# U.S. Urged to Reprocess Nuclear Fuel

## *The industry uses a U.S. diplomatic failure as a vehicle for overturning a key aspect of Carter's nonproliferation policy*

The nuclear power industry and its backers are intensifying their efforts to overturn President Carter's 2-year-old policy against domestic reprocessing of nuclear fuel. Proponents of reprocessing have fallen just a few votes short of victory in recent tests of congressional support for an environmental review that must precede the reprocessing.

The effort comes at a time when the Administration itself is divided over the wisdom of Carter's initial policy and while a Cabinet-level review committee is considering a proposal for approval of certain reprocessing efforts overseas (*Science*, 6 June). John Ahearne, acting chairman of the Nuclear Regulatory Commission (NRC), wrote on 2 May to the President's top domestic policy adviser, Stuart Eizenstat, asking for a clarification of Carter's views on reprocessing, but no reply has been received as yet.

In the past, Carter has said that both reprocessing and the breeder reactor it fuels will create a dangerous international supply of weapons-grade plutonium; his intention in canceling domestic reprocessing and breeder development was to set an example for other countries and to delay the transfer of American technology. But Carter also said that the policy would be reexamined at the conclusion of the U.S.-sponsored International Nuclear Fuel Cycle Evaluation (INFCE) conference, where it would be promoted. The Administration's failure to win support at the recently completed INFCE conference has prompted renewed enthusiasm on the part of probreeder activists.

The vehicle for the industry's support is an environmental review of reprocessing by the NRC that was canceled at Carter's request in 1977. The review will itself not lead directly to domestic reprocessing, but it is a necessary antecedent; thus a series of congressional votes on resuming the review became a litmus test of support. Each vote has been on motions to amend the NRC 1981 authorization bill to require that the review be resumed. On 30 May, the House subcommittee on energy and power defeated the amendment by a one-vote margin, 11 to 10. The full Commerce committee was set to vote as *Science* went to press. Earlier, the House Interior Committee, which also has jurisdiction over the NRC, defeated the amendment by coming to a 20–20 tie. There has been no action in the Senate yet.

Lobbying has been fierce by the industry and by environmental groups, who square off over reprocessing as in other nuclear power issues. Congressional supporters have cited as evidence a recent letter to President Carter from 25 eminent American scientists who generally oppose the Administration policy. The letter, sent under the auspices of Scientists and Engineers for Secure Energy, Inc., endorsed resumption of the NRC review. It was signed by Frederick Seitz, president emeritus of Rockefeller University, Robert Adair of Yale, Hans Bethe of Cornell, Edward Teller of Stanford, Norman Rasmussen of MIT, and Harvey Brooks of Harvard, among others.

> Gerard Smith's proposal could place the Administration in an awkward position on domestic reprocessing.

The group asserts that the final INFCE report supports reprocessing. "For those who fear [it] because of proliferation, the INFCE analysis provides a combination of reassurance with realism," their letter declared. Seitz told a press conference held under the auspices of Representative Mike McCormack (D–Wash.), an ardent nuclear power backer, that the United States should take the lead in reprocessing so as to maximize "the benefits from every ounce of nuclear fuel" while minimizing the risk that smaller nations would reprocess independently. The Natural Resources Defense Council (NRDC) challenges these claims, and charges the group with distorting the INFCE results. "Apparently the prominent scientists and engineers that signed the letter either have not read the INFCE reports . . . or have let their enthusiasm for plutonium overwhelm the scientific ethic of keeping citations in context." Actually, the INFCE report is ambiguous enough to produce ample evidence for either side.

The 20 supporters on the House Interior Committee also claimed in a statement that "in view of the commitment of other nations to reprocessing, it is especially important that the U.S. continue to play a meaningful role in the development and control of this technology, particularly as it relates to energy conservation, safeguards, safety, public health, and environmental standards." Only by doing it ourselves can these issues be resolved, the group suggests. Representative Morris Udall (D–Ariz.), the committee chairman, and Representative Jonathan Bingham (D–N.Y.), who led the fight against the amendment, responded that "it would be unfortunate for the Committee or the Congress to take a position . . . without any hearings or the benefit of the Administration's review. Moreover, it would send a very damaging yet unsubstantiated signal to the rest of the world that the United States intends to move toward early plutonium use."

The House subcommittee on energy research and production, chaired by McCormack, added more fuel to the debate with hearings on 4 June. Reprocessing and breeders were endorsed anew by long-time supporters such as Chauncey Starr, vice president of the Electric Power Research Institute, John Lamarsh, chairman of the Department of Nuclear Engineering at the New York Polytechnic Institute, and L. Manning Muntzing, a consultant to the American Nuclear Society. Starr asserts that the alternative to reprocessing—spent fuel stored for long periods—"is no less a potential military risk than is a diversion-resistant chemical reprocessing facility. If we accept one, we should accept the other."

Gerard C. Smith, the special U.S. ambassador for nonproliferation, and George Rathjens, a former MIT professor who is now a deputy special U.S. representative, emphasized the positive aspects of the INFCE report and offered little clue as to any Administration policy shift on domestic reprocessing. Smith's still-classified proposal for the United States to approve breeder reactor re-


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search and development overseas—as well as the attendant reprocessing—places the Administration in an awkward position on domestic reprocessing. As a congressional staff member points out, "If the Carter Administration says it's all right for England, France, and Japan to reprocess fuel, what is the argument for not doing it here? We'd just be denying ourselves the business."

The counterargument advanced by environmentalists is that even with U.S. approval these countries are unlikely to carry out their large-scale reprocessing plans, or in the case of France, to continue for long at prohibitive cost. "While there is no shortage of rhetoric, the reality is that the plutonium industry is collapsing," says Thomas Cochran of NRDC.

The debate will probably begin in the Senate soon. Doubtless ample rhetoric will continue on both sides, up to and even past the point when Carter releases his latest views, which could be delayed until after the November election.

—R. JEFFREY SMITH

# Energy Forecasts: Sinking to New Lows

## *The experts keep revising their forecasts of future energy needs—the fashion is downwards*

Although some astute energy watchers predicted early in the 1970's that demand would soon level off, the big institutional forecasters have only begun to consider this a real possibility in the last couple of years. Large outfits move slowly. And their forecasts are slow to change—partly because they often represent a record of investment, not just an analysis of trends. But even the most cautious energy forecasters are making revisions today, for a new reality has forced itself upon them.

Since 1978, actual sales of petroleum in the United States have declined, and electricity demand has grown at unprecedentedly slow rates. While demand for electricity used to increase by 7 percent annually, it is now going up less than 3 percent a year. In 1979, total energy use in the nation declined. Yet economic growth, measured by the gross national product (GNP), has continued to rise.

The most striking indication of change lies in the shifting relation between energy and GNP. Before the oil embargo of 1973–1974, energy use increased each year faster than economic growth. Since then, the trend has reversed, with energy demand growing less rapidly than the economy. It now takes 10 percent less energy to produce a dollar's worth of GNP than it did in 1973. The fact that energy demand is growing more slowly than the economy could wreck the plans of some energy suppliers.

One hears exasperation, for example, in the voice of Michehl R. Gent, executive vice president of the National Electric Reliability Council (NERC). NERC is a cooperative formed by electric utilities after the New York City blackout in 1964; its purpose is to see that power-generating capacity keeps pace with demand. Gent said, "We've gone through the age of laying a straight edge on a piece of graph paper, and we've just gone through all the econometric models [for energy forecasting] and shown they're no good. And so we're back to crystal ball gazing. The effect is so enormous, on our industry anyway, because of the capital requirements. To be wrong is just catastrophic." Is it possible that all the forecasts are wrong? "Absolutely," Gent said. Does that mean the future could be catastrophic for some? "It could be; the worst thing would be if demand is greater than we've predicted."

Like others, NERC has lowered its expectations, and Gent said that some utilities will be canceling orders for coal and nuclear generating plants. But Gent remains firm in his conviction that there cannot be any real growth in the economy without increased demand for energy—and particularly electricity. NERC's decision to lower its forecast, incidentally, has shaken others in the field, even though NERC still is among the high-growth forecasters. The chief forecaster for one very large company that makes electrical appliances said that NERC's forecast for electricity demand upset him this year because, for the first time ever, it was lower than his own. He likes to think that his work is conservative, for it is used in making business decisions. NERC's forecast has served him in the past as a marker of the too-optimistic point of view. Next year, he expects he will scramble down to a lower point on the range in order to stay below NERC. Thus the entire pack of prophets moves downhill.

A graphic illustration of this behavior has been put together by Amory Lovins, British representative for Friends of the Earth and bête noire of the utility industry. He is one of many who argue that enormous efficiency improvements can and will be made in technology in the next two decades, and that these will reduce energy demand far below the present level of 78 quadrillion British thermal units (quads) per year.

Lovins points out that, no matter what the bias of the forecaster, all energy pre-

| Year of forecast | Beyond the pale | Heresy | Conventional wisdom | Superstition |
|---|---|---|---|---|
| 1972 | 125 (Lovins) | 140 (Sierra) | 160 (AEC) | 190 (FPC) |
| 1974 | 100 (Ford zeg) | 124 (Ford tf) | 140 (ERDA) | 160 (EEI) |
| 1976 | 75 (Lovins) | 89–95 (Von Hippel) | 124 (ERDA) | 140 (EEI) |
| 1977–78 | 33 (Steinhart) | 67–77 (NAS I, II) | 96–101 (NAS III, AW) | 124 (Lapp) |

Abbreviations: Sierra, Sierra Club; AEC, Atomic Energy Commission; FPC, Federal Power Commission; Ford zeg, Ford Foundation zero energy growth scenario; Ford tf, Ford Foundation technical fix scenario; Von Hippel, Frank Von Hippel and Robert Williams of the Princeton Center for Environmental Studies; ERDA, the Energy Research and Development Administration; EEI, Edison Electric Institute; Steinhart, 2050 forecast by John Steinhart of the University of Wisconsin; NAS I, II, III, the spread of the National Academy of Sciences Committee on Nuclear and Alternative Energy Systems (CONAES); AW, Alvin Weinberg study done at the Institute for Energy Analysis, Oak Ridge; Lapp, energy consultant Ralph Lapp.

*Amory Lovins put together this table showing the downward drift in forecasts. Figures represent total U.S. energy demand in year 2000 or 2010.*


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