i>"Energy from the Sun"</i>	7-Adult	15.00 Rental	V
University of Hartford College of Engineering Energy Education Resource Center 200 Bloomfield Avenue West Hartford, CT 06117-0395 (203)243-4813	1	<i>Reading, Writing, and Radiation</i> , TG	7-12	\$57,000.00	A,GS,K,C,AT,F,TR,S (traveling program of experiments) A,T
	1	Curriculum for Teacher Training Seminar in Nuclear Science	7-12	25.00	
U.S. Department of Energy Technical Information Center PO Box 62 Oak Ridge, TN 37830 (615)576-1302	2	<i>Agriculture, Energy, and Society</i> , TG	9-12	Free	A
	2	<i>Providing for Energy Efficiency in Homes and Small Buildings</i> (5 vols. for vo-tech classes), TG	9-Adult	Free	A
	2	<i>Project Retro-Tech</i> (instructions for weatherization workers in 4 vols.); <i>Home Weatherization Instructor's Guide</i> <i>Home Weatherization Manual</i> <i>Home Weatherization Job Book</i> <i>Home Weatherization Charts</i>	9-Adult	Free	H,T,A,P
	1,2	<i>The Energy Challenge</i> (spirit masters), TG	7-9	Free	A
	2	<i>The Energy Future Today</i> , TG	7-9	Free	A
	4	<i>Energy Activities with Energy Ant</i> (coloring book)	K-1	Free	A
	2	<i>Networks: How Energy Links People, Goods, and Services</i> , TG	4-5	Free	A
	2	<i>The Energy Dome</i> , TG	6-9	Free	A
	2	<i>Science Activities in Energy</i> , TG Biomass Chemical Energy Conservation I Conservation II Energy Storage	6-9	Free	A
	Vermont Yankee Energy Information Center PO Box 157 Governor Hunt Road Vernon, VT 05354 (802)257-7711	1,2,4,5,6,7,8,11	Resources on all energy fields available to schools and civic organizations. This includes literature, books, films, kits, slide shows, and teachers guides.	K-12-Adult	Free
William Kaufmann, Inc. 95 First Street Los Altos, CA 94022 (415)948-5810	2	<i>Electricity: Today's Technologies, Tomorrow's Alternatives</i> Teacher's Guides	9-12	\$7.95	From the Electric Power Research Institute Catalog available.
	5	<i>Earth's Energy and Mineral Resources: Readings from American Scientist</i>	9-12	1.00 9.95	
Worldwatch Institute 1776 Massachusetts Avenue, NW Washington, DC 20036 (202)452-1999	5,6	<i>Renewable Energy: The Power to Choose</i>	9-Adult	\$18.95	Bulk discounts available.
	5,6	<i>Nuclear Power: The Market Test</i>	9-Adult	2.00	
	5,6	<i>Electricity from Sunlight: The Future of Photovoltaics</i>	9-Adult	2.00	
	5,6	<i>Wind Energy: A Turning Point</i>	9-Adult	2.00	
	5,6	<i>Rivers of Energy: Harnessing the Hydropower Potential</i>	9-Adult	2.00	
5,6	<i>Wood: An Ancient Fuel with a New Future</i>	9-Adult	2.00		
Zero Population Growth 1346 Connecticut Avenue, NW Washington, DC 20036 (202)785-0100	2,6,11	<i>Global 2000 Countdown Kit</i> , TG	9-Adult	\$15.00	GS A,H,GS,AT,P Catalog available.
	2,4,5,7,8	<i>Elementary Population Activities Kit</i> , TG	K-6	15.00	

New Materials

Energy and Environment Text

Energy and the Environment, John M. Fowler, McGraw-Hill Book Company, 1984. \$22.95, 672 pp.

As I read the text of Dr. John Fowler's newest book, *Energy and the Environment*, second edition, I found myself hoping that it will be read by some of our energy policy-makers. If their decisions were based on the depth of facts and breadth of vision contained in these pages, we would perhaps see less national energy policy based on "Disney's Second Law" ("wishing will make it so"), and be better prepared for future energy shocks.

This second edition will be marketed as a college textbook (physics, chemistry, earth sciences). But it should certainly not be limited to that audience. High school teachers and the concerned public alike will find its range and balance useful. It is really a new book. With the exception of the first few chapters that lay the necessary scientific groundwork for an understanding of energy, the book is com-

pletely rewritten and updated from the first edition that appeared nearly ten years ago. (A new instructor's manual will be available as well. —Ed.)

Energy and the Environment provides consistently accurate and current coverage of the traditional energy technologies and resources, the new, and the transitional technologies including energy conservation. Chapters on environmental impacts, energy economics, soft v. hard path energy futures, and energy policy, as well as several detailed technical appendices, round out this thorough examination of energy.

While not afraid to plunge into the most controversial areas of energy/environment policy and practice, Fowler is first and foremost a good scientist, who bases his discussions and conclusions firmly in scientific fact. His style is clear and readable for the most part, and he makes an honest attempt to isolate the essential arguments from each side of the most controversial topics.

Fowler, who ironically has been attacked as being both pro- and anti-nuclear, works to give the nuclear

question a thorough and impartial airing. He lays out in a reasoned way the scientific, technological, economic, and political issues, and urges the reader toward an informed judgement, free from inflammatory rhetoric.

His treatment of Amory Lovins' "soft path" is also particularly interesting from this standpoint. Fowler clearly agrees with much of Lovins' approach, but he does not uncritically accept all his numbers or conclusions.

A few criticisms: The charts, graphs, and tables, while abundant, are not always clear. (They can be both clear and lively, as *USA Today* has demonstrated.) And the book lacks some of the pedagogical aids that make a textbook easy to teach and study from. But these are minor flaws in a fine piece of scholarship.

Energy and the Environment, second edition, is a major contribution to the field, for its comprehensiveness, its insights, and its balance. It will be a valuable college text and deserves to be read by anyone interested in a penetrating analysis of energy and the environment in the 1980's.

— Donald D. Duggan

Alabama Software

Given the power of the personal computer and the way in which students relate to them, the Energy Division of the Alabama Department of Economic and Community Affairs expanded their energy education program to include a software development project. Eleven new educational microcomputer programs on energy for grades 3-12 are available.

The programs were developed by the Johnson Environmental and Energy Center of the University of Alabama in Huntsville for Apple computers. Color graphics are plentiful, but sound effects have been kept to a minimum to allow classroom use during other class activities.

Although some of the programs are Alabama-specific, most of them also would be interesting and useful to teachers outside of Alabama. Pilot test teachers have been very satisfied with

the quality and usefulness of these programs: 1. *Energy Conservation* shows the many ways students and parents can save energy (grades 3-6, animated tutorial); 2. *Fossil Fuel Facts* graphically depicts the origin of fossil fuels (grades 3-6); 3. *Alabama State Facts* includes state's natural resources (grades 3-9, tutorial); 4. *U.S. Energy Use* gives the history of energy use and the fuel mix of the U.S. (grades 4-9, tutorial); 5. *World Energy Facts* illustrates a discussion of geography, energy production, consumption, and reserves with a rotating globe (grades 4-12); 6. *Alabama Energy Facts* describes state energy production, consumption, and reserves with a series of graphs and charts (grades 6-12); 7. *Sign of the Times* shows the legislative process by following the 55 MPH speed limit bill (grades 7-9, tutorial); 8. *Alabama Fossil Fuels* presents state energy resources by county (grades 7-12); 9. *Energy Crossword* uses energy terms and allows teachers/stu-

dents to input their own puzzles (grades 7-12); 10. *Energy Hangman* comes with energy terms and definitions and allows teacher to include his/her own terms (grades 7-12); 11. *Solar Energy Economics* describes solar energy systems and performs economic analyses for residential solar water heaters (grades 9-12).

Four more programs are being developed on *Energy Arithmetic* (Energy Addition and Energy Subtraction, drills with a choice of 1, 2 or 3 digit numbers, grades 3-7; and two sets of Word Problems, grades 6-9).

Programs cost \$10.00 for Alabama teachers, \$20.00 for teachers outside Alabama. To order, contact Donna Robinson, Energy Division, Alabama Department of Economic and Community Affairs, 3465 Norman Bridge Road, Montgomery, AL 36105, 205/284-8937. Tell her you read about their software in *Energy & Education*.