

# Report of the Committee on Energy Research and Development

## I. INTRODUCTION AND SUMMARY

Although many of the technological developments affecting our nation's energy supply and usage come from the private sector, the federal government has historically played an important role in the funding and administration of long-term R&D projects. Government support for long-range R&D commitments has become especially important as a consequence of the volatility of today's energy markets. It is difficult for industry to justify investment in long-term R&D when revenues are constrained and energy supplies are relatively abundant and inexpensive.

Analysis of recent documents and testimony produced by the Reagan Administration reveals several trends within the environment surrounding federally-sponsored R&D. Most significantly, the Reagan Administration is attempting, via policy initiatives and the budget process, to shift more of the burden of R&D investment from the public to the private sector. One means of achieving this is by reduced funding levels for R&D programs administered by the Department of Energy (DOE). Another is by advocating the establishment of "cooperative ventures," wherein the government assumes a minority working interest with an industry coalition in a specific R&D project.

An apparent shift in funding priorities is simultaneously occurring within the DOE. Funding for energy R&D generally has remained heavily weighted toward nuclear research, while other appropriations are being shifted from oil- and gas-related programs to R&D ventures designed to promote the environmentally benign use of coal (*i.e.* clean coal technologies). The emphasis on coal-related research is a result of public awareness and pressure concerning acid rain, the abundance of domestic coal reserves (and the "soft market" for natural gas), and an increasing perception of a need for national energy security. This shift in emphasis is significant because research trends which are established today become the basis for future energy policy, usage, and technological development.

Legislation reflecting this shift in priorities was introduced in the 100th Congress. Efforts to repeal the Powerplant and Industrial Fuel Use Act and to enact natural gas pricing and transportation legislation are intended to increase the marketability and profitability of natural gas, thereby alleviating the current "gas bubble" and hastening the need for further resource development. Recent attention to the acid rain or "acid deposition" issue by both Congress and the Administration are already affecting appropriations for coal-related programs within the DOE.

## II. FISCAL YEAR 1988 BUDGET PROPOSALS

The perspective from which the Reagan Administration views federal sponsorship for energy R&D is discussed in several current documents,

including the President's Budget for Fiscal Year 1988, the recently issued DOE energy security report and recent DOE testimony concerning appropriations requests submitted to Congress.

According to the President's Budget:

The Federal Government can help the Nation meet its energy needs through limited spending that is carefully focused to meet appropriate Federal responsibilities and through cutbacks that eliminate inappropriate Government involvement in energy markets. . . . Private industry invests billions of dollars each year in research and development, including R&D related to energy. The Federal Government should complement, rather than supplant, private sector R&D investment. It should limit its spending to support for basic research and other longer term R&D where the benefits do not readily accrue to individual companies but assist industry as a whole in the development of new technologies. This policy is particularly applicable to non-nuclear R&D, where industry makes significant investments.<sup>1</sup>

The recently issued DOE energy security study<sup>2</sup> discusses R&D policy and targets specific areas of recommended focus. Concerning policy, the agency advocates cooperative R&D ventures between government and private industry in which the DOE would be a minority partner. According to the report:

Government-private sector cooperation in R&D ventures, in comparison with ongoing programs, can add leverage to tax dollars, government talent, and other resources. They should also increase the likelihood that technologies will be commercialized, because more companies will be financially involved. Benefits from the increased sharing of risks and resources are especially important to the energy industry at this time, when many segments are in a depressed state.<sup>3</sup>

The report goes on to state that, due to lack of such experience, industry has an "historical bias" against cooperative R&D, and concludes that "[a]ggressive government action will probably be needed to help catalyze some useful ventures that otherwise may not materialize."<sup>4</sup> The report notes that a public conference held in December, 1986, "elicited significant interest in the concept," and regional meetings are being scheduled to further develop the proposal.<sup>5</sup>

Additionally, the report targets two specific areas in which R&D efforts can maximize production of domestic oil reserves: Enhanced Oil Recovery (EOR), and increased geoscientific research. The report states, however, that funding for such programs is problematical, and that "industry-government cost-sharing . . . might hold the key."<sup>6</sup>

It is interesting to note that the report does not address R&D as it concerns natural gas, except to mention that unconventional gas recovery technol-

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1. EXECUTIVE OFFICE OF THE PRESIDENT, OFFICE OF MANAGEMENT AND BUDGET, THE BUDGET OF THE UNITED STATES GOVERNMENT (1988).

2. U.S. DEPT. ENERGY, ENERGY SECURITY, A REPORT TO THE PRESIDENT OF THE UNITED STATES (1987).

3. *Id.* at 91.

4. *Id.*

5. *Id.*

6. *Id.* at 92.

ogies are a byproduct of EOR research.<sup>7</sup> Although the report notes that natural gas is an effective substitute for imported oil, no attention is given concerning how to maximize this resource base. Rather, the focus on natural gas concerns regulatory and end-use constraints.<sup>8</sup> This may be due to a present surplus of natural gas.

Proposed budget figures for DOE R&D programs exhibit similar trends. The DOE has submitted an FY 1988 budget for fossil fuels R&D of \$169 million. This represents a large reduction from the DOE's estimated FY 1987 funding for fossil fuels research of \$302 million. Moreover, the Department requests only \$1.6 million in FY 1988 for gas-related programs, as opposed to FY 1987 estimated funding levels of \$8.0 million. \$12.3 million is requested for FY 1988 oil-related programs, as compared with \$26.0 million estimated funding during FY 1987, whereas \$109 million is requested for coal-related programs.<sup>9</sup>

The DOE describes its fossil energy program as follows:

The Fossil Energy program is comprised of two components: Clean Coal Technology and Fossil Energy Research and Development. The primary thrust of this program is to reduce the environmental impact associated with certain abundant fossil resources, particularly coal, to acceptable levels.<sup>10</sup>

In testimony presented March 24, 1987, before the House Committee on Appropriations, Subcommittee on Interior and Related Agencies, Mr. J. Allen Wampler, the DOE's Assistant Secretary for Fossil Energy, summarized the DOE position, stating that:

The President's fiscal year 1988 budget for fossil energy research and development continues the trend of recent years to include a greater emphasis on technologies that can control the release of pollutants from coal and that can increase the areas of application and flexibility of coal-based systems. It contains funding for projects that can assist industry in increasing the effective resource base for gas and liquid fuel through enhanced recovery technology and the production of such fuels from coal and shale.

The Assistant Secretary noted that the unconventional gas recovery program would be continued in FY 1988, but "primarily as an in-house research effort," and defended this position based on fiscal constraints and competing priorities.

### III. GAS RESEARCH INSTITUTE FUNDING

The Gas Research Institute (GRI) is an independent, nonprofit scientific research organization which develops and manages financing for R&D programs designed to benefit the regulated natural gas industry and its customers. GRI funding is derived primarily through revenues obtained via a "funding unit" incorporated into the cost of natural gas transported or sold for resale, primarily by interstate natural gas pipelines. GRI's current membership includes some 250 pipelines, utilities and associations. GRI funding is

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7. *Id.*

8. *Id.* at 120.

9. U.S. DEPARTMENT OF ENERGY, BUDGET HIGHLIGHTS, FY 1988, 14 (1987).

10. *Id.* at 13.

reviewed and approved annually by the Federal Energy Regulatory Commission (FERC or Commission) in proceedings similar to those under which the FERC reviews and approves rates and charges for interstate natural gas pipelines. There appears to be continued strong support at the FERC and by state regulators for GRI funding.

On September 29, 1986, in *Gas Research Institute*, the FERC approved a funding unit of 1.52 cents per Mcf for collection from GRI jurisdictional members for the period January 1, 1987, through December 31, 1987. This represented a .17 cents per Mcf increase relative to the funding unit approved for calendar year 1986, and a total funding level of \$175 million for 1987, up from \$160 million spent during 1986.<sup>11</sup> The Commission also noted that with its 1987 application, GRI will begin its tenth year of operation, and stated that:

[I]t would be appropriate to review GRI's past years of operation in view of this milestone. This historical review should assess GRI's total spending in relation to its past and current successes, as well as its failures. We believe this review to be critical in maintaining GRI's performance consistent with the needs of its members and their ratepayers. This also will maintain the integrity of the Commission's review procedures.<sup>12</sup>

In recent years, the FERC has adapted the GRI funding mechanism to reflect regulatory changes affecting the interstate transportation and sale of natural gas. For example, in approving GRI's 1983 research programs<sup>13</sup> the Commission required that all off-system sales by member interstate pipelines must carry the funding unit. In the Commission order approving GRI's 1984 programs,<sup>14</sup> the FERC provided that all short-term services provided by GRI member interstate natural gas pipelines must also carry the funding unit. This included all transactions under NGPA section 311, transactions for end-users such as those conducted under blanket certificates for transportation issued under Order No. 319,<sup>15</sup> and special incentive marketing programs for industrial users.

In Opinion 243,<sup>16</sup> the order approving GRI's 1986 program, the Commission restated its policy with regard to the application of the funding unit to short-term services, and included (1) extensions or roll-overs of existing transactions, and (2) non-recurring services with a term of one year or less.

Support for GRI funding at the state level also is exhibited by a recent decision by the Public Utilities Commission of Ohio. By opinion and order issued in Case No. 86-297-GA-AIR, the Ohio Commission reversed a long-standing policy and allowed the East Ohio Gas Co. (a local distribution company and subsidiary of Consolidated Natural Gas Co.) to collect the FERC-approved GRI surcharge on its intrastate sales and transportation volumes.

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11. *Gas Research Inst.*, 36 F.E.R.C. ¶ 61,395 (1986).

12. *Id.* at 61,972.

13. *Gas Research Inst.*, 20 F.E.R.C. ¶ 61,444 (1982).

14. *Gas Research Inst.*, 25 F.E.R.C. ¶ 61,147 (1983).

15. Order No. 319, *Sales and Transportation by Interstate Pipelines and Distributors; Expansion of Categories of Activities Authorized Under Blanket Certificate*, [1982-1985 Regs. Preambles] F.E.R.C. Stats. & Regs. ¶ 30,477, 48 Fed. Reg. 34,875 (1983).

16. *Gas Research Inst.*, 32 F.E.R.C. ¶ 61,426 (1985).

## IV. CONCLUSION

It is apparent that federal sponsorship of energy R&D is greatly influenced by current economic and political trends. So long as federal spending is limited by fiscal constraints, and energy markets are experiencing supply surpluses and reduced prices, it is unlikely that the federal role in energy R&D will increase significantly from current levels as described herein.

It appears that the federal budget deficit is not likely to disappear quickly. This, combined with the fact that the nature of R&D is a fluid and continuous process whose direction cannot easily be reversed, may result in a permanent change in the federal government's involvement in energy R&D. The concept of cooperative ventures between government and the private sector has strong agency support and may become the standard for government participation in future energy research projects. Under almost any scenario, industry is likely to bear a larger burden of the energy R&D investment.

GRI programs are also affected by these trends, but are somewhat more secure by virtue of a well-established regulatory mechanism for funding and a historical record of utility. As long as GRI can demonstrate the need for and practicability of its projects, support within the FERC and state regulatory agencies is likely to remain strong.

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