environment

Gathered last week in Washington at the Forum of the Committee on Power Plant Siting of the National Academy of Engineering

ENERGY ECONOMICS

Proposed rate structure may backfire

A current proposal for lessening the environmental problems associated with electric power production is to reverse the present "regressive" rate structure (SN: 3/6/71, p. 163)—to charge large users more and small users less in an effort to reduce total demand.

The question becomes one of whether industrial demand for electricity is elastic—whether higher rates would, indeed, reduce demand.

Dr. Carlos Stern, an environmental economist with the University of Connecticut, says there may be two possible elasticities to consider: electric power and total energy. And, he adds, the proposed new rate structure could conceivably add to environmental problems.

Dr. Stern says that electric power demand may be inelastic but that total energy demand may be elastic. Thus an industry might reduce its electric power demand in response to higher rates. But its total energy demand could remain the same, causing it to go to another, perhaps more polluting, energy source.

RESOURCES

Coal looks good, oil shale less so

New technologies to make coal a less-polluting source of electric energy may be available for large-scale use by 1980, says Dr. Elburt F. Osborn, director of the Bureau of Mines.

Two major possibilities, he says, are for gasification and liquefaction of coal. The Office of Coal Research's Hi Gas and CO_2 acceptor processes look good for gasification, and the Bureau of Mines' Synthane process and the OCR H-Coal process look good for liquefaction, he says. (The processes are identified here with the agencies that support them, but in most instances they were first developed by private firms.)

Use of low-sulfur coal for power production does not look promising, Dr. Osborn says. Even the lowest sulfur coal will not be able to meet strict emission standards, he says. In addition, 95 percent of the coal now being mined is east of the Mississippi, but 90 percent of the low-sulfur coal in the United States is in the more thinly populated area west of the Mississippi.

Oil shale may likewise not have the potential of gasified or liquefied coal. Three problems are paramount: the need to dispose of large amounts of waste shale left over after processing, land leasing problems and difficulties with the basic technology. Underground retorting of both coal and oil shale is a future possibility, says Dr. Osborn.

Another approach that looks promising is for removal of sulfur oxides from stack gases, says Dr. Osborn. The choice will be between two types of removal, one which results in a throwaway by-product, such as calcium sulfate, and regenerative processes which use the sulfur-oxide-removing material over and over. The regenerative processes are more costly, he says.

SYSTEMS ANALYSIS

Garbage in, garbage out

Systems analysis is subject to considerable misapplication through the use of implicit value judgments dressed up and made to appear objective, says Prof. Lester Lees of the California Institute of Technology's Environmental Quality Laboratory. He suggested that power companies had been particularly prone to such semantic distortions.

But systems analysis combined with explicit value judgments—an agreed-upon hierarchy of priorities—will be a key procedure in defining power plant siting problems, says William R. Gould, chairman of the NAE systems planning working group.

The procedure, Gould says, is to take all factors involved in a siting decision and evaluate them in terms of the priorities, then select the best solution.

The problem, he admits, is to secure agreement on the hierarchy of values. So far human relations problems, reflected by the wide diversity of opinions about power plants, have not been solved.

Gould says it will be some time before a generally acceptable systems approach is developed.

LAW

Criminal language not appropriate

The use of concepts such as guilt or innocence or "burden of proof," are probably inappropriate in environmental matters, says Prof. Albert J. Rosenthal of the Columbia University School of Law.

Rosenthal responded to a question of whether the burden of proof regarding a possible environmental hazard should fall on the promoters of the technology in question or upon environmentalists opposing it. He replied that such matters possibly may be determined best through administrative procedures that reveal the realities of any given proposal rather than through assigning arbitrary and legalistic definitions.

PLANNING

Simplistic solutions are dangerous

There are no simple answers to power plant siting problems, says Dr. Glenn R. Hilst, chairman of the committee's working group on air quality problems. Moreover, he says, to imagine there are simplistic solutions is highly dangerous.

For one thing, there are no easy one-to-one relationships between pollutants and their effects. Rather, he says, almost everything that happens in the interaction of pollutants and the environment is synergistic and highly complex. "There is a lack of knowledge of the ultimate fate of air pollutants. More research is needed."

As an example he points out that the interactions that occur when plants, animals and human receive pollutants are extremely complicated and little-known.