

16218

NAT. GAS - GREEN
Winter 1990
AIR

THE NATURAL RESOURCE

A Quarterly Newsletter on Energy and the Environment

American Gas Association

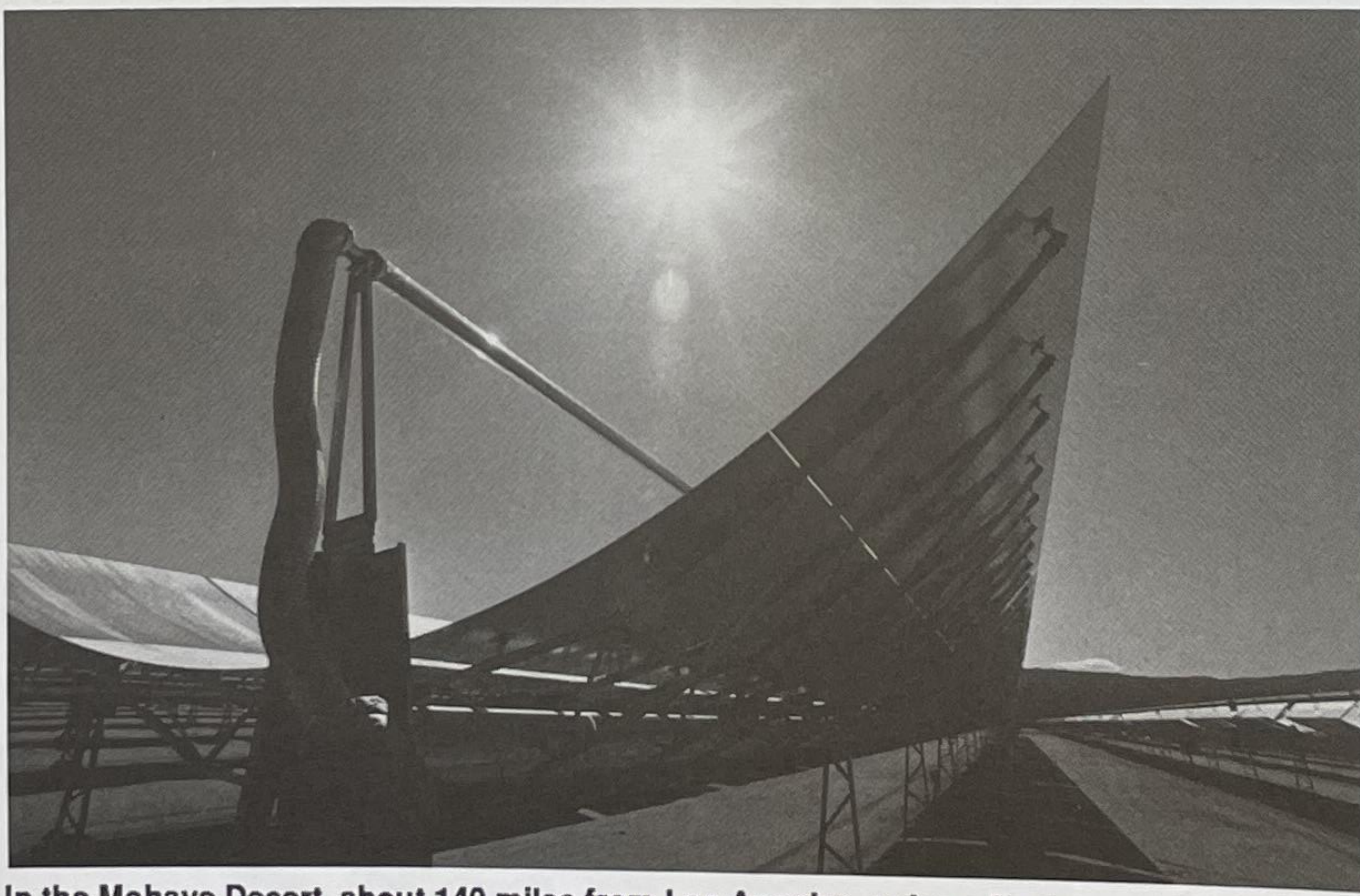
Volume 3, No. 3

Natural Gas Helps Bring Solar Power to Market

Solar energy — harnessing the power of the sun — could generate a bright opportunity for the natural gas industry. That's because natural gas is an ideal partner for solar power.

"It's hard to avoid the issue," said John W. Wilson Jr., vice president of Conway & Co., a Washington, D.C.-based public relations and advertising firm that works with the major producer of solar-powered electricity generation, Luz International Ltd. "Sooner or later we'll need new electricity sources. Older [generating facilities] will need to be decommissioned. As those older ones are set aside, the growing need for electricity is going to demand new technology."

Given a concurrent increase in environmental concern, Wilson said, "there will be a growing feeling that we can't keep burning the things we've been burning."



In the Mohave Desert, about 140 miles from Los Angeles, solar reflectors such as this one are providing electricity to southern California.

Highlights ...

- Methane's contribution to global warming studied.... pg. 3
- Come to EARTHTECH 90 April 4-8..... pg. 5
- Federal support needed for environmental education . pg. 8

The sun, considered essentially non-polluting, would seem to be an optimal source of energy. But its availability, constrained by daily cycles and weather, requires either thermal energy storage, an expensive prospect, or a link with a conventional energy backup. Natural gas is a natural backup because it is clean and abundant.

"A solar/natural gas hybrid system is a cost-effective and efficient way to

meet the electric utilities' need for second-to-second reliability," explained Michael Lotker, vice president of business development for Luz International.

A leader in the development of solar power as a commercially viable energy source, Los Angeles-based Luz currently produces 90 percent of the world's solar-powered electricity — 194 megawatts (MW), with 380 MW

continued on page 2

Printed on recycled paper.

Gas, Natural

Photographs may not be published, posted on the internet, donated, sold, exhibited or otherwise distributed.

Call number: BANC MSS 71/289c Container/page: Carton 162

Note: Sierra Club Nat. Legis. Office Records

THE BANCROFT LIBRARY

1989



President's Message State Governments Respond to Environmental Concerns

While Congress has struggled over Clean Air Act revisions for the past few years, individual states have moved swiftly on a number of clean-air issues. For instance, look what's happened in several states with regard to clean fuels for vehicles.

Nearly a year ago, the Texas Legislature enacted two laws that mandate a phased shift to clean transportation fuels in areas that can't meet federal standards for carbon monoxide and ozone. The mandate covers all metropolitan buses, state agencies with fleets of more than 15 vehicles and school districts operating fleets of more than 50 buses. The Texas Air Control Board is also empowered to set mandates for most local government fleets of more than 15 vehicles and for private fleets of more than 25. Enactment of these new laws followed a one-year demonstration program involving 12 state government vehicles, which showed that retrofitting vehicles to run on natural gas led to substantial reductions in operating costs and dramatic improvements in emission levels.

In 1987, the Arizona Legislature enacted a law mandating that certain public and private fleets in the Tucson and Phoenix metropolitan areas shift to clean-fuel vehicles. In 1988, the mandate was extended to buses, and natural gas was given a partial and temporary exemption from the state's motor fuels tax.

In California last fall, the legislature enacted two measures that promote clean transportation fuels. One exempts the incremental cost of a clean-fuel vehicle from the state's 6 percent sales tax. The other requires that at least 25 percent of all newly acquired state-government vehicles have clean-fuel capability, subject to vehicle availability. Just last December, the California Air Resources Board released a draft proposal that, if approved by the board this fall, would require all newly acquired light-duty vehicles in California — whether public or private, fleet vehicles or passenger cars — to be "low-emission" vehicles by the year 2000.

A measure is moving through the Pennsylvania Legislature which would mandate, "to the maximum extent practicable," a phased shift to clean fuels for state-government vehicles. Similar proposals have been introduced in Oklahoma and Louisiana. A new law in Washington requires state transportation officials to consider clean-fuel vehicles where feasible and economically justified. In Colorado, a new law provides a \$200 rebate for anyone who buys a clean-fuel vehicle or retrofits an existing vehicle.

Sweeping recommendations on using more gas in a variety of applications are contained in the New York State Energy Plan, as noted in an article on page 7.

Certainly states aren't constrained by the wide variety of interests that are represented in the U.S. Congress, and therefore it's generally easier for a state to move forward on a measure that will clearly benefit the majority of its citizens.

I'm glad to note, however, that even most major state and local government organizations, which do represent competing interests in various locales, also have adopted policy statements that support the increased use of natural gas, especially in vehicles, as a viable way to pursue America's environmental and energy security goals. These groups include the National Governors Association, the National Association of State Energy Officials, the National Association of Regulatory Utility Commissioners and the National League of Cities.

As a new Clean Air Act moves through Congress, I can't help but be optimistic that federal legislators from throughout the country also will recognize the role natural gas can play.

George H. Lawrence

Solar Power from page 1

expected on-line by 1994 — for sale to Southern California Edison Co. Luz, which installed its first solar generating system in 1984 and has built six others since then, recently negotiated with San Diego Gas and Electric Co. for delivery of 80 MW by 1993, Lotker said.

Luz's system works this way: Curved mirrors, called parabolic collectors, focus the sun's rays on a pipe running through a long trough. The concentrated sunlight heats fluid in a pipe to 735 degrees F, producing steam, which turns an electric generator.

Lotker said the process can work

with 100 percent solar energy, 100 percent natural gas or any combination of the two. Currently, the use of natural gas is limited by regulation to 25 percent of the energy input for a private party such as Luz that sells power to an electric utility covered by the Public Utilities Regulatory Policies Act of 1978 (PURPA). "If a utility were to buy a plant, they could use as much gas as they needed," Lotker noted.

Some advocates have estimated that natural gas would be used to power a solar/natural gas hybrid system from 50 percent to 70 percent of the time.

Some utilities currently are involved in Luz's development efforts. "About half the equity in Luz plants is owned by electric utilities, many of whom are combination electric and gas utilities," Lotker said. He said Luz's equity totals some \$600 million.

Solar energy is moving into the commercial market. To be viable, however, it must be reliable, and the sun doesn't shine all of the time. Natural gas appears to be just what is needed to provide a reliable, environmentally acceptable back-up source of power, making the sun a real player in today's power-generation market.

Photographs may not be published, posted on the internet, donated, sold, exhibited or otherwise distributed.

Call number: BANC MSS 71/289c Container/page: Carton 162

Note: Sierra Club Nat. Legis. Office Records

THE BANCROFT LIBRARY

162:8

Gas, Natural

1989

Television Academy Honors A.G.A. For NATURE Support

The Academy of Television Arts & Sciences has recognized the American Gas Association (A.G.A.) for its support of the Emmy Award-winning public television series NATURE.

NATURE series host and Executive Editor George Page presented the award to A.G.A. President George H. Lawrence and A.G.A. Immediate Past Chairman Eugene A. Tracy during a ceremony in New York.

"The NATURE series has enjoyed the steadfast support of the natural gas industry for six consecutive years, making it possible to bring Emmy Award-winning programs to a nationwide audience of millions," said Page. "A.G.A. plays an important role in our efforts to present programs of the highest quality, programs that celebrate the beauty of the natural world and that illustrate the importance of protecting the environment."

NATURE, produced by WNET/New York, is broadcast at 8 p.m. Sundays on most public television stations.



Pictured from left to right are A.G.A. President George Lawrence, NATURE host George Page and A.G.A. Immediate Past Chairman Eugene Tracy, chairman and CEO of Peoples Energy Corp. in Chicago.

Studies Suggest Methane Is Not a Major Greenhouse Gas

A rash of recent studies on methane leakage from gas industry operations and the role of methane in the greenhouse effect indicate that switching from coal or oil to natural gas would provide a net reduction in global warming. Concern about the gas industry's contribution to atmospheric methane arose from erroneous reports equating "unaccounted-for gas" with leakage. In fact, unaccounted-for gas consists primarily of gas lost through theft, metering anomalies and accounting errors. Other concerns resulted from incorrect assumptions about the atmospheric behavior of methane.

In response to a request from the Environmental Protection Agency (EPA), the American Gas Association (A.G.A.) surveyed natural gas companies to find out how much methane escapes into the air during gas transmission and distribution. The survey showed that of all the gas consumed in the United States during 1988, only 0.30 percent was emitted to the atmosphere. Coinciding with the A.G.A. survey, Pacific Gas and Electric Co. completed a two-and-a-half-year study of its 1987 unaccounted-for gas, performed at the

request of the California Public Utilities Commission. This study showed that leaks represented only 8.9 percent of unaccounted-for gas and only 0.14 percent of all gas received by the company.

These figures are much less than the 4 percent to 10 percent of throughput that EPA says would be "sufficient to negate the benefits of switching from oil and coal to natural gas in major applications" This statement comes from a joint EPA/Gas Research Institute proposal to further understanding of methane emissions from natural gas facilities and operations by conducting a three-year, \$4.4-million study. The project, now under way, will improve estimates of gas-industry methane emissions and assess the impacts of fuel substitution on the greenhouse effect.

The latter point is a critical one, because some opponents of natural gas have denied the usefulness of fuel switching by pointing out that a molecule of methane can trap 30 times more heat than a molecule of carbon dioxide. "But they made a mistake," says Stephen H. Schneider, a pre-eminent atmospheric scientist from the National Center for Atmospheric Research in a speech

before the 1989 International Gas Research Conference. "I would like to explain the mistake to you so that you can correct it every time you hear it."

Schneider explained that a molecule of methane "lives" about 10 years in the atmosphere before decomposing. A molecule of carbon dioxide also remains in the atmosphere for about 10 years, but rather than breaking down, it is transferred to the ocean. And, says Schneider, "If five molecules of carbon dioxide go into the ocean, they knock four more right back up." What is important, he continued is "the lifetime of the anomaly in the atmosphere." For carbon dioxide, he estimated this to be 100 years, compared with methane's 10 years. He concluded, "It turns out that a few percent of methane leakage is not going to be equivalent to the heat trapping produced by using less-efficient coal."

Confirming Schneider's comments are two additional studies. The first, a draft report titled "The Relative Role of Methane and Carbon Dioxide in the Greenhouse Effect," challenges even the preliminary assumption that methane traps 30 times more heat than car-

continued on page 4

Photographs may not be published, posted on the internet, donated, sold, exhibited or otherwise distributed.

Call number: BANC MSS 71/289c Container/page: Carton 162

Note: Sierra Club Nat. Legis. Office Records

THE BANCROFT LIBRARY

162:8

Gas, Natural

1989

Methane from page 3

bon dioxide. Sponsored by A.G.A., scientists at the Center for Atmospheric Research at the University of Lowell re-evaluated the relative absorptivity of the two substances and found that methane traps only 13 times more heat than an equal amount of carbon dioxide. Combined with Schneider's assessment of the atmospheric life and chemistry of the substances, this greatly reduces the apparent effectiveness of methane as a greenhouse gas.

Another study, prepared for EPA by The Bruce Co. and the Natural Resources Defense Council, considers the atmospheric behavior of all of the

important greenhouse gases. This study finds that methane is only 3.7 times more effective than carbon dioxide in the global warming context. Furthermore, it concludes, "On this basis, direct and indirect [carbon dioxide] emissions account for 80 percent of the total global warming potential of current greenhouse gas emissions" The study was recently accepted for publication in the peer-reviewed journal *Nature*.

A summary report of the international experience with natural gas leakage provides perhaps the best overview of the global methane emissions question. Prepared by The Alphanatania Group, a

British consulting firm, the report summarizes for the Swedish gas industry the likely ecological results if Sweden were to move toward greater natural gas use in its quest to eliminate the use of nuclear power. It concludes, "It is our opinion that the world gas industry is efficient in conservation of natural gas within its system There is no apparent justification for assertions that the industry is responsible for methane leakages greater than about 1 percent of the total world natural gas supply Our estimate of leakage for new supply would be around 0.05 percent."

Weather Project Brings Life to the Classroom

Focusing the interests of school children on environmental topics is a challenge for almost any teacher. But, in the Puget Sound area of Washington state, weather, science and the environment have become popular subjects in the classroom this year. Washington Natural Gas Co., through a joint sponsorship with KOMO-TV 4, the ABC-Television affiliate in Seattle, is providing an interactive educational program that brings science and weather into the classrooms.

The program, called Weatherschool, was originally developed by Ron Yaros, a St. Louis, Mo., meteorologist. KOMO-TV, through its popular weather forecaster, Steve Pool, added segments pertaining to science and the environment in the Pacific Northwest.

Designed for students in grades one through eight, the 16-week program reaches more than 90,000 students in the area. Weatherschool materials, provided free to participating classes, include a 56-page teacher's workbook and curriculum planner. Apple computer software is provided so that the students can plot weather maps, cloud charts and take-home weather report sheets.

KOMO-TV complements the lessons by having Steve Pool, as part of his 5 p.m. news broadcast, answer the weather questions asked at school. The evening Weatherschool segment is repeated the following morning on the station's "Morning News Express" program. Steve Pool and another KOMO News 4 forecaster also visit classrooms

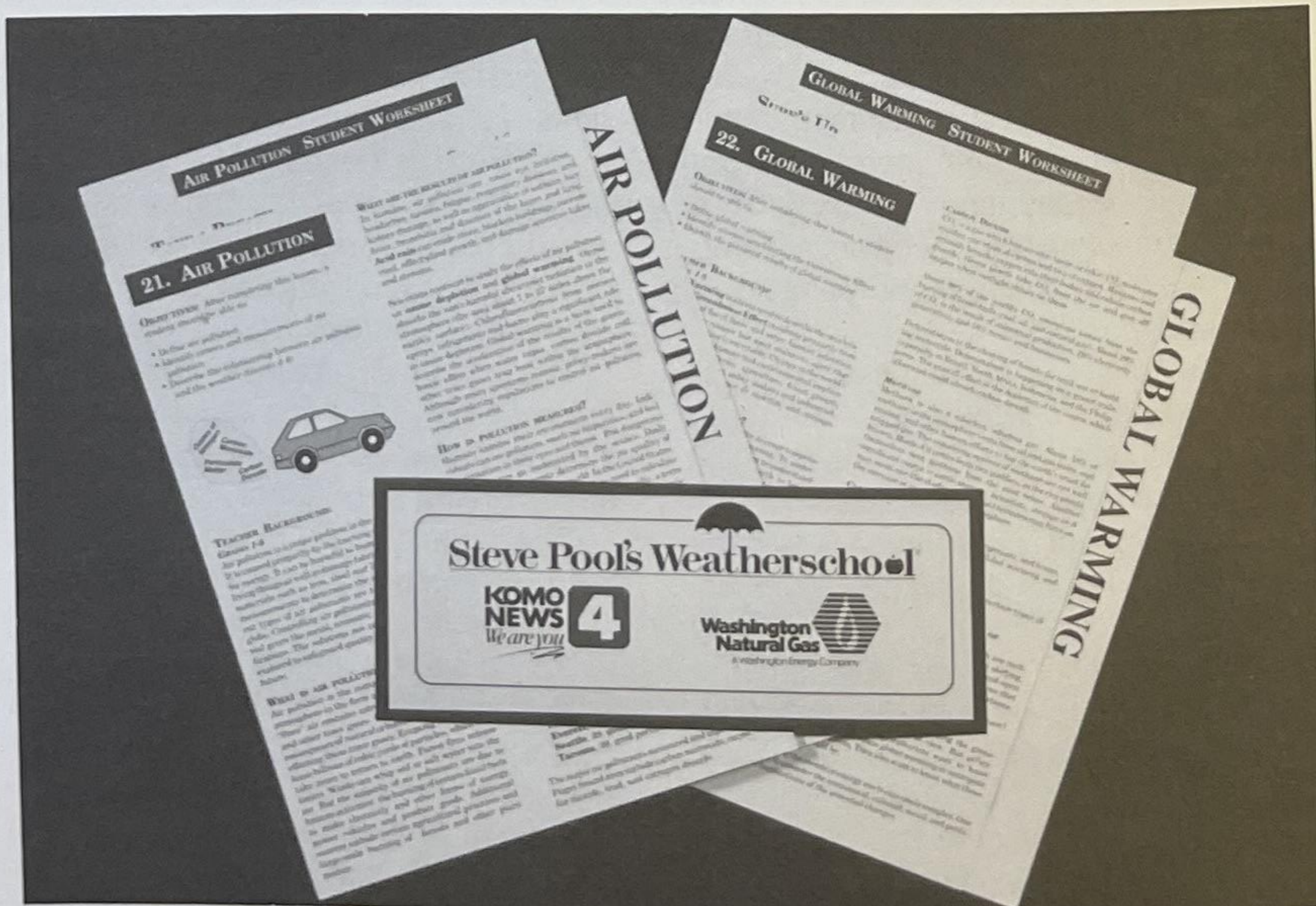
to discuss the topics covered in the Weatherschool program.

Through a curriculum specialist, Washington Natural Gas developed additional lesson plans and classroom activities on air pollution and global warming. The plans provide background information about the issues for teachers and experiments for students. A bibliography encourages further research on the subjects.

In the global warming lesson, for example, students learn about greenhouse gases and how they enter the atmosphere, and about which countries produce the most carbon dioxide.

According to Nina Caskey, supervisor of educational services for Washington Natural Gas, "Weatherschool provides a meaningful way for students of varying grade levels to enjoy the process of exploring science topics and understanding concepts about the environment. One of the program's main attractions is making use of a television news segment as part of the classroom learning."

For information about Weatherschool, contact Nina Caskey, Public Affairs, Washington Natural Gas Co., P.O. Box 1869, Seattle, WA 98111; (206) 224-2285.



162:8

Gas, Natural

Photographs may not be published, posted on the internet, donated, sold, exhibited or otherwise distributed.

Call number: BANC MSS 71/289c Container/page: Carton 162

Note: Sierra Club Nat. Legis. Office Records

THE BANCROFT LIBRARY

1989

DOE Funds 13 New Clean Coal Projects; Inclusion of Gas Co-Firing Urged

The Department of Energy (DOE) has completed the third round of competition in its clean coal technology program, adding \$540 million in federal funds and 13 projects to the 27 ventures already under way. The clean coal program is an outgrowth of a 1985 U.S./Canada agreement to reduce pollutants that cause acid rain.

The initiative's fourth round of competition is scheduled to open in June, with the fifth and final round slated for 1991. However, a three-year extension of the program is under consideration as part of Congress' ongoing debate on acid rain control legislation. Last fall, Sens. Jeff Bingaman, D-N.M., and Wendell Ford, D-Ky., sent a letter to Senate Environmental Subcommittee Chairman Max Baucus, D-Mont., urging that natural gas co-firing technology be specifically included in any extension of the program. In co-firing, a portion of the coal in a boiler is replaced by natural gas, resulting in a significant decrease in pollutant emissions.

Among other things, the letter points out, "In view of the demonstrated promise of natural gas co-firing technologies, it would be unfortunate to discourage their further development by precluding them from the clean coal technology extension. Therefore, we encourage you to expand the three-year extension to include retrofit technologies and to identify natural gas co-

firing expressly among the technologies eligible for the extension."

The letter also notes that co-firing could minimize the economic dislocation that might result from acid rain legislation. "These technologies might actually help preserve coal mining jobs by making it possible for electric utilities

to continue burning high-sulfur coal."

Neither the administration's clean-air bill nor S. 1630, the leading Senate legislation, explicitly permits co-firing to qualify, for purposes of acid rain compliance, as one of the eligible clean coal technologies under an extended version of the DOE program.

New York Energy Plan Calls for Greater Use of Gas

"New York should act to increase the cost-effective and efficient use of natural gas by at least 50 percent by 2008," advised the final version of the New York State Energy Plan, released early in the winter. The report places its greatest emphasis on increased use of natural gas for electricity generation, but also urges "greater competition of natural gas with electricity in space conditioning markets."

The plan, which is the joint product of three state agencies, points out that more interstate gas pipeline capacity is needed, but adds that "adequate supplies of natural gas are expected to be available from domestic and Canadian sources to serve the needs of New York's firm 'core market' customers ... and allow continued service to interruptible customers, including power plants."

Over the next 18 years, says the plan, New York should pursue a 10 percent reduction in the use of petroleum products and limit the growth in total end-use energy consumption to just 2 percent. These steps would help attain the plan's goals of reducing stationary source nitrogen oxides (NO_x) emissions by 25 percent, reducing mobile source NO_x emissions by at least 25 percent, and reducing total carbon dioxide emissions by 20 percent. In addition, by 2003, the plan advocates reducing the 1980 level of sulfur dioxide emissions by 50 percent.

While the plan stops short of advocating a clean-fueled vehicle mandate, it does call for accelerated demonstration programs and asserts that the state "should encourage the use of compressed natural gas as a transportation fuel."

Group Develops Guidelines for Environmental Education

While the American Society for Testing and Materials (ASTM) is best known for setting standards for things like fracture mechanics and feedwater heater tubes, it has embarked on a program to establish guidelines for environmental education. Through this program, ASTM hopes to help educate the public about environmental issues.

Charles Roth, chairman of ASTM's committee on environmental education and former director of education programs for Massachusetts Audubon, said the effort would focus on children and adults, both in formal and nonformal programs. He described formal programs as those relating to elementary and secondary schools and colleges,

while nonformal programs would include those conducted by nature centers, youth groups, businesses or community centers.

Four subcommittees were developed to focus on environmental literacy, formal education/schooling, nonformal education/communications and technical training. The environmental literacy group will work to develop a definition of environmental literacy and establish guidelines for improving the nation's understanding of environmental issues. The formal education group will focus on teacher training and curriculum issues. The first mission of the nonformal education group is to identify

providers of environmental communications and their audiences. Developing standards for business-related environmental training programs will be the concern of the technical training subcommittee.

The subcommittees will meet May 8-9 in Washington, D.C., in conjunction with the Alliance for Environmental Education's national conference, "Gateway to an International Network for Environmental Education." ASTM is seeking additional input from businesses, educators, environmentalists, government officials and others. For additional information, contact ASTM's Wendy Dyer at (215) 299-5526.

Photographs may not be published, posted on the internet, donated, sold, exhibited or otherwise distributed.

Call number: BANC MSS 71/289c Container/page: Carton 162

Note: Sierra Club Nat. Legis. Office Records

THE BANCROFT LIBRARY

162:8

Gas, Natural

1989

Hearing Finds Support for Federal Involvement in Environmental Education

Citing a need for increased federal involvement in environmental education, participants in a Washington, D.C., hearing called for passage of S. 1076, the National Environmental Education Act of 1990.

Among those testifying before the Senate Committee on Environment and Public Works was former U.S. Senator Gaylord Nelson, who represented the Wilderness Society. Nelson stressed the importance of developing a strong "conservation ethic" in today's young people so that they will have the courage to address the environmental problems they're likely to face.

"Absent such an ethic, we will continue to dirty and destroy for a handful of silver and a mortgage on the future," said Nelson.

Sen. Bob Graham, D-Fla., a member of the committee, concurred that the federal government should play an active role in environmental education. Federal priorities, he said, should focus on encouraging states to recognize the importance of environmental education; promoting innovation in expanding environmental awareness, not just among young people, but throughout the general public; identifying programs to serve as role models; and in helping young people develop a better understanding and appreciation of the country's national treasures.

Environmental Protection Agency (EPA) Deputy Administrator Hank Habich told the senators that environmental education is an issue very important to EPA



Testifying before the Senate Committee on Environment and Public Works in support of the National Environmental Education Act of 1990 are, from left, Steven Kussmann of the Alliance for Environmental Education, Gary San Julian of the National Wildlife Federation, Peggy Cowan of the Western Regional Environmental Education Council and Kathy McGlaughlin of the North American Association for Environmental Education.

Administrator William Reilly. In supporting the legislation, Habich said it is important for all people to understand and consider the environmental consequences of their actions.

Chairman of the Alliance for Environmental Education Steven Kussmann also offered his organization's endorsement of the legislation, telling committee members that new values and attitudes

toward the environment can only be established through a life-long learning process that goes beyond the school system and into the home and workplace.

"The public schools will always be an important focus for delivery of environmental education," said Kussmann, who also serves as director of communications programs for the American Gas Association. "Nevertheless, we must recognize that the nation's educational system is much larger than its system of formal schooling."

Kussmann said the alliance favored the lead role the legislation gives EPA for federal environmental education initiatives. He also urged the committee to support public/private-sector partnerships and the development of a decentralized environmental education network. Such a network can capitalize on existing resources and provide direct access to the grassroots level, where education must take place in order to be relevant and effective, he said.

S. 1076 was introduced by Senate Environment Committee Chairman Quentin Burdick, D-N.D., Senate Majority Leader George Mitchell, D-Maine, and Ranking Minority Member of the Environment Committee John Chafee, R-R.I.

Natural Gas Rates for Vehicles to Remain Attractive

While many people favor the increased use of natural gas for vehicles, some have worried that the increased demand for gas would increase its price. Such fears were recently countered by a new study showing that prices for large-volume natural gas refueling stations may be lower than average, firm-service industrial gas prices. The study, titled "Natural Gas Prices for the Vehicle Market," was conducted by the American Gas Association (A.G.A.) at the request of the Department of Energy.

The study concentrates on the nine states where low-emission vehicles are

most likely to be used under proposed clean-air legislation. To estimate the effect of this emerging market on natural gas prices, the study examines the influence of more consistent, year-round demand on gas prices, the financial makeups of transmission and distribution companies and existing incentive rates for natural gas vehicles. Finally, these market characteristics of vehicle service are applied to baseline energy price projections in A.G.A.'s fully integrated model of the U.S. energy market.

For a copy of the study, call (703) 841-8490 and ask for Issue Brief 89-19.

Photographs may not be published, posted on the internet, donated, sold, exhibited or otherwise distributed.

Call number: BANC MSS 71/289c Container/page: Carton 162

Note: Sierra Club Nat. Legis. Office Records

THE BANCROFT LIBRARY

162:8

Gas, Natural

1989