DOE/FE-0090

Background Information

Public Meetings for Views and Comments on the Conduct of the Innovative Clean Coal Technology Solicitation

Albuquerque, New Mexico, August 13, 1987
St. Louis, Missouri, September 3, 1987
Pittsburgh, Pennsylvania, September 10, 1987
Washington, D.C., September 22, 1987

CLEAN COAL Technology

U.S. Department of Energy
OFFICE OF FOSSIL ENERGY
Washington, DC 20545

PUBLIC MEETINGS FOR VIEWS AND COMMENTS ON THE CONDUCT OF THE INNOVATIVE CLEAN COAL TECHNOLOGY SOLICITATION

Background Information

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Federal Register Notice of July 10, 1987 (52 FR 26124)

INVITATION FOR PUBLIC VIEWS AND COMMENTS ON THE CONDUCT OF THE INNOVATIVE CLEAN COAL TECHNOLOGY SOLICITATION; NOTICE OF MEETINGS

CLEAN COAL Technology

federal register

Friday
July 10, 1987

Part II

Department of Energy

Office of Fossil Energy

Invitation for Public Views and Comments on the Conduct of the Innovative Clean Coal Technology Solicitation; Notice of Meetings

DEPARTMENT OF ENERGY

Office of Fossil Energy

Invitation for Public Views and Comments on the Conduct of the Innovative Clean Coal Technology Solicitation; Meetings

AGENCY: Office of Fossil Energy, DOE.

ACTION: Notice of meetings to invite public views and comments on the conduct of the Innovative Clean Coal Technology solicitation.

Introduction

On March 18, 1987, President Reagan announced his decision to seek $2.5 billion to fund the demonstration of innovative clean coal technologies (ICCT) over a five-year period, provided that appropriate projects are proposed that meet, among other things, cost-sharing requirements similar to those provided in the February 17, 1986, Clean Coal Technology (CCT) solicitation. Consistent with this decision, the Administration has amended the FY 1988 budget request and supporting outyear estimates for the CCT Program, such that the Administration is requesting the remaining $350 million from the Clean Coal Technology Reserve in FY 1988 and advanced appropriations of $500 million each year for Fiscal Years 1989 through 1992 for demonstration projects. The cost-sharing requirements would ensure that industry will invest an equal or greater amount over this period to stimulate deployment of ICCT.

The Secretary of Energy announced, on March 23, 1987, that the 1988 and 1989 funding ($350 million and $500 million) would be combined into a single $850 million solicitation to be issued, subject to the provision of appropriations, prior to the end of calendar year 1987. It is this proposed $850 million ICCT solicitation that is the subject of this Notice.

In addition to the announcement of the intention to seek funding, President Reagan also stated that he is directing the Secretary of Energy to establish an advisory panel, known as the Innovative Control Technology Advisory Panel (ICTAP), to "advise the Secretary of Energy on funding and selection of innovative control technologies projects. Projects will be selected, as fully as practicable, using the criteria recommended by the [Special Envoys on Acid Rain, Drew Lewis of the United States, and William Davis of Canada]."

Purpose of the Meetings

In general, the goal of the anticipated ICCT solicitation will be to implement the President's decision to provide financial assistance for the demonstration of clean coal technologies that are applicable to existing coal burning facilities, and that are consistent with the recommendations of the Special Envoys on Acid Rain.

The President's initiative will yield significant benefits to the United States, not only in terms of cleaner air and the increased use of coal, our most abundant energy resource, but also by:

- Greatly enhancing U.S. technological leadership and international competitiveness,
- Benefitting both eastern and western states by making available more cost-effective, fuel-flexible power systems capable of using the full spectrum of U.S. coals,
- Improving our position in international trade by providing advanced technology that would make American coal more attractive to foreign markets, and by reducing the cost of producing energy-intensive U.S. goods,
- Helping to ensure that the U.S. enters the 21st Century with a broad array of sophisticated, cleaner, and more economical coal-based energy technologies, rather than being limited to the more costly, less effective, environmental control options available today, and
- Enhancing the long-term energy security of the United States.

However, the Department of Energy (DOE) is interested in exploring alternatives that may be available with regard to how the ICCT solicitation is structured in general, and in terms of how several specific issues and concerns, described below, are resolved. As noted above, ICTAP will be an important source of guidance for the ICCT solicitation. ICTAP will represent a broad spectrum of interests, including various Federal agencies, the Government of Canada, States that produce coal and that use coal, electric utilities, industrial boiler owners, trade associations, and public interest groups.

The purpose of the meetings is to provide a conduit from the public, both to DOE and to ICTAP, which will be important recipients of the results of the public meetings. Accordingly, DOE is issuing this Notice in order to invite the public to attend any one of several meetings, and to share with DOE their views, comments, and recommendations with regard to the forthcoming solicitation.

Proposed Outline of the Anticipated Solicitation

In order to establish a context or framework for reference in which to consider the issues and concerns that are identified in the following section, it is useful to outline generally the structure of the anticipated ICCT solicitation. DOE stresses, however, that the funds for this endeavor have not yet been appropriated, that congressional guidance on the nature or conduct of this solicitation remains the subject of active, ongoing debate, and that nothing in this Notice should be considered as definite, final, or binding on DOE, with regard to either the nature and/or content of the solicitation and whether any solicitation is issued at all at any future date. The public is further advised that DOE cannot reimburse those who attend the public meetings or otherwise submit views to DOE for any expenses that they may incur in responding to this Notice.

DOE anticipates that the ICCT solicitation will be for the purpose of providing financial assistance awards and, accordingly, would be governed by DOE's Assistance Regulations as provided at 10 CFR Part 600. The Regulations provide two types of instruments that could be employed for financial assistance awards, grants and cooperative agreements. DOE adopted the cooperative agreement instrument for the February 17, 1986, Program Opportunity Notice (PON), and cooperative agreements are being considered for the ICCT solicitation as well. Cooperative agreements are employed when substantial involvement is anticipated between the government and the proposer during performance of the contemplated activity. These agreements are intended to ensure that federal funds are expended only on allowable project costs and that patent rights, licensing arrangements, and other project details are properly executed in a manner that serves the best interests of both the government and the project sponsors.

Project sponsors would be required to share the costs of the projects, such that DOE would not finance more than 50 percent of the total project cost as of the date of award, and the solicitation may require, as was the case previously, that the cost-sharing by the offeror be at least 50 percent in each of the project phases (usually design, construction, and operation). Also, costs probably would be shared between DOE and the offeror on an "as expended," dollar-for-dollar, basis.

DOE also believes that a provision for repayment by the project sponsors, for up to the government's share of the financial assistance, remains appropriate. In the event that the demonstration project or technology

becomes a commercial success, repayment provides a fair return to the taxpayer, who has shared the risks of the original project. However, DOE recognizes that repayment provisions must be sufficiently flexible to not discourage prospective participants from responding to the solicitation. Additionally, DOE is aware that provisions for repayment should be sufficiently flexible to accommodate the constraints of different market sectors, and should consider, for example, the regulated nature of the business environment for electric utilities. In the previous PON, offerors were advised that recovery of the government's investment would "be derived from the sum of the following potential revenue sources: (1) Operations of the demonstration project beyond the operating phase of the cooperative agreement. The net revenue from the operation (after operating costs) will be shared in proportion to the overall cost-share for the project, and (2) the commercial sale, lease, manufacture, licensing, or use of the technology demonstrated under the CCT Program."

The solicitation also may include Preliminary Evaluation requirements, and provide that failure to meet any one, or more than one, of these requirements would result in rejection of the proposal and the cessation of its consideration for financial assistance. Preliminary Evaluation requirements in the past have included, among other things, stipulations that the offeror must show that the proposed project or facility will be located in the United States, that the project will be designed for, and operated with, coal(s) from United States mines, that the technology will comply with the Clean Air Act, that the proposer either owns and will make available the demonstration site, or that the proposer has been granted the right to use the site for the duration of the proposed project, and that the cost-sharing requirements will be satisfied.

Once a determination is made that a proposal meets the Preliminary Evaluation requirements, it would then enter the comprehensive evaluation phase, where the proposal would be evaluated in accordance with the criteria stated in the solicitation. The solicitation would explicitly state the different criteria, and appropriately describe the relative weights assigned to the technical, business and management, and cost aspects of the proposal. Consistent and compatible with these criteria, the solicitation would provide guidance and instructions to prospective offerors on how to prepare and submit the proposal.

Evaluation criteria will be developed, as fully as practicable, using the recommendations contained in the Joint Report of the Special Envoys on Acid Rain and taking into account the advice and recommendations of ICTAP to the Secretary of Energy. DOE will consider the following factors, drawn from the Envoys' Report, in developing specific evaluation criteria:

(a) The extent to which the proposed technology will expand the menu of air pollution control options available to existing coal-fired power plants, and

(b) The extent to which the demonstration project and/or the commercialized version of the technology could contribute to reductions in transboundary air pollution, especially (i) the efficiency of sulfur dioxide and/or oxides of nitrogen emissions reductions, (ii) the cost-effectiveness of the technology in terms of dollars per ton of sulfur dioxide and/or oxides of nitrogen emissions reduced, and (iii) those retrofit (including repowering) technologies applicable to the largest number of existing sources that, because of their size, location, and present fuel quality, contribute to transboundary air pollution.

DOE believes it is also important in developing criteria not to exclude consideration of promising control options that may be demonstrated outside the eastern region of the United States. As long as such projects demonstrate a relevant technology, i.e., a technology applicable to existing, high-sulfur coal burning plants, they should be eligible candidates for ICCT financial assistance

DOE also may consider, as additional factors to be used in developing criteria, the degree to which the technology reduces other forms of pollution from coal combustion, the potential for the technology to reduce the cost of producing additional electric power (thereby stimulating the potential for deployment of the technology), and the extent to which a state that would host an ICCT project has adopted regulatory policies that would stimulate the commercial replication and deployment of innovative clean coal technologies.

The final consideration with regard to the selection of a proposal is the application, by the DOE Source Selection Official, of Program Policy Factors (PPF). These are factors that have been deemed as relevant and essential to the process of choosing which of the proposals received will, taken together, best achieve the program objectives. In the 1986 PON, the PPF were: "(a) The desirability of selecting for support a group of projects that represent a diversity of methods, technical approaches, or applications, (b) the desirability of selecting for support a group of projects that would ensure that a broad cross section of the U.S. coal resource base is utilized, both now and in the future, and (c) the desirability of selecting for support a group of projects that represent a balance between the goals of expanding the use of coal and minimizing environmental impacts."

Subjects of Particular Interest

DOE wishes to receive public views, comments, and recommendations on any and all aspects of the forthcoming anticipated ICCT solicitation, in the interest of assisting DOE in the preparation of a solicitation that optimally balances the needs of the prospective proposal offerors and the goals and objectives of the CCT Program. In that regard, there are a number of specific issues and concerns that DOE is particularly interested in receiving public comments on, as listed and described below. Please note, however, that this is not an all-inclusive list of subjects of interest, and new or different topics may be introduced or added at the public meetings themselves, either by the public attendees or by DOE.

1. Qualification Criteria and Preliminary Evaluation Requirements

The issue here is whether more stringent preliminary evaluation requirements and qualification criteria would further the goals of the ICCT solicitation by discouraging the submission of applications to fund projects that, under the stated qualification criteria, are deemed to be less than fully prepared and ready to proceed toward project implementation if award were made. DOE considers that it would be to the advantage of both DOE and the public to screen out and remove from further consideration such proposals early in the competition. More stringent qualification criteria could facilitate the evaluation process by limiting the number of proposals that DOE would undertake to evaluate.

For example, should the solicitation contain the stringent requirement that, "If a teaming arrangement is proposed, the offeror must provide a notarized copy of the teaming agreement, including all documents that legally establish the entity," or the less demanding stipulation that, "If a teaming arrangement is proposed, the offeror must provide a letter of intent or executed teaming agreement from all

parties sufficiently binding to ensure the formation of the proposed legal entity?"

2. Proposal Evaluation Criteria and Program Policy Factors

Ideally, evaluation criteria should ensure that submitters provide information in their proposals that is adequate for the purposes of a complete and accurate evaluation of the merits of the proposed project, while simultaneously minimizing the burden on the submitters by refraining from requesting unnecessary or redundant information or documentation. Evaluation criteria for the selection of projects for awards of financial assistance might include, among other things, the projected economic and technical competitiveness of the proposed technology, market penetration potential of the technology, and applicability of the technology to high-sulfur content coal-fired boilers. Additionally, as a PPF, consideration might be given to the extent to which a state has adopted regulatory incentives for clean coal projects.

3. Proposal Preparation Time

In the case of the 1986 PON, offerors were afforded sixty days from the date of issuance of the solicitation to submit their proposals. The question here is whether sixty days is a reasonable preparation interval, or whether an interval of say, ninety days, would yield a better selection of promising proposals. However, a longer preparation interval could delay the date of award and, ultimately, commencement of projects.

4. National Environmental Policy Act (NEPA) Strategy

DOE is considering forms of NEPA strategy that build on the experience of the 1986 PON, and is interested in public views of how that strategy may be improved. The NEPA strategy in the past included both programmatic and project-specific environmental impact considerations, both during and subsequent to the selection process. Offerors were requested to submit both programmatic and project-specific environmental data as discrete parts of their proposals, and DOE then independently evaluated these data and analyses, and also developed certain supplemental information deemed necessary for reasoned decision making. The key elements of that NEPA strategy included a pre-selection programmatic environmental impact analysis, which was provided to the Source Selection Official, a pre-selection project-specific environmental review, which also was provided to the Source Selection Official, and the documentation of the consideration given to environmental factors in a publicly available selection statement.

Finally, upon award of financial assistance, offerors were required to submit additional, detailed, environmental information which was used as the basis for the preparation by DOE of site-specific NEPA documents for each selected project. These documents were to be prepared, considered, and published in advance of go/no-go decisions to proceed beyond preliminary design. In addition to the above, each cooperative agreement requires an environmental monitoring plan to ensure that significant site- and technology-specific environmental data would be collected and disseminated.

5. Repayment of the Government's Cost-Share

DOE is interested in obtaining public comments on possible approaches to repayment of the government's cost-share, including terms that are mutually agreeable to both the government and to the private sponsor.

Meetings, Locations, and Dates

There will be four public meetings, at the locations and dates listed below:

1. Ramada Hotel Classic, 6815 Menaul Boulevard NE., Albuquerque, New Mexico (Tel 505–881–0000), at 9:00 a.m., on Thursday, August 13, 1987.

2. Holiday Inn Riverfront, 4th and Pine Streets, St. Louis, Missouri (Tel. 314 621–8200), at 9:00 a.m., on Thursday, September 3, 1987.

3. Pittsburgh Hilton Hotel, Gateway Center, Pittsburgh, Pennsylvania (Tel. 412–391–4600), at 9:00 a.m., on Thursday, September 10, 1987.

4. Sheraton Washington Hotel, 2660 Woodley Road (at Connecticut Ave.), Washington, DC (Tel. 202–328–2000), at 9:00 a.m., on Tuesday, September 22, 1987.

Format of the Meetings

All four of the meetings will follow the same format, as described below. Each meeting will commence with a brief plenary session, which will include introductory remarks and program overviews by DOE officials. At about mid-morning, there will be a short recess, and the audience will be asked to reconvene in several Discussion Workshops, the number of which will be determined at a later date, based upon the expected level of attendance by the public. The format of concurrent Workshops is intended to facilitate animated discussion in small groups and to best use the time available. Attendees are requested to limit their representation to a single Workshop. Each Workshop will contain a panel of DOE officials, and they will all be similar in form and substance.

There will be no further formal presentations or statements in the Workshops. Instead, attendees will be asked to engage in informal, unstructured, discussion with the panelists on the subjects described earlier in this Notice, and on such other subjects as may be introduced by members of the audience or by the panelists.

Finally, attendees will meet in a closing plenary session. Panel chairpeople will review and summarize the highlights and recommendations of each of their Workshops, and the meeting will end.

Expectations are that the meetings will not adjourn until late in the afternoon, and attendees might wish to take this into account when making travel arrangements.

Public Participation

Individuals may attend the meetings without notification in advance to DOE, and there is no registration fee or other charge for attendance. However, attendees should note that all travel and accommodations arrangements are the responsibility of the individuals, and that DOE will provide no meals or other refreshments. However, there are specific requirements for attendees who wish to submit written comments, as described below:

Written Comments:

Written comments should be submitted (in triplicate if possible) to arrive at the address noted below not later than July 29, 1987, in order to ensure their consideration by DOE in planning the agendas for the meetings. Also, individuals who are unable to attend the public meetings may submit written comments, which will be considered in developing the ICCT solicitation.

Address for Comments:

All written comments should be submitted to: Mr. Jack S. Siegel, Deputy Assistant Secretary for Coal Technology, Fossil Energy, FE–20, GTN, U.S. Department of Energy, Washington, DC 20545, (301) 353–3991.

Issued in Washington, DC, July 2, 1987.

J. Allen Wampler,

Assistant Secretary, Fossil Energy.

[FR Doc. 87–15632 Filed 7–9–87; 8:45 am]

BILLING CODE 6450–01–M

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Department of Energy News Release of July 10, 1987

PUBLIC TO HAVE OPPORTUNITY TO COMMENT ON FUTURE CLEAN COAL PROGRAM AT FOUR PUBLIC MEETINGS

CLEAN COAL Technology

U.S. DEPARTMENT OF ENERGY
OFFICE OF THE PRESS SECRETARY
WASHINGTON, DC 20585

COAL

DOENEWS:

NEWS MEDIA CONTACT:
Robert C. Porter, 202/586-6503

FOR IMMEDIATE RELEASE
JULY 10, 1987

PUBLIC TO HAVE OPPORTUNITY TO COMMENT ON FUTURE CLEAN COAL PROGRAM AT FOUR PUBLIC MEETINGS

Representatives of industry, state and local governments and the general public will have the opportunity to comment on President Reagan's proposed $2.5 billion, five-year clean coal technology initiative at four public meetings announced today by the Department of Energy.

The department will hold the public meetings in Albuquerque, St. Louis, Pittsburgh and Washington, D.C. in August and September. The purpose will be to obtain recommendations on the anticipated "Innovative Clean Coal Technology" solicitation which the Energy Department expects to issue late this year.

The new solicitation will kick off the second nationwide competition for federal matching funds for projects that demonstrate cleaner and more efficient ways of burning or using domestic coal. Last year the Energy Department selected nine projects in an initial round of competition, and, in March, President Reagan proposed to expand the program to include several additional competitions over the next five years.

The new rounds of competition will focus on technologies that could be applied to existing, high sulfur coal-burning plants -- a key recommendation of the 1986 report of the U.S. and Canadian Special Envoys on Acid Rain which called for a jointly-financed, government-industry program to demonstrate emerging clean coal technologies.

(MORE)

Following the President's March 18 announcement, the Administration amended its pending budget request to Congress to include $850 million for fiscal years 1988 and 1989 to conduct the next round of competition. The budget also requested that the remaining portion of the $2.5 billion be provided in advance appropriations to give industry confidence that the full amount of the President's commitment would be available in later years.

Congress is currently reviewing the Administration's request. If funds are provided by the beginning of fiscal year 1988, the next round of competition could begin with a government solicitation for proposals in November or December.

Comments from the public will be used in fashioning the forthcoming solicitation. They will also be provided to the newly-appointed members of the Innovative Control Technology Advisory Panel, a special panel of federal, state and private sector representatives appointed by the Secretary of Energy to help guide the clean coal technology program.

Each public meeting will follow the same format: brief overviews of the clean coal technology program by Energy Department officials, followed by several concurrent discussion workshops, and a closing session to review the highlights and recommendations of the workshops.

Interested participants may attend any of the public meetings. No advance notification to the Energy Department or registration fees are required. Written comments suggesting agenda topics can also be submitted no later than July 29, 1987. Written comments will also be considered in developing the upcoming solicitation.

The public meetings will be held as follows:

August 13 - Ramada Hotel Classic
6815 Menaul Blvd. NE
Albuquerque, New Mexico

September 3 - Adam's Mark Hotel
315 Chestnut Street
St. Louis, Missouri

September 10 - Pittsburgh Hilton Hotel
Gateway Center
Pittsburgh, Pa.

September 22 - Sheraton Washington Hotel
2660 Woodley Road
Washington, DC

All meetings will begin at 9 a.m. Additional information can be obtained from the July 10, 1987, issue of the Federal Register which contains a notice of the public meetings. Copies of the notice can be obtained from the Office of Coal Technology, Fossil Energy, FE-20, U.S. Department of Energy, Washington DC, 20545, (301) 353-3991.

-DOE-

R-87-088

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Supplements to the Federal Register Notice

(a) LETTER OF TRANSMITTAL TO PROSPECTIVE ATTENDEES.

(b) CORRECTION TO THE FEDERAL REGISTER NOTICE.

(c) AMENDMENT OF JULY 22, 1987 (52 FR 27575) TO THE FEDERAL REGISTER NOTICE.

CLEAN COAL Technology

Department of Energy
Washington, DC 20585

July 16, 1987

NOTICE OF MEETINGS;
INVITATION FOR PUBLIC VIEWS AND COMMENTS ON THE CONDUCT
OF THE INNOVATIVE CLEAN COAL TECHNOLOGY SOLICITATION

Prospective Attendees:

Enclosed for your information is a copy of the Notice of Meetings that appeared in the Federal Register of July 10, 1987. The Notice advises that written comments are welcome, either in lieu of, or in addition to, personal attendance at the meetings, but please note that your written submittal should be received by the Department of Energy (DOE) not later than July 29, 1987, in order to ensure its consideration by DOE in planning the agendas for the meetings.

We have been successful in arranging for the hotels to offer reduced rates for accommodations. However, DOE cannot be of any assistance with your reservations, and your arrangements must be made directly with the hotels. You are reminded that DOE cannot reimburse those who attend the meetings or otherwise submit views for any expenses that may be incurred in responding to this Notice. It is important that you mention to the hotel that you are attending the DOE Clean Coal Technology meeting, and that you observe the deadlines listed below, after which dates the reduced rates may no longer be available:

Albuquerque, New Mexico, Thursday, August 13, 1987, Ramada Hotel Classic.
Tel. 505-881-0000. Meeting Rates: $48 single, $58 double.
Reservations must be made by July 29.

St. Louis, Missouri, Thursday, September 3, 1987, Adam's Mark Hotel.
Tel. 314-241-7400. Meeting Rates: $85 single or double.
Reservations must be made by August 10.

Pittsburgh, Pennsylvania, Thursday, September 10, 1987, Pittsburgh Hilton.
Tel. 412-391-4600. Meeting Rates: $85 single or double.
Reservations must be made by August 19.

Washington, D.C., Tuesday, September 22, 1987, Sheraton Washington Hotel.
Tel. 202-328-2000. Meeting Rates: $110 single, $135 double.
Reservations must be made by August 21.

We look forward to seeing you in person. Thank you for your interest in DOE's Clean Coal Technology Program.

J. Allen Wampler
Assistant Secretary
Fossil Energy

Enclosure

C O R R E C T I O N

to the

Federal Register Notice of Meetings

In the enclosed Federal Register Notice, the hotel information provided for the meeting in St. Louis, Missouri, is WRONG.

The correct information for St. Louis is as follows:

Adam's Mark Hotel, 315 Chestnut Street, St. Louis, Missouri (Tel. 314-241-7400), at 9:00 a.m., on Thursday, September 3, 1987.

be deposited in a suitable account for appropriate disposition. Nothing in the Consent Order is consistent with the Final Settlement Agreement, *supra*, or the Statement of Modified Restitutionary Policy, and ERA intends to petition for implementation of special refund procedures pursuant to 10 CFR Part 205, Subpart V to distribute the funds. The use of the Subpart V process is consistent with the Agreements and the Policy. Paragraph IV.B.4. of the Agreement contemplates that funds obtained by ERA will be submitted to the OHA and that OHA will set a 20 percent reserve. "[A]mounts in excess of the reserve shall be distributed [to the States and DOE] while awaiting the completion of the first state refund proceedings." *id.*, at paragraph IV.B.6. Accordingly, the comments by the Controller of California appear to be consistent with the intentions of DOE.

For the foregoing reasons, and for the reasons set forth in the Notice of the Proposed Consents Orders, ERA has decided to finalize the Consent Orders with Trigon and Entex; Trigon and Ferguson; Trigon and Rogers; and Trigon and Omni.

III. Decision

By this Notice, and pursuant to 10 CFR 205.199J, the proposed Consent Orders between DOE and Trigon and Entex; Trigon and Ferguson; Trigon and Rogers; and Trigon and Omni shall become final orders of the DOE. DOE will issue a notice to Trigon, Entex, Ferguson, Rogers, and Omni, and the Consent Orders shall become final upon delivery of that notice.

Marshall Staunton,

Administrator, Economic Regulatory Administration.

[FR Doc. 87-16667 Filed 7-21-87; 8:45 am]

BILLING CODE 6450-01-M

Office of Fossil Energy

Invitation for Public Views and Comments on the Conduct of the Innovation Clean Coal Technology Solicitation; Amendment to Notice of Meetings

AGENCY: Office of Fossil Energy, DOE.

ACTION: Amendment to notice of meetings; Invitation for public views and comments on the conduct of the innovative clean coal technology solicitation.

SUMMARY: On July 10, 1987, the United States Department of Energy (DOE), Office of Fossil Energy (FE), published in the **Federal Register** (52 FR 26124) a Notice of Meetings; Invitation for Public Views and Comments on the Conduct of the Innovative Clean Coal Technology Solicitation. The present Notice amends that Notice of Meetings as follows below..

MEETINGS, LOCATIONS, AND DATES: There will be four public meetings. The location of the meeting in St. Louis, Missouri, is amended as follows: Adam's Mark Hotel, 315 Chestnut Street, St. Louis, Missouri (Tel. 314-241-7400), at 9:00 a.m. on Thursday, September 3, 1987.

FOR FURTHER INFORMATION CONTACT: Mr. Jack S. Siegel, Deputy Assistant Secretary for Coal Technology, Fossil Energy, FE-20, GTN, U.S. Department of Energy, Washington, DC 20545, (301) 353-3991.

Issued in Washington, DC, July 17, 1987.

J. Allen Wampler,

Assistant Secretary Fossil Energy.

[FR Doc. 87-16638 Filed 7-21-87; 8:45 am]

BILLING CODE 6450-01-M

ENVIRONMENTAL PROTECTION AGENCY

[PP 4G2988/T542; FRL-3233-7]

Renewal of Temporary Tolerances; American Cyanamid Co.

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice.

SUMMARY: EPA has renewed temporary tolerances for residues of the herbicide AC 222,293 [a mixture of m-toluic-acid(6-(4-isopropyl-4-methyl-s-oxo-2-imidazolin-2-yl)methyl ester) and p-toluic acid (2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)methyl ester)] resulting from application of the sulfate salts in or on certain raw agricultural commodities.

DATE: These temporary tolerances expire June 3, 1988.

FOR FURTHER INFORMATION CONTACT:

By mail: Robert Taylor, Product Manager (PM) 25, Registration Division (TS-767C), Office of Pesticide Programs, Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460

Office location and telephone number: Room 245, CM#2, 1921 Jefferson Davis Highway, Arlington, VA, (703-557-1800).

SUPPLEMENTARY INFORMATION: On May 7, 1984, EPA granted temporary tolerances to the American Cyanamide Co., Agricultural Research Division, P.O. Box 400, Princeton, NJ 08540, for residues of the herbicide AC 222,293 [a mixture of m-toluic-acid(6-(4-isopropyl-4-methyl-s-oxo-2-imidazolin-2-yl)methyl ester) and p-toluic acid (2-(4-isopropyl-4-methyl-5-oxo-2-imidazolin-2-yl)methyl ester)] resulting from application of the sulfate salts in or on the raw agricultural commodities wheat, grain at 0.05 part per million (ppm), and barley, grain at 0.5 ppm. The temporary tolerances expired on May 7, 1985. These tolerances were renewed in response to pesticide petition PP 4G2988.

The company has requested a 1-year renewal of the temporary tolerances to permit the continued marketing of the above raw agricultural commodities when treated in accordance with the provisions of experimental use permit 241-EUP-109, which is being renewed under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) as amended (Pub. L. 95-396, 92 Stat. 819; 7 U.S.C. 136).

The scientific data reported and other relevant material were evaluated, and it was determined that a renewal of the temporary tolerances will protect the public health. Therefore, the temporary tolerances have been renewed on the condition that the pesticide be used in accordance with the experimental use permit and with the following provisions:

1. The total amount of the active herbicide to be used must not exceed the quantity authorized by the experimental use permit.

2. American Cyanamid Co. must immediately notify the EPA of any findings from the experimental use that have a bearing on safety. The company must also keep records of production, distribution, and performance, and on request make the records available to any authorized officer or employee of the EPA or the Food and Drug Administration.

These tolerances expire June 3, 1988. Residues not in excess of this amount remaining in or on the above raw agricultural commodities after this expiration date will not be considered actionable if the pesticide is legally applied during the term of, and in accordance with, the provisions of the experimental use permit and temporary tolerances. These tolerances may be revoked if the experimental use permit is revoked or if any experience with or scientific data on this pesticide indicate that such revocation is necessary to protect the public health.

The Office of Management and Budget has exempted this notice from the requirements of section 3 of Executive Order 12291.

Pursuant to the requirements of the Regulatory Flexibility Act (Pub. L. 96-354, 94 Stat. 1164, 5 U.S.C. 601 through

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Statements of March 18, 1987, by the President and by the Secretary of Energy

ANNOUNCEMENT OF NEW ACID RAIN INITIATIVE

CLEAN COAL Technology

THE WHITE HOUSE
Office of the Press Secretary

For Immediate Release March 18, 1987

STATEMENT BY THE PRESIDENT

I am pleased to announce today several steps being taken to ensure that the United States continues to work closely with the Canadian government in determining and addressing the environmental effects of acid rain. These actins resulted from a review of this issue I directed my Domestic Policy Council to undertake and are consisten with the recommendations made by the Joint Envoys on Acid Rain, Drew Lewis of the United States and William Davis of Canada. Prime Minister Mulroney and I endorsed their recommendations in March 1986.

This past year, government-to-government coordination and research cooperation with Canada on acid rain problems have been substantially strengthened, as recommended by the Envoys. The Administration also has implemented the initial phase of the Department of Energy Clean Coal Technology Program, and has completed an inventory of federal, state and private clean coal research and demonstration projects, which are expected to expend more than $6 billion by 1992.

To maintain the progress we are making, I am directed three major steps to continue to carry out the Envoys' proposals.

o The first will be to seek the full amount of the government's share of funding recommended by the Joint Envoys -- $2.5 billion -- for demonstration of innovative control technology over a five year period. Five hundred million dollars will be requested for fiscal years 1988 and 1989 to fund innovative emissions control projects. I will also encourage industry to invest an equal or greater amount over this period, and to stimulate development and deployment of innovative technologies for reduction of air pollution emissions. This builds on activities already underway in the Department of Energy Clean Coal Technology Program.

o The second step I am taking is to direct the Secretary of Energy to establish an advisory panel. This panel, which will include participation by State governments and by the government of Canada, will advise the Secretary of Energy on funding and selection of innovative control technologies projects. Projects will be selected, as fully as practicable, using the criteria recommended by the Joint Envoys.

o Third, I am asking the Vice President to have the Presidential Task Force on Regulatory Relief, which he chairs, review federal and state economic and regulatory programs to identify opportunities for addressing environmental concerns under existing laws. The Task Force will examine incentives and disincentives to the deployment of new emissions control technologies and other cost-effective, innovative emission reduction measures now inhibited by various federal, state and local regulations. The findings

and results of the Task Force review will be reported in six months, along with any recommendations for changes to existing regulations.

I have advised Prime Minister Mulroney of these decisions. Next month, I will travel to Canada to discuss these and other issues with the Prime Minister. I feel these steps will help both countries to better understand and address this shared environmental problem, so that future specific actions that are taken will be cost-effective, and represent appropriate taxpayer expenditures.

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The following statement was issued at the Department of Energy following the President's announcement:

STATEMENT OF SECRETARY OF ENERGY JOHN S. HERRINGTON March 18, 1987

The President's decision today to commit $2.5 billion in federal matching funds over the next five years for innovative clean coal technologies places this nation solidly on a course toward improved energy security in a way that will advance our environmental goals. It will strengthen the common bonds of cooperation with our international neighbors including Canada. And it will place the U.S. squarely in the forefront of a worldwide response that is now taking place to address the serious and difficult problem of acid rain.

The program that we are pleased to be carrying out, at the President's direction, will build on the solid investment made to date by both the U.S. public and private sectors to improve the quality of our environment.

We will fashion a program that, over the next five years, will entail multiple rounds of competition that will elicit the best ideas and concepts from the creative minds of our industry. Each of the concepts to be demonstrated in this expanded clean coal program will be linked by a common characteristic -- the capability to combine a high degree of environmental effectiveness with improved economic performance and plant reliability.

Our intention is to tailor our project criteria, as fully as practicable, to the criteria presented last year by the U.S. and Canadian Special Envoys on Acid Rain -- namely projects that would demonstrate technologies applicable to existing, high sulfur coal burning facilities that would reduce sulfur dioxide and nitrogen oxide emissions in the most cost-effective manner possible.

I have directed staff at the Department of Energy to begin immediately to prepare the necessary budgetary amendments that will be submitted to Congress within the next few weeks to implement the President's initiative. I fully intend to work with the U.S. Congress and a special advisory panel made up of experts from both the U.S. and Canada.

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Department of Energy News Release of March 23, 1987

DOE TO KICK OFF PRESIDENT'S ACID RAIN INITIATIVE WITH $850 MILLION CLEAN COAL SOLICITATION LATE THIS YEAR

CLEAN COAL Technology

U.S. DEPARTMENT OF ENERGY
OFFICE OF THE PRESS SECRETARY
WASHINGTON, DC 20585

COAL

DOE NEWS:

NEWS MEDIA CONTACT:
Robert C. Porter, 202/586-6503

FOR IMMEDIATE RELEASE
MARCH 23, 1987

DOE TO KICK OFF PRESIDENT'S ACID RAIN INITIATIVE WITH $850 MILLION CLEAN COAL SOLICITATION LATE THIS YEAR

U.S. Secretary of Energy John S. Herrington said today that the Department of Energy will kick off President Reagan's acid rain initiative late this year with an $850 million solicitation for innovative clean coal technologies.

Herrington said the solicitation will be tailored to attract industry proposals for advanced pollution control devices that can be installed on existing coal-fired power plants. Companies submitting candidate technologies would be asked to at least match the federal funding share if their concept is selected. This year's solicitation would be followed by additional rounds of competition through 1992.

The Energy Secretary also announced that he will appoint a senior panel to advise on the types of technologies to be demonstrated in the new program. The panel, made up of federal, state and private sector participants and a Canadian government representative, could total as many as 25 members. It will be chaired by Under Secretary of Energy Joseph F. Salgado.

Herrington's announcement came five days after President Reagan pledged to seek $2.5 billion over the next five years to demonstrate innovative pollution control technologies. The initiative was one of several steps taken by the Administration to ensure a continued close working relationship with the Canadian government in resolving the issue of acid rain.

(MORE)

The expanded clean coal program builds on an effort already underway in the Energy Department to demonstrate a new generation of clean-burning coal technologies. The current effort involves nearly $400 million in federal financing. Last Friday, the first two project awards were made with seven more anticipated.

Herrington said that, in implementing the expanded program, the U.S. will credit $150 million in federal funding earmarked for the first round of clean coal projects. The funds represent the federal share of five of the nine first-round projects deemed by the department to demonstrate technologies that, when commercially used, would meet the general criteria directed by the President for the expanded program.

According to the President's March 18 announcement, the criteria for future project selections would be patterned, as fully as practicable, to guidelines recommended last year by U.S. and Canadian Special Envoys on Acid Rain.

The envoys, William Davis of Canada and Drew Lewis of the U.S., recommended that federal funding be targeted toward the most cost-effective, innovative technologies that could be applied to existing, high sulfur coal burning plants. The Envoys also proposed that special consideration be given to plants that, because of their size and location, were likely contributors to transboundary air pollution.

Herrington said that, in addition to the $150 million set aside for the current clean coal program, another $350 million would be requested in FY 1988. The department would also ask Congress for an advance appropriation of $500 million in FY 1989 funds.

The 1988 and 1989 funding -- $350 million and $500 million -- would be combined into a single solicitation to be released, pending Congressional approval, between October and December of 1987 (the first quarter of fiscal 1988). Projects could then be selected by early Spring of 1988. Additional yearly appropriations of $500 million would be requested in fiscal years 1990, 1991 and 1992.

Herrington also said that he has asked the Administrator of the Environmental Protection Agency, the Director of the Office of Management and Budget, and the Secretaries of Commerce, Interior and State to appoint senior technical officials to serve on an Innovative Control Technology Advisory Panel that would advise the department on the types of projects to be demonstrated. Letters will also be sent to the governors of several states and to the Canadian government requesting similar appointments. Representatives of industry and public interest groups would also be asked to serve.

-DOE-

R-87-024

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Amendment to Department of Energy Request for Appropriations for Fiscal Year 1988

REQUEST FOR $2.5 BILLION ACID RAIN INNOVATIVE CONTROL TECHNOLOGY DEMONSTRATION PROGRAM

CLEAN COAL Technology

THE WHITE HOUSE

WASHINGTON

April 4, 1987

The Speaker of the

House of Representatives

Sir:

I ask the Congress to consider amendments to the request for appropriations for fiscal years 1988 through 1992 for the Department of Agriculture, the Department of Energy, and the Environmental Protection Agency. This would provide a total of $2,500,000,000 over five years to support demonstrations of innovative control technologies to reduce air pollution emissions, as recommended by the Joint Report of the Special Envoys on Acid Rain.

The details of these proposals are set forth in the enclosed letter from the Director of the Office of Management and Budget. I concur with his comments and observations.

Sincerely yours,

Ronald Reagan

Enclosures

EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET
WASHINGTON, D.C. 20503

April 4, 1987

The President

The White House

Sir:

I have the honor to submit for your consideration an amendment to the request for appropriations for fiscal year 1988 amendment that, when added to the funds already contained in your budget, will provide total funding of $500 million per year in fiscal year 1988 through 1992 -- a total of $2.5 billion for the Acid Rain Innovative Control Technology Demonstration Program. This action implements your recent decision to seek the full government funding recommended by the Joint Report of the Special Envoys on Acid Rain.

The proposed amendment will increase 1988 outlays by $59,000,000. Consistent with your objective of adhering to the Gramm-Rudman-Hollings deficit target of $108 billion in 1988, the increased outlays associated with this initiative in 1988 would be completely offset by reductions in lower priority programs of the Department of Energy and other agencies. To achieve this outlay reduction, included in this proposal are amendments reducing the fiscal year 1988 appropriations requests of the Department of Agriculture, the Department of Energy, and the Environmental Protection Agency by a total of $40,500,000. Additional amendments will result in outlay reductions of $15,000,000 from the Department of State, $13,000,000 from the Department of Treasury, and $2,000,000 from the Executive Office of the President will be proposed separately.

I have carefully reviewed the proposals contained in this document and am satisfied that these requests are necessary at this time. I recommend, therefore, that these proposals be transmitted to the Congress.

Sincerely yours,

James C. Miller III
Director

Enclosures

DEPARTMENT OF ENERGY

ENERGY PROGRAMS

1988 Budget Appendix Page	Heading	1988 Budget Request Pending	1988 Proposed Amendment	1988 Revised Request
I-J15	Clean coal technology			
	1988.....	$50,000,000	$300,000,000	$350,000,000
	1989.....	100,000,000	400,000,000	500,000,000
	1990.....	---	500,000,000	500,000,000
	1991.....	---	500,000,000	500,000,000
	1992.....	---	500,000,000	500,000,000
	(Delete the above heading and the appropriation language that follows it and insert the following:)			
	Clean Coal Technology/Innovative Control Technology			
	For necessary expense for the Secretary of Energy to issue, pursuant to the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901, et seq.), solicitations for clean coal/innovative control technology development and demonstration projects and, upon review of responses to such solicitations, to provide financial			

1988 Budget Appendix Page	Heading	1988 Budget Request Pending	1988 Proposed Amendment	1988 Revised Request
	assistance awards for projects that meet the cost-sharing criteria contained under the Clean Coal Technology head in Public Law 99-190, $350,000,000 in the fiscal year 1988 which shall be derived from the Clean Coal Technology Reserve established pursuant to Public Law 98-473; $500,000,000 in fiscal year 1989; $500,000,000 in fiscal yer 1990; $500,000,000 in fiscal year 1991; $500,000,000 in fiscal year 1992; all funds to remain available until June 30, 1993, (Department of the Interior and Related Agencies Appropriations Act, 1987, as included in Public Laws 99-500 and 99-591, section 101(h).)			

This request would provide funding to cost-share with non-Federal entities the construction and operation of facilities to demonstrate the potential commercial feasibility of emerging clean coal technologies. This proposal, when combined with $150 million already made available, would provide the full $2.5 billion in Federal financing recommended by the Joint Report of the Special Envoys on Acid Rain for demonstration of innovation control technology. This proposal would increase outlays by $59 million in fiscal year 1988. This increase would be fully offset by reductions in other lower priority programs.

DEPARTMENT OF ENERGY
FY 1988 CONGRESSIONAL BUDGET REQUEST
CLEAN COAL TECHNOLOGY/INNOVATIVE CONTROL TECHNOLOGY

OVERVIEW

Clean Coal Technology/Innovative Control Technology

Background

Coal is the most abundant energy resource in the United States with recoverable reserves estimated to be 935 billion barrels crude oil equivalent (COE). However, petroleum and natural gas, whose proven reserves are estimated to be 28 billion barrels and 35 billion barrels COE respectively, are the most utilized fossil fuels in the U.S. energy consuming marketplace despite their significantly higher costs relative to coal. Even though oil and natural gas prices are projected to remain significantly higher than coal, their demand is expected to remain relatively the same as it was in 1984.

Coal is demand driven. The capacity exists to increase coal supplies to meet significant increases in demand. To make coal utilization look more attractive, the Department of Energy and the private sector have been conducting research through proof-of-concept on a wide variety of coal technologies aimed at improving the economics of using coal, improving the environmental performance associated with its use and converting coal into forms that could allow it to be used as a lower cost substitute for oil and natural gas. One of the principal activities in the area of improving environmental performance is the Clean Coal Technology program.

The Clean Coal Technology Program is related to, but not directly a continuation of, the effort that was undertaken by DOE pursuant to Section 321 of the "Act Making Continuing Appropriations for Fiscal Year 1985," P.L. 98-473, 98 Stat. 1874. Section 321 directed the Secretary of Energy to solicit from the private sector "statements of interest in, and proposals for projects employing emerging clean coal technologies," analyze the information received, and submit a report to Congress that "assesses the potential usefulness of each emerging clean coal technology... and ...identifies the extent to which federal incentives, including financial assistance, will accelerate the commercial availability of these technologies." In response to the November 27, 1984, Program Announcement, 49 Fed. Reg. 46696, DOE received one hundred and seventy-five submissions with project values totaling over $8 billion. On May 1, 1985, DOE submitted its findings in the "Report to Congress on Emerging Clean Coal Technologies" (DOE/S-0034).

In August 1985, the President signed into law H.R. 2577, "Making Supplemental Appropriations for the Fiscal Year Ending September 30, 1985, and for Other Purposes." The Conference Report 99-236 accompanying H.R. 2577 advised DOE to immediately begin the preparation of a competitive solicitation for cost-shared clean coal technology projects, to consult with the Environmental Protection Agency (EPA) on technologies traditionally supported by EPA and on environmental regulatory considerations, and provided guidelines for the preparation of the solicitation in addition to those cited earlier in the accompanying Senate Report 99-82.

On December 19, 1985, P.L. 99-190, "An Act Making Appropriations for the Department of the Interior and Related Agencies for the Fiscal Year Ending September 30, 1986, and for Other Purposes," was signed into law. This statute, among other things, provides funds to conduct cost-shared clean coal technology projects for the construction and operation of facilities that would demonstrate the feasibility of future commercial applications of such technology.

P.L. 99-190 makes available a total of $397.6 million for this program. These funds were distributed over a three year period as follows: $99.4 million in FY 1986, $149.1 million in FY 1987, and $149.1 million in FY 1988. Funding is provided from the $397.6 million for contracting, travel, and ancillary costs incurred by the Department of Energy for implementation of the Clean Coal Technology Program. P.L. 99-190 also requires a minimum of 50 per centum cost sharing by the private sector on each project, cost sharing in each phase of each project, constraints on valuation of "in-kind" cost sharing by the private sector, time limitations for issuing the solicitations, proposal preparation and project selection(s), among other things.

In accordance with the earlier guidance and P.L. 99-190 making funds available, the Clean Coal Technology program solicitation was issued on February 18, 1986, with a closing date of April 18, 1986. The proposals were evaluated and nine projects selected for negotiations on July 24, 1986.

On March 18, 1987, the President made a decision to seek the full amount of the Government's share of funding recommended by the Joint Envoys on acid rain, Drew Lewis of the United States and William Davis of Canada. This decision will provide $2.5 billion for demonstration of innovative control technologies over a 5-year period provided that appropriate projects are proposed that meet the program's cost-sharing requirements.

Consistent with this decision, the Administration is amending the FY 1988 budget request and supporting outyear estimates for the Innovative Control Technology program. The Administration is requesting $350,000,000 from the Clean Coal Technology Reserve in FY 1988 and advanced appropriations of $500,000,000 each year for fiscal years 1989 through 1992 to fund innovative emissions control projects. The demonstration projects will be conducted in accordance with the already established cost-sharing guidelines of the Clean Coal Technology program. This will ensure that industry will invest an equal or greater amount over this period to stimulate deployment of innovative technologies for reduction of air pollution emissions.

Program Goals and Objectives

The overall goal of the Clean Coal Technology/Innovative Control Technology Program is to conduct cost-shared construction and operation of clean coal projects to demonstrate the feasibility of future commercial applications of these technologies. When complete, it is expected that these demonstration projects will provide sufficient technical, economic, environmental, health and safety, and operational information at a large enough scale to enable the private sector to make rational commercialization decisions.

It is the intent of the Department to meet this goal in accord with the following program objectives:

- Implement the intent of Congress to advance the state-of-the-art in Clean Coal Technology by performing a competitive solicitation consistent with their guidance and to enter into cooperative agreements with selected representatives of the private sector to perform such co-funded projects as can be supported by the funds provided.
- Support the private sector in the execution of these projects as is required to achieve the objectives of Congress, the DOE and the private sector in the successful construction and operation of the selected concepts to demonstrate the feasibility of those concepts for future commercial application.
- Ensure that the maximum opportunity is created to achieve technology transfer and subsequent commercialization of these clean coal/innovative control technologies by the private sector.

DEPARTMENT OF ENERGY
FY 1988 CONGRESSIONAL BUDGET REQUEST
CLEAN COAL TECHNOLOGY/INNOVATIVE CONTROL TECHNOLOGY
(dollars in thousands)

SUMMARY OF CHANGES

Clean Coal Technology/Innovative Control Technology

FY 1987 Appropriation enacted	$149,100
Cooperative Agreements	
o Provide for a second solicitation that will focus on projects to demonstrate technologies which are capable of retrofitting, repowering or modernizing existing coal using facilities utilizing the same policies and principles toward cost sharing as were adopted in the first clean coal technology solicitation and will seek to reduce information requirements where prudent	+331,488
Program Direction	
o Provide support for performing program solicitation, project selection and contract negotiations and initiate associated activity to produce and deliver such reports, evaluations, and overviews as may be required to describe, evaluate, monitor and manage the activities of the program in addition begin such preparation environmental work as may be needed to be responsive to NEPA requirements. Provide salaries, benefits, travel expenses, etc. for FTE's associated with the Clean Coal Technology/ Innovative Control Technology Program	+18,512
FY 1988 Congressional Budget Request	$499,100

Clean Coal Technology/Innovative Control Technology

For necessary expenses for the Secretary of Energy to issue, pursuant to the Federal Nonnuclear Energy Research and Development Act of 1974 (42 U.S.C. 5901, et. seq.), solicitations for clean coal/innovative control technology development and demonstration projects and, upon review of responses to such solicitations, to provide financial assistance awards for projects that meet the cost-sharing criteria contained under the Clean Coal Technology head in Public Law 99-190, $350,000,000 in the fiscal year 1988, which shall be derived from the Clean Coal Technology Reserve established pursuant to Public Law 98-473; $500,000,000 in fiscal year 1989; $500,000,000 in fiscal year 1990; $500,000,000 in fiscal year 1991; $500,000,000 in fiscal year 1992; all funds to remain available until June 30, 1993, (Department of the Interior and Related Agencies Appropriations Act, 1987, as included in Public Laws 99-500 and 99-591, section 101(h).)

Explanation of Change

Deletes Language contained in Public Laws 99-500 and 99-591 which had specific application to Fiscal Year 1987.

Proposed Language provides an additional amount for subsequent clean coal technology/innovative control technology demonstration solicitations.

DEPARTMENT OF ENERGY
FY 1988 CONGRESSIONAL BUDGET REQUEST
CLEAN COAL TECHNOLOGY/INNOVATIVE CONTROL TECHNOLOGY
(dollars in thousands)

LEAD TABLE

Clean Coal Technology/Innovative Control Technology

	FY 1986 Actual	FY 1987 Appropriation	FY 1988 Base	FY 1988 Request	Request vs. Base
Clean Coal Technology/Innovative Control Technology	$ ...	$ ...	$ ...	$350,000	$+350,000
Clean Coal Technology (non-add)	98,176	149,100	149,100	149,100	...
Staffing (FTEs): Direct	0	0 1/	0 1/	0	0
Indirect	0	0 1/	0 1/	58	58

1/ In FY 1987, the FTEs for Clean Coal Technology are included in the Fossil Energy R&D indirect FTE total.

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Department of Energy News Release of June 9, 1987

MEMBERS NAMED TO CLEAN COAL ADVISORY PANEL

CLEAN COAL Technology

U.S. DEPARTMENT OF ENERGY
OFFICE OF THE PRESS SECRETARY
WASHINGTON, DC 20585

DOE NEWS:

COAL

NEWS MEDIA CONTACT
Will Callicott, 202/586-5806

FOR IMMEDIATE RELEASE
June 9, 1987

MEMBERS NAMED TO CLEAN COAL ADVISORY PANEL

Energy Secretary John S. Herrington has established an Innovative Control Technology Advisory Panel to advise the Department on an expanded demonstration program for clean coal technology.

President Reagan directed the establishment of the panel, which was recommended by the U.S. and Canadian Special Envoys on Acid Rain.

Members of the panel include senior representatives of federal agencies, government representatives from a cross-section of affected states, producers and users of coal, environmental groups, unions and the research community. Included among the members will be two senior representatives of the Government of Canada. Herrington has designated Under Secretary of Energy Joseph F. Salgado to serve as panel chairman.

The panel's recommendations on the scope and funding of future clean coal demonstration projects are to be patterned, as fully as practicable, after guidelines recommended last year in the report of the Special Envoys.

"The President's clean coal initiative is an historic, important and ambitious undertaking," Herrington said. "This panel will play a crucial role in helping meet the President's objectives by advising me on selection criteria for projects, as well as development of our innovative controls program. We have made every effort to ensure that the panel will include a representative cross section of the groups and individuals who have an interest in this area. This advisory panel is a welcome addition to the clean coal program, and I look forward to their counsel and help."

(MORE)

The innovative technologies program will build on DOE's existing Clean Coal Technology Program. Under that program, DOE is providing nearly $400 million in federal financing for nine joint government-industry demonstration projects. Negotiations have been completed for four projects, and an additional five are expected to be underway by early summer.

In March, President Reagan pledged to seek an additional $2.5 billion over the next five years for new clean coal demonstration programs. As part of that expanded effort, DOE will seek Congressional approval for an $850 million solicitation for additional projects in late 1987.

The panel will include:

Joseph F. Salgado, Chairman
Under Secretary
Department of Energy

Richard Balzhiser
President
Electric Power Research Institute

Joan T. Bok
Chairman
New England Electric System

Fred O. Braswell, III
Assistant Director and
Division Chief
Alabama Department of Economic and
Community Affairs

Bobby Brown
President
Consolidation Coal

Robert K. Dawson
Associate Director for
Natural Resources, Energy and Science
Office of Management and Budget

William Esler
President and CEO
Southwestern Power Service Co.

J. William Futrell
President
Environmental Law Institute

William Kelce
Executive Director
Alabama Coal Association

William J. Lhota
Senior Vice President
Columbus and Southern Ohio
Electric Company

Paul Locigno
Director of Government Affairs
International Brotherhood of
Teamsters

Peter MacDonald
Chairman
Navajo Tribal Council

J. Curtis Mack, II
Assistant Secretary for
Oceans and Atmosphere
Department of Commerce

Nancy Maloley
Commissioner
Indiana Environmental
Protection Agency

William McCollam, Jr.
President
Edison Electric Institute

(MORE)

John McCormick
Greenpeace, U.S.A.

William B. Marx
President and Founder
Council of Industrial
Boiler Owners

John Negroponte
Assistant Secretary for
Oceans and International
and Scientific Affairs
Department of State

Mary Eileen O'Keefe
President and CEO
Lakeshore International, Ltd.

J. Craig Potter
Assistant Administrator
Environmental Protection Agency

Robert H. Quenon
President and CEO
Peabody Holding Company

John H. Skinner
Director, Office of
Environmental Engineering
and Technology
Environmental Protection Agency

James E. Sparkman
Chief Executive Officer
Kaiser Aluminum

Richard Trumka
President
United Mine Workers

Norman P. Wagner
President and CEO
Southern Indiana Gas & Electric

Mary L. Walker
Assistant Secretary for
Environment, Safety and Health
Department of Energy

J. Allen Wampler
Assistant Secretary for
Fossil Energy
Department of Energy

Robert L. Wise
Chief Executive Officer
Pennsylvania Electric

Randolph Wood
Director, Department of
Environmental Quality
State of Wyoming

Additional members will be proposed by the governors of Illinois, Michigan, New Hampshire, Pennsylvania and Wyoming, the Department of the Interior, and by the Government of Canada.

-DOE-

R-87-073

8

Statement by J. Allen Wampler of April 9, 1987

TESTIMONY BEFORE THE

SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT

COMMITTEE ON ENERGY AND NATURAL RESOURCES

U.S. SENATE

CLEAN COAL Technology

THE NATIONAL CLEAN COAL TECHNOLOGY PROGRAM

Testimony by
J. ALLEN WAMPLER
Assistant Secretary for Fossil Energy
U.S. Department of Energy

before the

Subcommittee on Energy Research and Development
Committee on Energy and Natural Resources
U.S. Senate

April 9, 1987

Mr. Chairman and Members of the Committee:

The term "clean coal technology" has become an increasingly important part of our energy vocabulary. It has come to signify a new generation of highly efficient, environmentally clean coal-based technologies -- concepts that will permit this nation to increase its use of coal while continuing the excellent progress made in the last decade to improve the quality of our air.

I am pleased to have the opportunity today to describe the Administration's efforts to assist industry in moving these technologies nearer to the threshold of commercial acceptance and application. My testimony this morning will focus on both the ongoing Department of Energy Clean Coal Technology program as well as the President's recently announced initiative to expand this effort in accordance with the 1986 report of the Special Envoys on Acid Rain.

I have also included descriptions of the environmental and performance benefits of these new coal-based technologies -- benefits that were only projected a decade or so ago but which today are being demonstrated through actual, commercial-scale, functioning hardware.

In addition to describing the budgetary aspects of the federal Clean Coal Technology program, Mr. Chairman, I hope my testimony will provide justification for why the Department of Energy believes the development and deployment of advanced clean coal technologies represents a preferred course of national response to such issues as acid rain as well as the future energy security of our Nation.

The National Clean Coal Program

Today's expanding slate of clean coal technologies has emerged from a decade of smaller-scale development by both government and industry. Many concepts now crossing the commercial threshold originated in the aftermath of the 1973 OPEC oil embargo. With the Nation's economy shaken by the sharp rise in oil prices and sudden concern over the vulnerability of imports, the U.S. coal research program was driven principally by a goal of displacing liquid and gaseous fuels.

In the 1980s, the perception of primary R&D needs has been expanded. With increased attention focusing on the issue of "acid rain" and other air pollutants, the scope of the national coal research program now includes high-priority efforts to develop new technologies that can control SO_2 and NOx.

Many of the technologies under development in the 1970s for other purposes also have the potential to be attractive alternatives to conventional pollution controls. Thus, the scientific and engineering groundwork laid in the 1970s and early 1980s now forms the technological basis for developing, demonstrating and deploying the new generation of clean coal technologies. Most importantly, this technological evolution is taking place not only through federally sponsored efforts but also through initiatives pursued by State governments and by the private sector.

All of these efforts -- both public and private -- combine to make up the "National Clean Coal Program", and all should be included when discussing America's commitment to increasing the use of coal in concert with achieving a higher quality environment.

The Federal Program - Clean Coal Technology Round #1

On December 19, 1985, Pub. L. No. 99-190, "An Act Making Appropriations for the Department of the Interior and Related Agencies for the Fiscal Year Ending September 30, 1986, and for Other Purposes," was signed into law. This Act, among other things, provided funds to conduct cost-shared clean coal technology projects for the construction and operation of facilities that would demonstrate the feasibility of future commercial applications of such technology.

The Act further required that DOE issue a "general request for proposals" for the Clean Coal Technology Program within 60 days of the date of enactment (i.e., by February 17, 1986), provided 60 days from issuance of that request for the proposals to be submitted (i.e., by April 18, 1986), and required the selection of projects for negotiation no later than August 1, 1986. The Department met the Congressional requirements in issuing a Program Opportunity Notice soliciting proposals and receiving and evaluating the responses.

The Act made available $397.6 million for this program, as follows: $99.4 million in fiscal year 1986, $149.1 million in fiscal year 1987, and $149.1 million in fiscal year 1988.

Of these monies, $1.2 million was transferred in FY 1986 to the Small Business and Innovative Research Program (SBIR) as required by the Small Business Innovative Development Act of 1982 (Pub. L. No. 97-219) and is unavailable to the Clean Coal Technology Program. This transfer left available funding of $98.2 million for FY 1986 and total current availability for the first solicitation of $396.4 million.

In addition, $3.7 million will be transferred to the SBIR program for FY 1987 and FY 1988. Also, $25 million has been held in reserve to cover the cost of project overruns in the event that the Government agrees to share such costs. Finally, $5.5 million has been set aside for contracting, travel, and ancillary costs incurred by the DOE in implementing the Clean Coal Technology Program. The remaining $362.2 million is currently available for award to eligible clean coal projects.

By Congressional direction, the first round of competition for federal cost-sharing was open to all market applications of clean coal technology that apply to any segment of the United States coal resource base. The competition encompassed both "new" and "retrofit" applications.

The final Program Opportunity Notice was issued on February 17, 1986. In response to the public comments received regarding a prior, publicly-distributed draft notice, and also as a result of continued review by the Energy Department's Source Evaluation Board, several improvements were made in the final solicitation compared to the original draft. Also, an amendment to the Program Opportunity Notice was issued on February 24, 1986, which revised sections relating to revenue sharing.

The Environmental Protection Agency (EPA) was given a copy of the draft solicitation to review, and the agency provided comments to DOE. Further, EPA personnel served as advisors to DOE during evaluations; the EPA advisor provided comments on the environmental aspects of all proposals and an EPA representative served as a member of the evaluation team for proposals where the agency had expertise (those involving flue gas desulfurization and the *Limestone Injection Multistage Burner technology*).

After considering the evaluation criteria, program policy factors, and the National Environmental Policy Act (NEPA) strategy as stated in the solicitation, the Energy Department selected proposals from the following offerors, listed in alphabetical order, as best furthering the goals and objectives of the Program Opportunity Notice:

American Electric Power Service Corporation
Babcock & Wilcox
Coal Tech Corp.
Energy & Environmental Research Corporation
Energy International, Incorporated
General Electric Company
Ohio Ontario Clean Fuels, Incorporated
The M.W. Kellogg Company
Weirton Steel Corporation

In the event that a cooperative agreement could not be awarded to any of the selected proposers, the Department identified a second list of candidate proposers:

City of Tallahassee
Colorado - UTE Electric Association, Inc.
Combustion Engineering, Inc.
Consolidation Coal Company and Foster Wheeler Power Systems, Inc.
McDonnell Douglas Energy Systems, Inc.
Minnesota Department of Natural Resources
Southwestern Public Service Company
Tennessee Valley Authority (2 proposals)
TRW, Inc.
United Coal Company
Western Energy Company
Westinghouse Electric Corporation
Wisconsin Electric Power Company (subsequently withdrawn)

If, at the conclusion of negotiations with the originally selected proposers, agreements cannot be reached with any firm, the evaluation criteria and program policy factors will be applied to the second list to select additional project(s).

On August 21, 1986, a "Comprehensive Report to Congress On Proposals Received in Response to the Clean Coal Technology Program Opportunity Notice" was submitted to Congress. That report outlined the solicitation process implemented by DOE for receiving the first round of Clean Coal Technology proposals, summarized the proposals received, provided information on the technologies that were the focus of the program, and reviewed special issues and topics related to the solicitation.

Current Status -- On March 20, 1987, immediately following the expiration of the required 30-day Congressional review, the Energy Department signed the first two joint government-industry clean coal technology cooperative agreements. The agreements were signed with American Electric Power Service Corp. (AEP), of Columbus, OH, acting on behalf of the Ohio Power Company, and with Coal Tech Corp. of Merion, PA. The two companies were the first of the nine firms selected in Round #1 to complete negotiations with the government.

Under the agreements, AEP will design and install an advanced "pressurized fluidized bed combustor" at the currently idle Tidd Facility on the Ohio River near Brilliant, OH. The pressurized fluidized bed technology is intended to remove 90 to 95 percent of sulfur dioxide from coal combustion gases before they leave the boiler. Nitrogen emissions are also reduced due to the technology's lower combustion temperatures compared to a conventional boiler. In commercial application, pressurized fluidized bed combustion/combined cycle technology could increase a conventional power plant's electric output by 40-50 percent.

The AEP project is expected to cost $167.5 million with the government's share capped at $60.2 million. Construction will begin by the end of this year with the three year operating phase starting in early 1990.

Coal Tech will replace a standard oil burner at the Keeler Boiler Manufacturing Company plant in Williamsport, PA, with a newly-designed advanced "slag-rejecting" coal combustor. The innovative combustor would be attached to the outside of the boiler and would remove ash and other impurities before they can build up as energy-robbing deposits. Sulfur would be captured inside the combustor, and nitrogen oxides would also be reduced. Total cost of Coal Tech's 25-month project is estimated at $785,984 of which 50 percent will be paid by the Energy Department.

The remaining seven proposals are at various stages in the negotiating process. While it is difficult to predict an actual completion date for the negotiations without compromising the government's negotiating position, our expectation is to have all of the agreements finished by the end of June.

The President's Expanded Clean Coal Initiative

On March 18, 1987, President Reagan announced several steps to ensure a continued close working relationship between the U.S. and Canada in determining and addressing the environmental effects of acid rain. The centerpiece of the President's initiative was his directive to seek $2.5 billion over a five year period to fund innovative clean coal technology demonstrations. The commitment represents the full amount of the government's share of funding recommended by the Special Envoys on Acid Rain, Drew Lewis of the United States and William Davis of Canada, in their January 1986 report to the President and Prime Minister Mulroney.

The President's announcement fulfills a commitment made last year to Prime Minister Mulroney. But in addition to addressing a pressing national concern of many Canadians, the President's initiative will also return significant benefits to this nation -- not only in terms of cleaner air and the increased use of our most abundant energy resource, but also in the form of enhanced technological leadership and the potential for improved international trade.

The President's pledge is to seek funding in the amount of $500 million a year for five years. The funding would be used to structure multiple rounds of competition. The competitive procurements would be sequenced in such a way as to encourage new, potentially improved clean coal concepts to continue their development progress and to be considered as candidate technologies once they reach sufficient maturity.

Projects will be evaluated, as fully as practicable, using the criteria recommended by tne Special Envoys and taking into account advice from an advisory panel to be appointed by the Secretary. For example, special consideration will be given to those technologies that can be applied to existing facilities currently dependent on the use of high sulfur coal. Projects will be judged on their potential for economically reducing emission rates for SO_2 and NOx. Weighting factors may be used to reflect emission reductions that could help lower pollutants that affect Canadian ecosystems.

As an indication of the Administration's commitment to move forward aggressively with this program, we will request that the full amount of funding directed by the President -- $2.5 billion -- be made available to the Department in appropriations for FY 1988 and advance appropriations for FY 1989, 1990, 1991 and 1992.

In this way, private industry, which will be expected to contribute matching funds at least equivalent to the government's share, will be assured that funds will be available to carry out the full extent of the 5-year, $500 million per year program.

In fiscal year 1988, we propose that the $500 million request be made up of $350 million to be drawn from the remaining funds in the Clean Coal Technology Reserve Fund and the approximately $150 million previously appropriated and scheduled to be available in fiscal 1988 for the first round of Clean Coal Technology projects.

We propose to include a portion of the first-round funds in the President's initiative because, while we recognize that Congress established the initial program under much broader guidelines than the President proposes to use in subsequent rounds, several first-round projects meet the more focused criteria of the Special Envoys. Five of the projects employ technologies that, either as demonstrations or in commercial application, fit the Lewis-Davis criteria -- that is, they can be used to improve the environmental performance of high-sulfur coal burning facilities in a cost-effective manner.

Therefore, we believe credit should be applied in FY 1988 to the anticipated federal share of the relevant projects. That amount is approximately $150 million -- the same funding level proposed as the Round #1 funding increment scheduled to be available in FY 1988.

Should Congress approve the request for advance appropriations of $500 million for fiscal 1989, we plan to combine the $350 million in new FY 1988 funding with the $500 million from FY 1989 to issue a competitive solicitation of $850 million. Our target date for releasing the solicitation would be by the end of this calendar year, pending Congressional approval.

Subsequent solicitations would then follow between 1988 and 1992 -- each one drawing on the experience of the past competition, combined with guidance from the advisory panel and direction from Congress. The funding profile for both the Round #1 Clean Coal Technology Program and the President's expanded program can be depicted as follows:

INNOVATIVE CLEAN COAL TECHNOLOGY MULTI-YEAR FUNDING PROFILE

FISCAL YEAR	1986	1987	1988	1989	1990	1991	1992
CLEAN COAL TECHNOLOGY PROGRAM - 1ST ROUND	$100	$150	$150				
REMAINING CLEAN COAL TECHNOLOGY RESERVE FUND			350				
ADDITIONAL APPROPRO-PRIATIONS				500	500	500	500
	$100	$150	$500	$500	$500	$500	$500

PRESIDENT's PROGRAM

FY 1988 PROPOSED SOLICITATION

The "Retrofit, Repowering and Modernization" Informational Solicitation

Much of the basis for proceeding with the President's expanded program came from the substantial industry response to the Department's recent request for "Statements of Interest" and "Informational Proposals" for retrofit, repowering and modernization technologies. This exercise provided ample evidence that industry was prepared to participate in a joint government-industry clean coal technology effort oriented toward existing coal-burning facilities.

Congress in Pub. L. No. 99-500 (the "Department of the Interior and Related Agencies Appropriations Act for FY 1987," which was signed into law on October 18, 1986) required that the Department solicit expressions of interest from the industry for these types of clean coal concepts. The Department complied with the Congressional directive by issuing a Program Announcement in the Nov. 12, 1986, Federal Register (51 FR 41060-6) and a notice in the Nov. 17, 1986, Commerce Business Daily.

A total of 139 responses were received. Additionally, some letters were received regarding various aspects of the solicitation; these were not counted as submittals. The table on the next page is taken from the Department's "Summary Report to Congress on Emerging Clean Coal Technologies Capable of Retrofitting, Repowering, or Modernizing Existing Facilities" which was forwarded to the Congress on March 6, 1987. A more detailed analysis is currently being prepared and will be provided to Congress by May 12, 1987. The table provides a summary of the submittals categorized by technology, and indicates the total dollar value of all of the projects described for each category.

We should emphasize that the "statements of interest" are not firm project proposals. DOE has not evaluated them on their merits or in relation to prospective program selection criteria. Also, in examining the total value, note that not all of the submittals provided estimates of project costs.

DISTRIBUTION OF SUBMITTALS RECEIVED BY TECHNOLOGY
(in descending order of number received)

Technology	Number Received	Total Value[2]	Percentage of Grand Total Value
Flue Gas Cleanup	49	$ 706,028,000[1]	13.7 %
Coal Preparation	25	409,003,000[1]	7.9
Fluidized Bed Combustion	15	1,072,516,000	20.8
Advanced Combustors	13	230,535,000[1]	4.5
Alternative Fuels	13	218,141,000	4.2
Surface Coal Gasification	11	1,903,200,000	36.9
Heat Engines	3	62,179,000	1.2
Industrial Processes	3	57,500,000	1.1
Other Repowering[3]	3	23,000,000[1]	0.4
Coal Liquefaction	2	71,000,000	1.4
Fuel Cells	1	6,000,000	0.1
Magnetohydrodynamics	1	400,000,000	7.8
TOTALS:	139	$ 5,159,102,000*	100.0 %

Notes:

(1) Five of the submittals did not provide project cost information, as follows: two in the Flue Gas Cleanup category, and one each in the Coal Preparation, Advanced Combustors, and Repowering categories.

(2) Values reflect total project costs as provided by the submitters, including both governmental and private sector cost-shares. The data have not been evaluated and are reported as received.

(3) The Other Repowering category includes those submittals of repowering projects where the specific technologies that would be used have not been specified.

The President's Program -- Expanding an Ongoing Nationwide Effort

The U.S. has made extraordinary progress in the development of a slate of clean coal technologies both in federally sponsored efforts and in the efforts financed by the private sector and by State governments.

Between 1980 and 1985, approximately $1.6 billion of a total of $3.2 billion for coal technology development was spent by both public and private research programs on advanced coal technologies with inherent reduced emissions. Now, with a major goal to improve the options available for reducing emissions from coal-fired powerplants, the Nation is on an expanded course to develop and demonstrate a broad slate of technologies which used singularly or in combination will result in more efficient and effective emission controls.

A recent DOE report entitled "America's Clean Coal Commitment" (Feb. 1987), prepared prior to the President's March 18 announcement, documented an expected expenditure of more than $6 billion between 1986 and 1992 to develop and demonstrate new clean coal technologies. Approximately $4.9 billion of the $6 billion would be made up of specific clean coal projects, i.e., projects that will operate at a sufficiently large scale to demonstrate the viability of the innovative technology. The remainder of the funding is comprised of privately and publicly financed research and development efforts focused specifically on the cleaner use of U.S. coal.

Within the $6 billion total, the non-federal contribution would amount to an expected $3.9 billion, of which $370 million will come from the Electric Power Research Institute (EPRI), the research arm of the utility industry. State government funding will also make a significant contribution to this total. While State-funded projects are underway in several States -- for example, in West Virginia, Pennsylvania, Virginia, Kentucky and several others -- Illinois and Ohio in particular have taken an aggressive role in financing large-scale development and demonstration efforts. The expected contribution from these two States alone amounts to more than $300 million.

The President's March 18 initiative, with its associated cost sharing from industry, means that new projects costing in excess of $4 billion will be added to these nationwide totals.

Benefits of Clean Coal Technology

Clean coal technologies offer the potential to:

1. Control large amounts of the SO_2 and NO_x released from coal-fired power plants including those in the environmentally-sensitive Northeast.
2. Return economic benefits to American consumers by permitting clean energy to be generated without financially constraining capital investments for environmental controls.
3. Retrofit and repower aging coal-fired power plants, particularly those in the East.
4. Use high-sulfur coals, thereby avoiding the social disruptions associated with massive coal switching, and
5. Reduce acid rain related emissions -- especially from aging power plants in the Nation's northeast quadrant.

Although commercial deployment is already beginning for some technologies like atmospheric fluidized-bed combustion and integrated gasification/combined cycle, how rapidly these innovative clean coal technologies will be deployed depends upon many factors. Two of the most important are (1) technology risk -- concern about the performance and reliability of the technologies; and (2) market demand -- influenced, for example, by the growth in demand for electricity and the future regulatory environment.

The federal and private funding to be expended between 1986 and 1992 on clean coal technologies directly addresses the technological risk. By developing and demonstrating new technologies at commercial- or near-commercial scale, industry acceptance will likely be accelerated. Market demand, however, will depend on a number of complex factors that vary significantly from region to region, and even from site to site.

Many of the emerging clean coal technologies are designed to generate electric power cleanly and more efficiently than is possible today. There is little doubt that electricity is vital to the future of the U.S. The Nation's health depends on continued economic growth, and if adequate electrical generating capacity is not available, we run the risk of undermining this growth.

Coal can provide much of the resource base to ensure continued economic progress. But utilities have been understandably reluctant in recent years to invest in large, conventional baseload power plants -- either coal or nuclear fueled. The uncertainty over anticipated growth in power demand, coupled with uncertainty regarding future environmental regulations, has stalled many construction projects.

In those regions of the country where the demand for electricity is expected to increase, utility owners are now, or will soon be, faced with the need to install new generating capacity. The need for additional electricity will likely intensify as we approach the mid-1990s when the majority of existing coal-fired power plants will turn 25 or more years old. At that point, utilities must consider various options if they wish to continue producing power from these aging facilities.

These events -- today's slowdown in construction and the anticipated future demand for new facilities, either to meet new demand or as replacements for older units -- have combined to create a "window" for new clean coal technologies that will open even wider in the 1990s.

For those utilities that face the dual problem of aging baseload power plants and the need for additional electricity, the repowering technologies -- integrated gasification combined cycle, pressurized and atmospheric fluidized bed combustion -- are especially attractive options. They can be installed relatively quickly (compared to construction of a new baseload plant)

and in a modular fashion. This would allow a utility to carry out its construction program in small, less costly increments to meet projected demand growth. And it will help ensure that consumers are not confronted with another cycle of "rate shock" caused by bringing large, new baseload plants into service.

With these repowering technologies, utilities can use much of the balance-of-plant equipment in the aging plant, increase its power output by as much as 150 percent, extend its useful lifetime, and greatly reduce SO_2 and NO_x emissions. These technologies are relatively insensitive to coal type and can be installed on most existing coal-fired power plants.

Those utilities confronted with possible requirements for further emission controls will also benefit from the emergence of an expanded slate of retrofit clean coal technologies.

Today, if more stringent environmental controls were to be imposed on existing facilities, utilities would be limited to three options -- flue gas scrubbing which is very costly, switching to low-sulfur coals which could create severe socio-economic impacts, and coal cleaning which is limited in reducing SO_2 emissions.

The expanding slate of innovative clean coal retrofit technologies should provide substantially improved options that are preferable to the choices available today. These new technologies offer the flexibility to be used individually or in combination with one another to achieve emissions control of both SO_2 and NO_x. They provide cost-effective options for the diverse inventory of coal-fired power plants, including those that are limited in available space. They permit the full range of coals to be used in small, moderate or large size boilers. And they produce waste products that are more easily and safely disposable or, in some cases, saleable.

Finally, the availability of demonstrated clean coal hardware can give America a substantial marketing advantage overseas. Worldwide consumption of coal is expected to increase by more than one-third between now and the end of the century, primarily because of increasing coal-fired electric generating capacity. As in the U.S., growth in the demand for coal by many industrialized and developing nations will likely be accompanied by increasing concerns over environmental impacts. The improved coal technologies being developed and demonstrated in the U.S. will be able to meet the environmental objectives of the international community.

Moreover, because America's clean coal projects will provide commercial-scale performance data using U.S. coals, the potential exists to link U.S. coal exports and U.S. technology in a way that enhances America's competitiveness in both. The "packaging" of U.S. coal and the technology to use it cleanly and efficiently can become an important byproduct of the Nation's clean coal technology program.

This completes my formal statement. I will be pleased to answer any questions the Committee may have.

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Statement by J. Allen Wampler of May 18, 1987

TESTIMONY BEFORE THE
COMMITTEE ON ENERGY AND NATURAL RESOURCES
U.S. SENATE

CLEAN COAL Technology

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Testimony of

J. ALLEN WAMPLER
Assistant Secretary for Fossil Energy
U.S. Department of Energy
to the
Committee on Energy and Natural Resources
U.S. SENATE

May 18, 1987

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Mr. Chairman and Members of the Committee:

I am pleased to have this opportunity to describe the Administration's efforts to implement a national Clean Coal Technology demonstration program in comparison with initiatives proposed by Members of Congress.

We have a unique opportunity in front of us, Mr. Chairman. Research and development over the last decade has given us the tools to resolve the conflict between coal use and environmental protection. Properly developed, demonstrated and deployed, emerging clean coal technologies offer not only improved environmental performance and better economics but also, in many cases, enhanced efficiencies and the potential to boost both the lifetime and power output of today's older coal-burning facilities.

President Reagan's March 18, 1987, commitment to expand the nation's Clean Coal Technology program is an important step toward improving America's energy security through the use of our most abundant fossil fuel resource -- coal -- in an environmentally safe, cost-effective manner. "The Clean Coal Technology Deployment Act" (S.879) introduced on March 30, 1987, and the bill's counterpart in the House of Representatives, H.R.1995, are similar attempts to advance this nation along the same course.

The Administration agrees with the sponsors of these bills on the national significance of the innovative clean coal technology program, both to environmental quality and energy security. The Administration is already implementing many of the efforts outlined in these bills administratively and is examining what additional administrative and regulatory actions can be taken to further advance the demonstration and deployment of clean coal technologies.

The President is committed to an aggressive, leadership role in moving innovative clean coal technologies over the commercial threshold. This has been evidenced by the Administration's request for the Congress to provide the full amount of the $2.5 billion in federal funding in FY 1988 appropriations and advance appropriations for FY 1989, 1990, 1991 and 1992.

Although Congress will continue to exercise its oversight and budgeting authorities in shaping the future course of the clean coal program, appropriating the full amount of funding will give industrial sponsors confidence that the federal share of funds will be available when they are asked to commit their share of project costs.

The Benefits of Clean Coal Technology

The President's March 18 initiative addresses the serious issue of acid rain, a major concern of both the U.S. and its northern neighbor Canada. The innovative clean coal technology program, however, will do much more than simply address a pressing international environmental problem. The commercially-ready technologies that emerge from this effort will:

- Greatly enhance U.S. technological leadership and international competitiveness;
- Benefit both Eastern and Western states by making available more cost-effective, fuel-flexible power systems capable of using the full spectrum of U.S. coals;
- Improve international trade by providing a more attractive, marketable "package" of both coal and the advanced technology to use it and by reducing the cost of energy-intensive U.S. goods;

- o Help ensure that the U.S. enters the 21st Century with a broad array of sophisticated, cleaner, and more economical coal-based energy technologies, rather than being limited to the more costly, less effective environmental control options available today; and
- o Enhance the long-term energy security of the U.S.

For these reasons, implementing an expanded clean coal technology program is just as important for safeguarding this nation's future energy security and economic vitality as it is for safeguarding our environment.

A Comparison of the President's March 18 Initiative and S.879

On March 18, 1987, the President proposed a 5-year, $2.5 billion (federal share), cost-shared effort to demonstrate innovative clean coal technologies at commercial or near-commercial scale. The program would be fashioned, as fully as practicable, from the recommendations contained in the 1986 Report of the Special Envoys on Acid Rain. In implementing the program, the Secretary of Energy will receive advice from an Innovative Control Technology Advisory Panel currently being established as part of the President's directives.

The President also directed the Vice President's Task Force on Regulatory Relief to undertake a 6-month review of federal and state economic and regulatory programs to identify opportunities for addressing environmental concerns under existing laws. The Task Force will examine incentives and disincentives to the deployment of new emission control technologies and recommend changes to existing regulations that now inhibit that deployment.

S.879, by comparison, proposes a $3.5 billion, 10-year financial assistance program coupled with several regulatory incentives designed to enhance the commercial deployment of new coal technologies, particularly in regulated markets such as the utility market.

There is a substantial degree of common ground between the President's March 18 Clean Coal Technology initiative and the proposed program offered in S.879. Both recognize that an effective clean coal effort should encompass:

- o a cost-sharing effort to demonstrate the commercial potential of innovative, emerging technologies, particularly in markets where the regulatory structure increases the adversity to risk-taking, and
- o a deployment strategy in which incentives are fashioned from the removal of regulatory barriers rather than a potentially premature, very costly and economically disruptive program of added environmental controls.

The major distinctions between the President's March 18th initiative and S.879 are:

- o S.879 provides $3.5 billion in increments of $350 million annually over a minimum of 10 years and appropriations would continue indefinitely until all funds had been provided. The Administration's program establishes a set period, 1988 through 1992, for the appropriation of $2.5 billion, targeting its resources for maximum benefit in time for key utility decisionmaking in the mid-1990s;
- o Financial assistance in S.879 would be in the form of construction and operation grants. The Administration's program provides for cost-shared cooperative agreements which provides much stronger assurances of recipient performance in line with program objectives;
- o To promote the deployment of new clean coal technologies, S.879 proposes several regulatory actions under the jurisdiction of the Federal Energy Regulatory Commission as well as several provisions that pertain to state regulatory proceedings; the President, in his March 18 announcement, directed that similar regulatory measures be reviewed by a Vice Presidential task force.

Other similarities and distinctions are that:

- o Both S.879 and the President's program would cost-share with industry the demonstration of innovative pollution control technologies applicable to existing, coal burning facilities, although such demonstrations could be conducted on either new or existing plants;

- o Both would base the selection of projects on evaluation criteria similar to those proposed by the Special Envoys on Acid Rain although only the President's program explicity incorporates the Envoys' recommendations;

- o Both S.879 and the Administration would encourage States to be actively involved in clean coal technology efforts;

- o S.879 would support technologies capable of reducing any type of pollution from coal burning facilities in any location while the Administration, in adhering as closely as possible to the recommendations of the Special Envoys on Acid Rain, would emphasize (but not limit itself to) a reduction of sulfur dioxide and nitrogen oxide pollution;

- o Many of the factors considered in evaluating and selecting projects, i.e., projected commercial efficiency and effectiveness, market penetration potential, applicability of technology to high sulfur coal burners, etc., are common to both proposals;

- o Both proposals limit federal financing to 50 percent during any phase of the project with limits on government funding of cost overruns, although the Administration would propose to recover the federal contribution by negotiating recoupment provisions;

Rationale for the President's $2.5 Billion, 5-Year Demonstration Program

The Administration believes that the financial assistance limits of $2.5 billion over a five-year period, as pledged by the President on March 18, are preferable to the proposed $3.5 billion, 10-year program in S.879. We believe that providing $500 million per year for the federal share of clean coal projects is necessary to concentrate the demonstration of new technologies in a manner that meets a "window" of opportunity that will open for these systems in the mid 1990s.

By the middle of the next decade, utilities will be increasingly confronted by the dual problem of an aging boiler population and the need for increasing their power generating capacity. More than half of all coal-fired boilers will be 25 years old or older by the mid-1990s. In the eastern U.S. alone, there are 410 units of coal-fired utility capacity of 100 megawatts or larger that were placed in service from 1955 to 1975 and which

do not have post-combustion SO2 control devices. Utility decisionmakers will soon have to make some fundamental choices about many of these units -- including whether to retire or refurbish them.

At the same time, demand for electricity will be growing and today's reserve margins declining. Estimates for increasing power demand vary typically between two and three percent, but even with the more conservative, two-percent growth rate, the U.S. could require as much as 100,000 megawatts of additional capacity by the end of the next decade.

If technologies such as combined cycle gasification or fluidized bed combustion (either atmospheric or pressurized) are successfully demonstrated at commercial scale between now and the early 1990s, utilities may be able to resolve the two-fold problem of modernizing aging plants and increasing power demand with a single answer.

Repowering a conventional steam-cycle plant with pressurized fluidized bed combustion, for example, can increase the plant's power output by 30 to 50 percent. Installing gasification-combined cycle as a replacement for the conventional boiler can boost output by as much as 150 percent. This increase in power output from an existing facility could defer the need to build a new increment of baseload facilities. The repowered plant would also be capable of reducing sulfur emissions by as much as 99 percent at a cost of as little as $80 to $250 per ton of SO_2 removed (compared to the addition of a scrubber which could cost $500 per ton or more). Nitrogen oxide emissions would also be lowered to well below present federal standards for new units.

If utilities are to have the performance data available in time to take advantage of the clean coal technology repowering option, demonstration facilities must be constructed and in operation by the early 1990s.

These inherent economic and performance advantages of clean coal repowering options will be beneficial both to the eastern and western regions of the U.S. -- particularly in areas where power demand is expected to continue to rise. In carrying out the President's March 18th initiative, we believe it is important not to exclude consideration of promising clean coal options that may be demonstrated outside the eastern region of the U.S. As long as such projects demonstrate a relevant technology, i.e., a technology applicable to existing, high-sulfur coal burning plants, they should be eligible for clean coal financial assistance. In addition, many of the retrofit technologies -- i.e., the limestone injection multistage burner and several advanced combustor concepts -- while not able to attain the NSPS 90 percent sulfur reduction standards for new, high-sulfur coal burning plants, may be able to attain the 70 percent removal standards for plants using low-sulfur subbituminous coal or lignite.

Therefore, we believe that a clean coal technology demonstration program, adhering to the Special Envoys' recommendations, will have major benefits for the nation as a whole, both East and West, and for both the taxpayer and the ratepayer.

Another factor regarding influencing the 5-year timeframe of the President's program is that the final report of the National Acid Precipitation Assessment Program is scheduled to be available in 1990. By that time, policymakers should have much better information to decide if additional environmental controls are warranted. If the evidence shows the need for an accelerated reduction in sulfur and nitrogen pollutants from coal plants from existing sources, especially pre-NSPS plants, it is important to have an expanded menu of low cost per ton retrofit control and repowering options available.

Therefore, the early to mid-1990s is a critical time for decisionmaking, both in terms of continuing to provide reliable electrical service and in meeting national environmental objectives. The Administration believes it is important, therefore, to concentrate the clean coal demonstration effort over the next 5 years rather than extending it over 10 years as called for in S.879.

S.879 currently envisions grants in aid for clean coal projects. The Administration adopted the cost-shared "cooperative agreement" as the procurement vehicle for the initial round of Clean Coal projects, and such a contractual instrument is one of those being considered for future Clean Coal projects as well. A cooperative agreement often requires a considerable degree of negotiation between the government and the proposer. Such negotiations are necessary to ensure that federal funds are expended only on allowable project costs and that patent rights, licensing arrangements and other project details are properly executed in a manner that is in the best interests of both the government and the project sponsors.

The Department also believes a repayment provision for up to the Government's share of the financial assistance remains appropriate. Repayment, in the event the demonstration project or technology becomes a commercial success, provides a fair return to the taxpayer who has shared the risks of the original project.

We recognize, however, that repayment provisions must be sufficiently flexible so as not to dampen the interest of prospective participants in the program. We also recognize that repayment provisions cannot be uniformly administered for different market sectors and must consider, for example, the regulated business environment of electric utilities.

Conclusion

While there are many positive parallel approaches between S.879 and the President's decision on March 18, the Administration believes that its program implementing the recommendations of the Special Envoys on Acid Rain, has the greater potential to achieve the important goals that the two programs share. The March 18 decision also fulfills assurances given by our Government to the Government of Canada. The Administration feels strongly that any actions taken to expand and advance the nation's Clean Coal Technology demonstration program should be fully supportive of and consistent with those assurances.

The President's innovative clean coal technology initiative offers the means for the U.S. to achieve the full potential of its most abundant domestic resource without endangering its environment -- a goal shared by S.879. In accord with the President's initiative, the Administration is prepared to carry out an innovative clean coal technology program that:

1) is consistent with the Special Envoys Report on Acid Rain;

2) provides necessary financial assistance in the form of cost-sharing with industry for innovative projects that are in the national interest while ensuring against undue subsidies;

3) is conducted within a timeframe consistent with expected utility decisionmaking and/or the revision of national policy regarding environmental emission standards; and

4) offers regulatory incentives that allows new clean coal technologies to be considered in utility and other market-driven decisionmaking.

This completes my formal statement, Mr. Chairman.

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Statement by J. Allen Wampler of May 21, 1987

TESTIMONY BEFORE THE
SUBCOMMITTEE ON ENERGY AND POWER
COMMITTEE ON ENERGY AND COMMERCE
U.S. HOUSE OF REPRESENTATIVES

CLEAN COAL Technology

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Testimony of
J. ALLEN WAMPLER
Assistant Secretary for Fossil Energy
U.S. DEPARTMENT OF ENERGY
to the
Subcommittee on Energy and Power
COMMITTEE ON ENERGY AND COMMERCE
U.S. House of Representatives

May 21, 1987

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- Summary -

"Clean coal technology" characterizes a new generation of highly efficient, environmentally-clean, coal-based systems that will permit this nation to increase its use of coal while continuing the excellent progress made in the last decade to improve the quality of our air.

The Department of Energy, under guidelines established by Pub. L. No. 99-190, has selected nine candidate projects in its initial round of clean coal competition. Negotiations have been completed with four project sponsors, and the Department expects to complete negotiations with all remaining proposers by the end of June.

On March 18, 1987, the President committed to expand the ongoing Clean Coal Technology effort using the 1986 Report of the Special Envoys on Acid Rain as the basis for a $2.5 billion, 5-year initiative. In addition to addressing a pressing national concern of Canada, the President's initiative will return significant benefits to this nation in terms of cleaner air, the increased use of coal, and enhanced technological leadership and international competitiveness. The President's program would benefit both eastern and western states by making available more cost-effective, fuel flexible power systems, and it would enhance the long-term energy security of the U.S.

As an indication of the President's commitment to move aggressively, the Administration has requested that the full amount of funding -- $2.5 billion -- be made available to the Department in appropriations for FY 1988 and advance appropriations for FY 1989, 1990, 1991, 1992. This will give private industry confidence that cost-sharing funds will be available to carry out the full program.

In his March 18 announcement, the President recognized that an effective clean coal deployment strategy is one that focuses on the removal of regulatory barriers rather than one that enacts a potentially premature, very costly and economically disruptive program of added environmental controls. The President directed the Vice President's Task Force on Regulatory Relief to undertake a 6-month review of federal and state economic and regulatory programs to identify opportunities for addressing environmental concerns under existing laws. The task force will examine incentives and disincentives to the deployment of new emissions control technologies and other cost effective, innovative emission reduction measures now inhibited by federal, state and local regulations.

Testimony of
J. ALLEN WAMPLER
Assistant Secretary for Fossil Energy
U.S. DEPARTMENT OF ENERGY
to the
Subcommittee on Energy and Power
COMMITTEE ON ENERGY AND COMMERCE
U.S. House of Representatives

May 21, 1987

Mr. Chairman and Members of the Subcommittee:

The term "clean coal technology" has become an increasingly important part of our energy vocabulary. It has come to signify a new generation of highly efficient, environmentally clean coal-based technologies -- concepts that will permit this nation to increase its use of coal while continuing the excellent progress made in the last decade to improve the quality of our air.

I am pleased to have the opportunity today to describe the Administration's efforts to assist industry in moving these technologies nearer to the threshold of commercial acceptance and deployment. My testimony this morning will focus on (1) the ongoing Department of Energy Clean Coal Technology program -- the so-called "Clean Coal Round #1" -- and (2) the President's March 18, 1987, initiative to expand the Clean Coal Technology program with the commitment of $2.5 billion of government funds over the next five years.

In preparing this testimony, I have included within the text answers to the six questions asked in your April 29, 1987, letter of invitation. These specific answers are indicated by including the number of the relevant question in brackets, example: [Question #].

Clean Coal Technology Round #1

On December 19, 1985, Pub. L. No. 99-190, "An Act Making Appropriations for the Department of the Interior and Related Agencies for the Fiscal Year Ending September 30, 1986, and for Other Purposes," was signed into law. This Act, among other things, provided funds to conduct cost-shared clean coal technology projects for the construction and operation of facilities that would demonstrate the feasibility of future commercial applications of such technology.

The Act made available $397.6 million for this program, as follows: $99.4 million in fiscal year 1986, $149.1 million in fiscal year 1987, and $149.1 million in fiscal year 1988.

Of these monies, $1.2 million was transferred in FY 1986 and $1.8 million in FY 1987 to the Small Business and Innovative Research Program (SBIR) as required by the Small Business Innovative Development Act of 1982 (Pub. L. No. 97-219) and is unavailable to the Clean Coal Technology Program. This transfer left available funding of $98.2 million for FY 1986 and $147.3 million for FY 1987. In addition, $3.7 million will be transferred to the SBIR program in FY 1988. Also, $25 million has been held in reserve to cover the cost of project overruns in the event that the Government agrees to share such costs. Finally, $5.5 million has been set aside for contracting, travel, and ancillary costs incurred by the DOE in implementing the Clean Coal Technology Program. The remaining $362.2 million is currently available for award to eligible clean coal projects.

By Congressional direction, the first round of competition for federal cost-sharing was open to all market applications of clean coal technology that apply to any segment of the United States coal resource base. The competition encompassed both "new" and "retrofit/repowering" applications.

On July 25, 1986, after considering evaluation criteria, program policy factors, and the National Environmental Policy Act (NEPA) strategy, as stated in the February 17, 1986 solicitation, the Energy Department announced the selection of the following firms for negotiation of cooperative agreements:

American Electric Power Service Corp.
Babcock & Wilcox Co.
Coal Tech Corp.
Energy & Environmental Research Corporation
Energy International, Incorporated
General Electric Company
Ohio Ontario Clean Fuels, Incorporated
The M.W. Kellogg Company
Weirton Steel Corporation

Current Status -- The Energy Department has currently completed negotiations with four project sponsors: American Electric Power Service Corp., Coal Tech Corp., Babcock & Wilcox Co., and Energy and Environmental Research Corp. On March 20, 1987, immediately following the expiration of the required 30-day Congressional review, the Energy Department signed the first two joint government-industry clean coal technology cooperative agreements with American Electric Power, on behalf of the Ohio Power Company, and with Coal Tech Corp.

Under the agreements, AEP will design and install an advanced "pressurized fluidized bed combustor" at the currently idle Tidd Facility on the Ohio River near Brilliant, OH. The pressurized fluidized bed technology is expected to remove 90 to 95 percent of sulfur dioxide from coal combustion gases before they leave the boiler. Nitrogen emissions also will be reduced due to the technology's lower combustion temperatures compared to a conventional boiler. In commercial application, pressurized fluidized bed combustion/ combined cycle technology could increase a conventional power plant's electric output by 30-50 percent. The AEP project is expected to cost $167.5 million with the government's share capped at $60.2 million. Construction will begin by the end of this year with the three year operating phase starting in early 1990.

Coal Tech will replace a standard oil burner at the Keeler Boiler Manufacturing Company plant in Williamsport, PA, with a newly-designed advanced "slag-rejecting" coal combustor. The innovative combustor would be attached to the outside of the boiler and would remove ash and other impurities before they can build up as energy-robbing deposits. Sulfur would be captured inside the combustor, and nitrogen oxides would also be reduced. Total cost of Coal Tech's 25-month project is estimated at $785,984 of which 50 percent will be paid by the Energy Department.

On May 11, 1987, the department transmitted to Congress a report on the third project, the Babcock & Wilcox proposal to extend tests of the Limestone Injection MultiStage Burner technology and to conduct a side-by-side comparison with the Coolside in-duct sorbent injection technique. Following the 30-day review period, the department will be prepared to sign this agreement.

Energy and Environmental Research, which proposes a natural gas reburning/sorbent injection project, has signed a cooperative agreement with the Energy Department. The Department is now preparing the required report to Congress on this project.

The remaining proposals are at various stages in the negotiating process. While it is difficult to predict an actual completion date for the negotiations without compromising the government's negotiating position, our expectation is to have all of the agreements finished by the end of June.

Relationship of Round #1 to the Lewis-Davis Report [Question 2a]

Congress provided the legislative guidance for the initial round of Clean Coal Technology projects in Pub. L. 99-190, signed into law on December 19, 1985. The legislative history of this law included the following statements outlining criteria the Department was directed to follow:

> "... that the solicitation be open to all markets utilizing the entire coal resource base."
>
> "[it is] imperative to demonstrate technologies that use coal cleanly and efficiently, so that needed generating capacity will be available on time, and with minimal environmental impact."
>
> "Technology that can be retrofitted to existing applications of coal will also provide pollution relief. Clean uses of coal in other applications will also reduce dependence on foreign oil as well as increase coal markets."
>
> "... other [non-utility] applications such as industrial, including steel and iron ore process, and transportation uses are also of interest."

Given this guidance, it is apparent that environmental considerations were of primary importance in evaluating proposals under Clean Coal Round #1 [Question 3c]. To qualify for comprehensive evaluation, a proposer had to certify that the proposed project was capable of complying with the requirements of the Clean Air Act.

For those qualifying proposals that underwent comprehensive evaluation, there were two explicit criteria dealing with environmental health, safety and socioeconomic factors. The first dealt with the approach employed at the demonstration plant to address these factors. The second dealt with the potential of the commercialized version of the technology to meet and exceed relevant environmental, health and safety statutes.

Also, there was an evaluation criteria dealing with the economic competitiveness of the technology, including the effect of environmental regulations on the marketability of the technology. In addition, the selection official balanced the goals of expanding the use of coal and of minimizing environmental impact. To accomplish this balancing, he had available a "pre-selection programmatic environmental impact analysis" and a "pre-selection project specific environmental review." This information enabled him to ensure that environmental consequences were considered in the selection process.

As will be noted later in my testimony, reductions of both SO2 and nitrogen oxides (NOx) will play a more prominant role in the evaluation criteria being developed for subsequent rounds of Clean Coal competitiors since these rounds will be patterned more closely to the Special Envoys Report on Acid Rain [Question 3d].

The Special Envoys' report, prepared by Drew Lewis of the U.S. and William Davis of Canada, was submitted to their respective governments on January 8, 1986, subsequent to the Congressional directives for the initial Clean Coal competition. On March 19, 1986, the President fully endorsed the recommendations called for in the Envoys report.

The Special Envoys identified their most important goal for demonstration facilities to be to "expand the menu of control options."

As the Envoys said:

> "If the menu of control options were expanded, and if the new options were significantly cheaper yet highly efficient, it would be easier to formulate an acid rain control plan that would have broader public appeal."

Implicitly in this goal, a major objective was to demonstrate less expensive technologies that could be used to control suspected acid rain precursor pollutants. To achieve this goal, the Special Envoys recommended that special consideration be given to (emphasis added by DOE):

- o projects which could get the greatest reductions of SO2 and NOx;
- o among projects with similar potential, funding should go to those that reduce emissions at the cheapest cost per ton;
- o projects that demonstrate retrofit technologies applicable to the largest number of existing sources, especially existing sources, that, because of their size and location, contribute to transboundary air pollution;
- o technologies that can be applied to facilities currently dependent on the use of high-sulfur coal.

Although the Clean Coal Technology Round #1 projects had other goals in addition to the objective of providing technologies to reduce acid rain, many of the projects had much in common with the Special Envoys' objectives. Most importantly, the common goals centered on the expansion of the slate of economically competitive technologies which can control SO2 and NOx.

The table on the following page displays the degree to which the nine selected projects were judged to meet the criteria set forth by the Special Envoys. Since each of the selected technologies represents a fundamental departure from current commercial control technology approaches, they all can be said to "expand the menu of control options."

In the table below, the "Y" signifies that the Clean Coal project conforms to the individual Special Envoys' criterion; the "N" indicates that it does not.

		RECOMMENDATION 1			RECOMMENDATION 2	RECOMMENDATION 3	RECOMMENDATION 4
			EMISSION REDUCTION				
OFFEROR NAME:	ABBREVIATED TITLE	APPLICABLE TO UTILITIES	DEMO	COMMERCIAL	ECONOMIC IMPROVEMENTS	APPLICABLE TO RETROFIT	USE HIGH SULFUR COAL
American Electric Power Serv.	TIDD PFBC Demo Plant	Y	Y	Y	Y	Y	Y
The Babcock & Wilcox Company	LIMB Demo Project Extension	Y	Y	Y	Y	Y	Y
Coal Tech Corporation	Advanced Cyclone Combustor Demo	Y	N	Y	Y	Y	Y
Energy & Environmental Research	Gas Reburning/Sorbent Injection	Y	Y	Y	Y	Y	Y
Energy International, Inc.	UCG/Clean Fuels Proof-of-Concept Project	Y	N	Y	Y	N	N
General Electric Company	Integrated Gasification-Steam Injection Gas Turbine	Y	Y	Y	Y	N	Y
The M.W. Kellogg Company	The Appalachian Project	Y	N	Y	Y	Y	Y
Ohio Ontario Clean Fuels Inc.	Coal-Petroleum Coprocessing Plant	Y	N	Y	Y	N	Y
Weirton Steel Corporation	KR Ironmaking Demo Plant	N	Y	Y	Y	N	Y

All but one are capable of using high sulfur coal. Four of the selected technologies would reduce emissions of SO2 and NOx to levels less than half of currently allowed emission rates for new sources. All but one are in areas believed to contribute to transboundary air pollution. And five of the nine are appropriate for retrofitting or repowering (replacing the existing boiler) existing facilities.

It is important to note that the Special Envoys, in fashioning their criteria, were explicit in their distinctions between "projects" and "technologies" to be financed under their recommended program. In particular, regarding application to existing sources, transboundary air pollution, and the use of high sulfur coal, the Special Envoys recommended that applicable "technologies" adhere to the criteria rather than placing the obligation on the demonstration projects themselves.

In this regard, we believe it is appropriate and consistent with the Special Envoys report to apply the Envoys' criteria to either the demonstration project itself or the applicability of the demonstrated technology when placed into commercial use (or both where appropriate). Given this, as many as five of the nine projects meet the Lewis-Davis criteria either as demonstration projects or given the future commercial application of the demonstrated technology. The five are: the American Electric Power pressurized fluidized bed combustion project; the Coal Tech Corp. advanced combustor; the Babcock & Wilcox limestone injection multistage burner/Coolside sorbent injection project; the M.W. Kellogg combined cycle gasification project; and the Energy and Environmental Research Corp. gas reburning/sorbent injection project.

The President's Expanded Clean Coal Initiative

On March 18, 1987, President Reagan announced several steps to ensure a continued close working relationship between the U.S. and Canada in determining and addressing the environmental effects of acid rain. The centerpiece of the President's initiative was his directive to seek immediately $2.5 billion in appropriated funds to be used over a five year period to cost-share innovative clean coal technology demonstrations. The commitment represents the full amount of the government's share of funding recommended by the Special Envoys.

The President's announcement fulfills a commitment made last year to Prime Minister Mulroney. But in addition to addressing a pressing national concern of many Canadians, the President's initiative will also return significant benefits to this nation -- not only in terms of cleaner air and the increased use of our most abundant energy resource, but also by:

- Greatly enhancing U.S. technological leadership and international competitiveness;
- Benefitting both Eastern and Western states by making available more cost-effective, fuel flexible power systems capable of using the full spectrum of U.S. coals;

- o Improving the U.S.'s standing in international trade by making available a more attractive, marketable "package" of American coal and the advanced technology to use it and by reducing the cost of energy-intensive U.S. goods;

- o Helping to ensure that the U.S. enters the 21st Century with a broad array of sophisticated, cleaner and more economical coal-based energy technologies, rather than being limited to the more costly, less effective environmental control options available today.

- o Enhancing the long-term energy security of the U.S.

For these reasons, implementing an expanded clean coal technology demonstration program as outlined by the President on March 18 is just as important for safeguarding our domestic economic vitality and energy security as it is for safeguarding our environment.

The President's pledge is to seek funding in the amount of $500 million a year for the five fiscal years, 1988 to 1992. The funding would be used to structure multiple rounds of competition. The competitive procurements would be sequenced in such a way as to encourage new, potentially improved clean coal concepts to continue their development progress and to be considered as candidate technologies once they reach sufficient maturity.

Projects will be evaluated, as fully as practicable, using the criteria recommended by the Special Envoys and taking into account advice from a specially appointed government-industry panel -- the Innovative Control Technology Advisory Panel -- which will provide advice to the Secretary.

The Administration, in accord with the President's March 18 decision, is committed to implementing the recommendations of the Special Envoys. We feel strongly that any actions taken to expand and advance the nation's Clean Coal Technology demonstration program should be fully supportive of and consistent with the assurances given by the President to the Government of Canada.

For example, the Department will consider the following factors, drawn from the Envoys' recommendations, in developing specific evaluation criteria:

(a) The extent to which the technology will expand the menu of air pollution control options available to existing coal-fired powerplants;

(b) The extent to which the demonstration plant and/or the commercialized version of the technology can contribute to reductions in transboundary air pollution, especially (i) the efficiency of SO2 and/or NOx removal, (ii) the cost-effectiveness of the technology in terms of dollars per ton of SO2 and NOx emissions reduced, and (iii) those retrofit (including repowering) technologies applicable to the largest number of existing sources that because of their size, location, and present fuel quality contribute to transboundary air pollution.

We believe it is also important in developing criteria not to exclude consideration of promising control options that may be demonstrated outside the eastern region of the U.S. As long as such projects demonstrate a relevant technology, i.e., a technology applicable to existing, high-sulfur coal burning plants, they should be eligible candidates for clean coal financial assistance.

For example, we would not want to exclude a plant like the Cool Water Gasification Combined Cycle Demonstration Facility in California that demonstrates an innovative technology applicable to eastern, high-sulfur coal facilities but is sited in another region of the nation.

The Department also plans to consider as additional factors to be used in developing criteria, the degree to which the technology reduces non-air quality pollution from coal combustion, the potential for the technology to reduce the cost of producing additional electric power, and the extent to which a State that would host a clean coal project has adopted regulatory policies that would stimulate the commercial replication and deployment of clean coal technologies.

As an indication of the President's commitment to move forward aggressively with this program, the Administration has requested that the full amount of funding -- $2.5 billion -- be made available to the Department in appropriations for FY 1988 and advance appropriations for FY 1989, 1990, 1991 and 1992.

In this way, private industry, which will be expected to contribute matching funds at least equivalent to the government's share, will be assured that funds will be available to carry out the full extent of the 5-year, $500 million per year program.

The funding profile for both the first round of the Clean Coal Technology program and the President's expanded program is depicted by the following chart:

INNOVATIVE CLEAN COAL TECHNOLOGY MULTI-YEAR FUNDING PROFILE

(BUDGET AUTHORITY IN MILLIONS $)

FISCAL YEAR	1986	1987	1988	1989	1990	1991	1992
CLEAN COAL TECHNOLOGY PROGRAM - 1ST ROUND	$100	$150	$150				
REMAINING CLEAN COAL TECHNOLOGY RESERVE FUND			350				
ADDITIONAL APPROPRIATIONS				500	500	500	500
	$100	$150	$500	$500	$500	$500	$500

PRESIDENT's PROGRAM

FY 1988 PROPOSED SOLICITATION

In fiscal year 1988, we propose that the $500 million request be made up of $350 million to be drawn from the remaining funds in the Clean Coal Technology Reserve Fund and the approximately $150 million previously appropriated available in fiscal year 1988 for the first round of Clean Coal Technology projects.

We include a portion of the first-round funds in the President's initiative because, as stated previously, five first-round projects were judged to meet the criteria of the Special Envoys either as demonstrations or in commercial application. Therefore, we believe credit should be applied in FY 1988 to the anticipated federal share of the relevant projects. That amount is approximately $150 million -- the same funding level proposed as the Round #1 funding increment scheduled to be available in FY 1988.

Should Congress approve the request for advance appropriations of $500 million for fiscal 1989, we plan to combine the $350 million in new FY 1988 funding with the $500 million from FY 1989 to issue a competitive solicitation of $850 million. Our target date for releasing the solicitation would be prior to the end of this calendar year, pending Congressional authorization. Subsequent solicitations would then follow between 1988 and 1992 -- each one drawing on the experience of the past competition, combined with guidance from the Innovative Control Technology Advisory Panel.

The Department will also conduct a series of public meetings to elicit comments from the private sector prior to the release of the next project solicitation. The public meetings, scheduled for this summer, will be held in different regions of the country to ensure a broad cross-section of participation.

Even though advanced appropriations are being requested, the Administration still intends to submit an annual status review of tne Clean Coal program as part of the President's yearly budget submission to Congress. This will allow for full Congressional review and input into the future course of the program.

The President expanded the Clean Coal Technology program in full recognition that the Administration had previously opposed federal involvement in such an effort [Question 1]. The Administration's initial opposition was based principally on two factors: the potential negative impact on our deficit reduction goals, and the belief that the government should not be involved in marketplace decisions. It was this latter point that served as the basis for the 1985 statement referenced in the Subcommittee's letter of invitation -- "Federal incentives will not accelerate commercialization of these technologies and may be counterproductive to their development."

Since that time, the department has conducted one round of competition and has found that the private sector was ready to participate both in submitting attractive technical ideas and -- most importantly -- in a willingness to shoulder a substantial portion of the financial risk. In fact, the nine project sponsors selected in the first round have offered to contribute 65 percent of the funding compared to the government's 35 percent, although the department's solicitation only required a minimum of 50 percent private sector cost-sharing.

That amount of significant private sector cost sharing, both in the first round and hopefully in subsequent rounds, offers the opportunity for significantly leveraging tax dollars. It also means that the private sector is making the marketplace decisions by putting their own finances at risk.

Another factor is the increasing attention being given to concerns regarding (1) acid rain, (2) U.S. competitiveness, and (3) long-term energy security. The first was highlighted by the Special Envoys report; the second by the President's January State-of-the-Union address; and the third by the department's recently released Energy Security -- A Report to the President. Each of these was prepared, or released, after the 1985 report referenced in your letter, and all have served to increase the Administration's support for federal assistance in the demonstration and deployment of innovative clean coal technologies.

The Importance of an Expanded Clean Coal Technology Program

We believe that providing $500 million per year in federal financial assistance for the next five years is necessary to concentrate the demonstration of new technologies in a manner that meets a "window" of opportunity that will open for clean coal power systems in the mid 1990s.

By the middle of the next decade, utilities will be increasingly confronted by the dual problem of an aging boiler population and the need for increasing their power generating capacity. More than half of all coal-fired boilers will be 25 years old or older by the mid-1990s. In the eastern U.S. alone, there are 410 units of coal-fired utility capacity of 100 megawatts or larger that were placed in service from 1955 to 1975 and which do not have post-combustion SO2 control devices. Utility decisionmakers will soon have to make some fundamental choices about many of these units -- including whether to retire or refurbish them.

At the same time, demand for electricity will be growing and today's reserve margins declining. Estimates for increasing power demand vary typically between two and three percent, but even with the more conservative, two-percent growth rate, the U.S. could require as much as 100,000 megawatts of additional capacity by the end of the next decade.

If technologies such as combined cycle gasification or fluidized bed combustion (either atmospheric or pressurized) are successfully demonstrated at commercial scale between now and the early 1990s, utilities may be able to resolve the two-fold problem of modernizing aging plants and increasing power demand with a single answer.

Repowering a conventional steam-cycle plant with pressurized fluidized bed combustion, for example, can increase the plant's power output by 30 to 50 percent. Installing gasification-combined cycle as a replacement for the conventional boiler can boost output by as much as 150 percent. This increase in power output from an existing facility could defer the need to build a new increment of baseload facilities.

The repowered plant would also be capable of reducing sulfur emissions by as much as 99 percent at a cost of as little as $80 to $250 per ton of SO_2 removed (compared to the addition of a scrubber which could cost $500 per ton or more). Nitrogen oxide emissions would also be lowered to well below present federal standards for new units.

If utilities are to have the performance data available in time to take advantage of the innovative clean coal technology repowering option, demonstration facilities must be constructed and be in operation by the early 1990s.

Also, the final report of the National Acid Precipitation Assessment Program is scheduled to be available in 1990. By that time, policymakers should have much better information to decide if additional environmental controls are warranted. If the evidence shows the need for an accelerated reduction in sulfur and nitrogen pollutants from coal plants, especially pre-NSPS plants, it is important to have an expanded menu of low cost retrofit control and repowering options available.

Therefore, the early to mid-1990s is a critical time for decisionmaking, both in terms of continuing reliable electrical service and in meeting environmental objectives. By concentrating funding over the next five years, sufficient data should become available from a broad array of advanced power and environmental control options to give industry the most economic and fuel-flexible choices possible to make key decisions.

Stimulating Clean Coal Technology Deployment

The ultimate value from new clean coal technologies will be derived, of course, from their eventual commercial replication and use in the marketplace.

In his March 18 announcement, the President recognized that an effective clean coal deployment strategy is one that focuses on the removal of regulatory barriers rather than one that enacts a potentially premature, very costly and economically disruptive program of added environmental controls. The President directed the Vice President's Task Force on Regulatory Relief to undertake a 6-month review of Federal and State economic and regulatory programs to identify opportunities for addressing environmental concerns under existing laws. The task force will examine incentives and disincentives to the deployment of new emissions control technologies and other cost effective, innovative emission reduction measures now inhibited by Federal, State and local regulations. The findings and results of the Task Force will be reported in six months, along with any recommendations for changes to existing regulations.

Even before the task force completes its review, however, some general statements can be made about the current federal and state regulatory climate and about some of the provisions that could accelerate the commercial replication of successfully demonstrated clean coal technologies. [Question 5]

One of the most serious impediments to increased industrial participation in technology demonstration and commercialization is the continuing threat of further "racheting" of environmental regulations through "acid rain" control legislation, such as that currently pending in Congress. As long as the possibility exists that additional government regulations could force the use of currently available technology, the incentive for either developer or user to invest in new technology is significantly diminished.

Regulated utilities also face disincentives to the development and deployment of clean coal technology because of the possibility that their investment will not be recovered through the ratemaking process. Increasingly, state regulatory commissions are refusing to allow utilities to recover capital or to earn profits when hindsight considers investments to be "imprudent." This creates a bias toward low capital investment/high fuel cost alternatives.

Such a policy by a State could have a major impact on a utility's adoption of a technology such as the integrated gasifier combined cycle, regardless of how well it is demonstrated in a first-of-a-kind facility. Under a State policy that encourages risk aversion and discourages capital investments, a utility might install a gas-fired combined cycle generating system -- a low-risk activity -- but would likely resist subsequent addition of a coal gasifier even though economics might dictate the switch to coal. The gasifier is a higher risk, more capital intensive installation and thus more susceptible to a retrospective finding of "imprudency" by a state utility commission.

Even if an innovative clean coal technology proves successful in a demonstration effort, the amount and timing of any return on its commercial replication will still be uncertain. It will depend upon whether, when, and to what extent public utility commissions treat clean coal expenditures in establishing base revenues.

As a way of encouraging favorable treatment of clean coal projects by State regulatory commissions, the Department is preparing to incorporate into the evaluation criteria for its upcoming clean coal solicitation, the extent to which a State has adopted regulatory incentives for clean coal projects.

There may be other administrative actions that can be taken to remove regulatory and institutional barriers. For example, in determining the "just and reasonable" rate for the wholesale marketing of electricity, the Federal Energy Regulatory Commission has already established precedent for including 100 percent of the costs of construction for pollution control devices in the rate base as the costs are incurred. Similar provisions may be appropriate for designated clean coal power systems. There is also precedent for FERC to approve an incentive rate of return to be provided for certain high-risk projects under the Commission's jurisdiction.

Other actions that can be taken to remove regulatory barriers that inhibit the replication and commercial use of innovative emissions control technologies will be identified by the Vice President's Regulatory Relief Task Force.

Proposed Offsets to FY 1988 Fossil R&D Budget [Question 6]

The budget amendment necessary to implement the expanded Clean Coal Technology Program will increase 1988 outlays by $59 million. Consistent with the President's objective of adhering to the Gramm-Rudman-Hollings deficit target of $108 billion in 1988, the Administration has forwarded amendments to the FY 1988 budget that would reduce the proposed DOE fossil energy R&D request by $19 million. This is part of an Administration-wide budget reduction package that, together with action by the Department of Treasury to increase customs collection, would completely offset the expected increase in 1988 outlays associated with the expanded Clean Coal program.

The proposed amendment will reduce the FY 1988 Fossil Energy R&D budget from $168.9 million to $149.9 million. Included is $7.7 million in reductions to eight subactivities in the proposed coal R&D budget, $3.2 million in reductions to the Program Direction & Management Support budget, a $2.5 million reduction in the proposed amendment for cooperative R&D ventures, and $5.6 million in offsets derived from the closeout of the Powerton Project ($1.7 million) and the planned termination of the KILnGAS cooperative agreement ($3.9 million).

Details of the individual reductions in the FY 1988 proposed fossil energy budget are provided in an attachment to this statement.

Conclusion

The President's innovative clean coal technology initiative offers the means for the U.S. to achieve the full potential of its most abundant domestic resource while improving the quality of its environment. The Clean Coal Technology program reflects the fundamental goal of the Lewis-Davis Special Envoys' recommendations for a technology demonstration program -- namely it will "expand the menu" of available control options.

Moreover, because many of the technologies expected to emerge from the innovative clean coal technology program will be more economical and efficient, more easily and rapidly fabricated and installed, and more fuel flexible than today's options, they will have inherent, commercial advantages. Given a favorable regulatory climate at both the State and federal level, these market advantages should result in commercial replication of these technologies without additional federal subsidies and without imposing unfair costs on the consumer.

The Subcommittee asked, in its letter of invitation, for a description of a clean coal technology program that could achieve a 2 million ton reduction of SO2 (presumably over the short-term, e.g. by 1995) [Question 3a]. The question goes to the heart of the Administration's position that the innovative clean coal technology program, as outlined by the President's March 18th announcement, represents the preferred course of action in dealing with the issue of acid rain.

If emission reduction within the next five to 10 years is the sole benefit one wishes to gain from a clean coal program, then that program would likely entail nothing more than subsidies for the installation of flue gas scrubbers on older, uncontrolled power plants. The costs of such a narrowly-focused effort, however, would be measured not only by the federal subsidies but by the loss of America's technological preeminence in power generating technology.

A scrubber-only program, whether subsidized by the government or financed through increased rates to the consumer, would remove the incentive offered by the President's Clean Coal program to advance the technology to potentially higher levels of emission reductions and achieve inherent economic benefits.

A mandated emission reduction requirement today -- beyond those reductions already being achieved by present requirements of the Clean Air Act -- would likely produce exactly the opposite result over the long-term. As the mandated program expired and new capacity additions were limited to conventional pollution control devices (since new technology would not have been adequately demonstrated), emissions would eventually begin to rise.

Alternatively, allowing such new concepts as combined cycle gasification (with sulfur capture potentials exceeding 99 percent) to take their place in the market through a government-industry demonstration program, coupled with the removal of regulatory barriers, would likely result in a sustained drop in emissions for well into the foreseeable future without requiring long-term government subsidies or unfairly distributing higher consumer costs.

With the proper combination of financial assistance and the removal of regulatory disincentives, the Department does not envision the need to finance multiple demonstrations of the same technology to achieve this goal of meaningful commercial deployment (although it may be wise to finance various approaches or potential improvements that refine a concept). [Question 4]. Once successfully demonstrated, many of the clean coal technologies should be ready for commercial replication through normal market forces.

In summary, the President's innovative clean coal technology program:

1) is consistent with the Special Envoys Report on Acid Rain;

2) provides necessary financial assistance in the form of cost-sharing with industry for innovative projects that are in the national interest while ensuring against undue subsidies;

3) is conducted within a timeframe consistent with expected utility decisionmaking and/or the revision of national policy regarding environmental emission standards; and

4) is linked to a review of regulatory actions that can be taken to allow new clean coal technologies to be considered in utility and other market-driven decisionmaking.

This completes my formal statement, Mr. Chairman.

FY 1988 BUDGET AMENDMENT
Fossil Energy Research and Development
(Offsets to the Clean Coal Technology/Innovative Control Technology Amendment)

	($000) Proposed Amendment
Control Technology and Coal Preparation	
Coal Preparation Eliminate studies on reconstituting and handling finely ground coal produced in advanced coal cleaning processes (ancillary operations).	$-1,000
Flue Gas Cleanup Eliminate until FY 1989 the beginning program to develop pollution controls for advanced coal technologies in light industrial, commercial, and residential sectors.	$-1,400
Gas Stream Cleanup Eliminate all alkali and trace chemical research in support of PFB, direct coal-fired turbines, IGCC (turbines and molten carbonate fuel cells). Reduce new procurement for combined sulfur and particulate removal to support direct coal-fired turbines.	$-2,000
Advanced Research and Technology Development	
Direct Utilization Reduce level of effort in Coal Science	$ -700
Combustion Systems	
Pressurized Fluidized Bed Combustion Eliminate identification of an alternate to the Foster Wheeler second generation PFB concept leaving no options if it is unsuccessful.	$ -400
Alternative Fuels Utilization Reduce the level of effort in characterization work which supports the Coal Preparation and Advanced Combustion Technology programs.	$ -200
EPA LIMB Demonstration Stretch-out construction and operation of tangentially fired LIMB demonstration by several months.	$-2,000
Program Direction and Management Support	
Headquarters Program Direction Eliminate the centralized funding of HBCUs and SBA. Instead, targets for these set asides will be established within the R&D program.	$-1,000
ETC Program Direction Reduce the use of site support contracts to only essential institutional functions.	$-2,200

Cooperative R&D Ventures ..... $-2,500
Reflects the delay in implementing the program due to the time-frame required for obtaining industry input. In addition, the initial program should be on a relatively small scale to ensure Congressional support and successful implementation.

Prior Year Offsets ..... $-5,600
Powerton Project ($-1.7M) - Final closeout of the project.
KILnGAS Cooperative Agreement ($-3.9M) - Planned termination of the agreement. Since Allis-Chalmers has been unable to secure the required 50% cost share for additional tests, they are proposing to mothball the facility leaving excess funds.

FY 1988 BUDGET AMENDMENT

Fossil Energy Research and Development

(Offsets to the Clean Coal Technology/Innovative Control Technology Amendment)

	($ in thousands) Pending Request	Proposed Amendment	Revised Request
Control Technology & Coal Preparation			
Coal Preparation	$ 11,482	$ -1,000	$ 10,482
Flue Gas Cleanup	13,230	-1,400	11,830
Gas Stream Cleanup	6,905	-2,000	4,905
Other	1,383	0	1,383
Total Control Technology & Coal Prep.	33,000	-4,400	28,600
Advanced Research & Technology Development			
Direct Utilization	9,000	-700	8,300
Other	17,000	0	17,000
Total Advanced Research & Tech. Dev.	26,000	-700	25,300
Combustion Systems			
PFB Combustion	7,026	-400	6,626
Alternative Fuels Utilization	3,500	-200	3,300
EPA LIMB Demonstration	7,000	-2,000	5,000
Other	4,074	0	4,074
Total Combustion Systems	21,600	-2,600	19,000
Program Direction & Management Support			
Headquarters Program Direction	10,835	-1,000	9,835
ETC Program Direction	27,600	-2,200	25,400
Other	230	0	230
Total Program Direction & Mgmt. Support	38,665	-3,200	35,465
Other Fossil Energy R&D Activities	43,135	0	43,135
Proposed Amendment for Cooperative R&D Ventures	7,000	-2,500	4,500
Subtotal Fossil Energy R&D	$169,400	$-13,400	$156,000
Offsets	-500	-5,600	-6,100
TOTAL FOSSIL ENERGY R&D	$168,900	$-19,000	$149,900

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Statement by J. Allen Wampler of July 20, 1987

TESTIMONY BEFORE THE
SUBCOMMITTEE ON INTERIOR AND RELATED AGENCIES
COMMITTEE ON APPROPRIATIONS
U.S. SENATE.

CLEAN COAL Technology

OPENING STATEMENT BY

J. ALLEN WAMPLER

ASSISTANT SECRETARY FOR FOSSIL ENERGY
U.S. DEPARTMENT OF ENERGY

TO THE

SENATE COMMITTEE ON APPROPRIATIONS

Subcommittee on Interior and Related Agencies

July 20, 1987

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To ensure that industry has confidence that the Administration is prepared to provide its share of financing, we have submitted a budget amendment for the full amount of $2.5 billion.

We believe this will demonstrate our commitment to this program and to the Lewis-Davis report. The Administration intends to submit an annual status review of the Clean Coal Program as part of the President's yearly budget submission to Congress. This will allow for full Congressional review and input into the future course of the program.

Should the Congress approve an expanded Clean Coal program, we would issue the first of the new series of solicitations by the end of this calendar year. The first projects would be selected by the spring of next year.

Let me insert an item at this point, Mr. Chairman, regarding our current Clean Coal program. As you know, nine projects were selected last year in the program's first round of competition. We have completed negotiations with four. Five remain in the negotiation process.

We believe it is in the national interest to conclude the remaining talks as quickly as possible. Therefore, earlier this month, I directed our negotiators to establish a fixed deadline of September 30 to complete the remaining negotiations. I also directed that interim milestones be established so that we can gauge the progress of each ongoing negotiation. If a proposer is unable to achieve the milestones, we will be prepared to terminate negotiations before September 30, unless there is a reasonable likelihood that the final deadline could be met.

Let me say, Mr. Chairman, that generally I have been pleased with the progress made in these negotiations. The remaining five have been prolonged primarily because companies have needed additional time to finalize their business arrangements. But the time is rapidly approaching when we will have to consider terminating those negotiations which cannot be successfully completed. Let me assure you that we will make those judgements in the most responsible manner possible, and I hope people will view our position as being one intended to expedite this very important program.

I recognize, Mr. Chairman, that you have introduced S.879 which is similar in many respects to the Administration's proposed program but includes regulatory revisions currently under review by the Administration.

We believe there is a considerable amount of common ground between the two approaches. And we have been very pleased with the willingness of you and your staff to work with us in developing an approach that is in the best interests of both the coal industry and the nation as a whole. I believe we are indeed moving down a common path.

Mr. Chairman, I can report to you today that the Administration is willing to work actively toward a bipartisan Clean Coal Technology Program authorization bill. I understand, Mr. Chairman, that you have been working with the leadership of the Senate Energy Committee in drafting a bipartisan Clean Coal bill. We look forward to seeing this bill introduced shortly and hope that it can become the basis for a bipartisan legislative initiative.

Let me briefly mention the key aspects of the fossil R&D program:

There is a heavy emphasis this year in the coal program on technologies that can control the release of pollutants from coal. This is a continuation of a policy trend that began in the early part of this decade in response to increasing concerns about such environmental disorders as acid rain.

Many of the efforts in our program are applicable to utility power generation. But several concepts will also increase the available markets for coal-based systems beyond just utility applications -- helping to open up, for example, new markets in the light industrial, commercial, residential and transportation sectors.

We also believe it is important to maintain a solid base of R&D in petroleum and gas. The largest proportion of this effort will be allocated to petroleum R&D -- with an emphasis on those activities that the oil industry can no longer pursue. In fact, we have broadened our petroleum-related program to include the examination of bypassed mobile oil -- something that could be particularly relevant in light of the situation facing many operators in today's oilpatch.

Also included in our budget proposal is an amendment to implement a cooperative R&D venture program. The cooperative venture concept is one that I believe makes a great degree of sense for both government and private entrepreneurs. It is not a replacement for direct government funding for R&D, nor is it an attempt to divert funds from our mainline R&D budget.

Instead, the concept seems to me to be a creative, potentially beneficial way to leverage federal dollars while placing more R&D decisionmaking in the hands of the private sector.

In summary, Mr. Chairman, the fossil energy budget is a sound budget. Its proposed funding levels are, admittedly, tempered by the realization that deficit-reduction priorities are paramount.

But the programs and projects in this budget are those we expect to return the most dividends to this nation for the dollars spent.

That completes my opening remarks. I will be pleased to answer any questions you may have.

Statement of J. Allen Wampler
Assistant Secretary for Fossil Energy
Department of Energy
Before the
Committee on Appropriations
Subcommittee on Interior and Related Agencies

The President's fiscal year 1988 budget for fossil energy-related programs is comprised of two principal components: (1) the Clean Coal Technology Program which will demonstrate the most promising of an emerging suite of innovative pollution control technologies, and (2) a core research and development program intended to stimulate the technological evolution of future generations of advanced coal, oil and gas concepts.

The Clean Coal Technology Program

On March 18, 1987, President Reagan announced several steps to ensure a continued close working relationship between the U.S. and Canada in determining and addressing the environmental effects of acid rain. The centerpiece of the President's initiative was his directive to seek $2.5 billion over a five year period to fund innovative clean coal technology demonstrations. The commitment represents the full amount of the government's share of funding recommended by the Special Envoys on Acid Rain (Drew Lewis of the United States and William Davis of Canada) in their January 1986 report to the President and Prime Minister Mulroney.

The President's announcement fulfills a commitment made last year to Prime Minister Mulroney. But in addition to addressing a pressing concern of many Canadians, the President's initiative will also return significant benefits to this nation -- not only in terms of cleaner air and the increased use of our most abundant energy resource, but also in the form of enhanced technological leadership and the potential for improved international trade.

The President's pledge is to seek funding in the amount of $500 million a year for five years. The funding would be used to structure multiple rounds of competition. Competitive procurements would be sequenced to encourage new, potentially improved clean coal concepts -- including many in the current core R&D program -- to continue their development progress and to be considered as candidate technologies once they reach sufficient maturity.

As an indication of the Administration's commitment to move forward aggressively with this program, the Administration has sent a budget amendment to the Congress requesting that the full amount of funding directed by the President -- $2.5 billion -- be made available to the Department in appropriations for FY 1988 and advance appropriations for FY 1989, 1990, 1991 and 1992. In this way, private industry, which will be expected to contribute matching funds at least equivalent to the government's share, will be assured that funds will be available to carry out the full extent of the 5-year program.

Even though advanced appropriations are being requested, the Administration still intends to submit an annual status review of the Clean Coal program as part of the President's yearly budget submission to Congress. This will allow for full Congressional review and input into the future course of the program.

In fiscal 1988, we propose that the $500 million request be made up of $350 million to be drawn from the remaining funds in the Clean Coal Technology Reserve Fund and the approximately $150 million previously appropriated and scheduled to be available in fiscal 1988 for the first round of Clean Coal Technology projects.

We propose to include a portion of the first-round funds because, while we recognize the Congress established the initial program under much broader guidelines than the President's proposed expanded program, several first-round projects meet the more focused criteria of the Special Envoys. Five of the nine first-round projects employ technologies that, either as demonstrations or in commercial application, fit the Lewis-Davis criteria -- that is,

they can be used to improve the environmental performance of high-sulfur coal burning facilities in a cost-effective manner.

Therefore, we believe credit should be applied in FY 1988 to the anticipated federal share of the relevant projects. That amount is approximately $150 million -- the same funding level proposed as the first-round funding increment scheduled to be made available in FY 1988.

Should Congress approve the Administration's budget amendment, we would combine the $350 million in new FY 1988 funding with the $500 million in advance appropriations for FY 1989 and issue an initial, competitive solicitation of $850 million in federal cost-sharing. Our target date for releasing the solicitation would be by the end of this calendar year, pending Congressional approval of the FY 1988 budget request by October 1, 1987. Project selections would then be made by early Spring of 1988.

Subsequent solicitations would then follow between 1988 and 1992 -- each one drawing on the experience of the past competition(s), combined with guidance from an Innovative Control Technology Advisory Panel (currently being established by the Secretary), and direction from Congress.

The funding profile for both the first round of the Clean Coal Technology Program and the President's expanded program can be depicted by the chart that follows on page 4.

Projects submitted under the expanded program will be evaluated, as fully as practicable, using the criteria recommended by the Special Envoys. For example, special consideration will be given to those retrofit and repowering technologies that can be applied to existing facilities currently dependent on the use of high sulfur coal. Projects will be judged on their potential for economically reducing emission rates for SO_2 and NOx. Weighting factors will be used to reflect reductions that could help lower pollutants that affect Canadian ecosystems.

INNOVATIVE CLEAN COAL TECHNOLOGY MULTI-YEAR FUNDING PROFILE

(BUDGET AUTHORITY IN MILLIONS $)

FISCAL YEAR	1986	1987	1988	1989	1990	1991	1992
CLEAN COAL TECHNOLOGY PROGRAM - 1ST ROUND	$100	$150	$150				
REMAINING CLEAN COAL TECHNOLOGY RESERVE FUND			350				
ADDITIONAL APPROPRO-PRIATIONS				500	500	500	500
	$100	$150	$500	$500	$500	$500	$500

PRESIDENT's PROGRAM

FY 1988 PROPOSED SOLICITATION

The budget amendment necessary to implement the expanded Clean Coal Technology Program will increase 1988 outlays by $59 million. Consistent with the President's objective of adhering to the Gramm-Rudman-Hollings deficit target of $108 billion in 1988, the increased outlays associaced with this initiative are proposed to be offset by reductions in lower priority programs of the Department of Energy and other agencies. As one part of this outlay reduction, a reduction of $19 million in the Department's FY 1988 budget submission for fossil energy research and development has been proposed. This proposed reduction is described in more detail in the following section.

The Fossil Energy Research and Development Program

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 fuels through enhanced recovery technology and the production of such fuels from coal and shale.

The budget request also maintains "cutting edge" fundamental and cross-cutting research for fossil energy technology and resources. It continues research that makes use of the considerable expertise that exists not only in private enterprise but also in the nation's university community and national laboratories.

For fossil energy R&D in FY 1988, the department originally requested $168.9 million in new budget authority. Included was $109.4 million for coal-related research and development. Approximately $78.5 million of the coal budget -- or nearly $7 out of $10 -- was directed toward improving the environmental acceptability of coal use.

Following the President's commitment to an expanded Clean Coal Technology Program, the Administration forwarded amendments to the FY 1988 budget that would reduce the proposed fossil energy R&D request by $19 million. This reduction is part of an Administration-wide, $70.5 million budget reduction amendment that would offset the expected increase in 1988 outlays associated with the expanded Clean Coal program.

The proposed amendment will reduce the FY 1988 Fossil Energy R&D budget from $168.9 million to $149.9 million. Included is $7.7 million in reductions to eight subactivities in the proposed coal R&D budget, $3.2 million in reductions to the Program Direction & Management Support budget, a $2.5 million reduction in the proposed amendment for cooperative R&D ventures, and $5.6 million in offsets derived from the closeout of the Powerton Project ($1.7 million) and the planned termination of the KILnGAS cooperative agreement ($3.9 million).

The Coal R&D Program

The decade of the 1980s has seen a fundamental shift in national coal research priorities. During the 1970s, in the aftermath of an oil embargo that left the U.S. economy shaken by the sharp rise in oil prices and increased concern over the vulnerability of imports, the U.S. coal research program was driven largely by a goal of displacing liquid and gaseous fuels.

In the early 1980s, the perception of primary R&D needs took on a different emphasis. With increased attention focused on the issue of "acid rain" and the compatibility of coal with America's environmental goals, the national research program began to encompass new efforts to develop ways to control SO_2 and NO_x either before, during or after coal combustion.

In addition to reducing potential pollutants, the coal-based projects being proposed in the FY 1988 budget also include concepts that could open new markets for coal. Research on new processes and equipment would be funded to extend the applicability of coal into the light industrial, commercial, chemical, residential and transportation (i.e., locomotive and maritime) markets. A core R&D effort is also maintained to improve the knowledge base for converting coal into gaseous and liquid fuels.

As in previous coal budgets, the FY 1988 proposal also maintains a substantial effort in fundamental and cross-cutting research including continuation of a research program focused specifically on the nation's university community and a project involving university/national laboratory collaboration.

The Petroleum & Gas R&D Programs

The FY 1988 budget also proposes $12.3 million and $1.6 million for petroleum and gas related programs, respectively. Included in the petroleum related effort are technologies that can improve reservoir definition and cost effective extraction processes for heavy and light oil, along with continuation of fundamental and cross-cutting research.

Events during the past year have caused major changes in the domestic petroleum industry. The steep decline in oil prices has precipitated a sharp reduction in domestic production, particularly from the smaller producers with marginal fields.

The FY 1988 budget request maintains a research program to improve resource recovery and broadens specific research to examine bypassed mobile oil and higher-cost production. As part of this redirected emphasis, research in microbial enhanced oil recovery will continue its transition from laboratory studies to small scale field tests. A geoscience characterization program will also be initiated in both heavy and light oil to determine ways of overcoming constraints that currently limit production.

The unconventional gas recovery program would be continued in FY 1988 primarily as an in-house research effort. Activities would be directed toward maintaining and updating the data base for eastern gas shales, integrating the results of the western tight sands multiwell test into computer models, and continued study of the development potential of gas hydrates and the gas generation potential of deeply buried hydrocarbons.

Cooperative R&D Ventures Program

Common to all of the programs proposed in this budget is the effective transfer of technology from federally-sponsored research to private industry. This is particularly relevant given the President's State of the Union goal of assuring American competitive preeminence into the 21st Century. Advancing science and technology is fundamental to U.S. competitiveness. The President's initiative focuses on maintaining U.S. preeminence through initiating new ideas and know-how and translating these ideas into improved products and processes.

I am committed to ensuring that the Fossil Energy science and technology efforts effectively carry out the President's objective. In general, we believe the most effective technology transfer occurs when industry is involved early and substantially in a research and development effort. The more directly the research agenda is guided by the companies' own technological and economic needs, the more effective the transfer is likely to be.

In line with this policy, the Office of Fossil Energy will submit an amendment to this budget request outlining the structure of a proposed cooperative R&D ventures program. This is a relatively new approach to government-industry financial partnerships, but one we believe will give the private sector greater incentive to carry out research programs that are responsive to their R&D needs.

The Office of Fossil Energy's approach to proposed cooperative R&D ventures will be analogous to that of a business partner or investor seeking out and joining other participants in a flexible and equitable arrangement. Under the cooperative R&D venture concept, the department may offer up to 49 percent of the total funding for any one project, thereby maintaining a minority position. A cooperative venture's research agenda will be set by the participants. Through their willingness to invest resources, the venture partners will have a greater influence on the direction of federal spending than is the case in government contract research.

Particularly for participants with limited R&D funds, cooperative R&D ventures can offer a relatively low-cost route to innovative technology development through pooling of resources.

The Office of Fossil Energy has concluded a series of regional public meetings to gain private sector input into the formulation of a proposed cooperative R&D venture program. These regional meetings, held in San Francisco; Charleston, WV; and Chicago, followed a national meeting held in Denver last December. The input received from the participants at these meetings is being used to structure a cooperative R&D program and to prepare a formal budget amendment to the Congress that will provide a more definitive description of the proposed initiative. This amendment will be submitted in the near future.

The following pages provide individual descriptions of the major funding categories in the FY 1988 Fossil Energy R&D budget request.

Control Technology and Coal Preparation

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Coal Preparation	$10.9	$11.5	$ - 1.0	$10.5
Flue Gas Cleanup	12.9	13.2	- 1.4	11.8
Gas Stream Cleanup	13.1	6.9	- 2.0	4.9
Waste Management	0.9	1.4	-	1.4
Total Control Technology and Coal Preparation	$37.8	$33.0	$ - 4.4	$28.6

BACKGROUND

- o Coal Preparation is directed toward the development of advanced coal cleaning technologies that will reduce the ash and sulfur content of U.S. coal so that the product can be formulated into a high quality fuel that could replace oil and/or gas and reduce environmental emissions of suspected acid rain precursors from coal-fired power plants in both new and retrofit applications. Research is conducted in three broad areas: (1) physical treatment and cleaning; (2) chemical/biological pretreatment and cleaning; and (3) engineering support and ancillary operations.

- o Flue Gas Cleanup addresses the removal of pollution causing contaminants from fossil fuel fired systems to meet current and projected environmental standards that could serve to limit the utilization of fossil fuels. Efforts will be focused on fundamental research and proof-of-concept testing for processes for the independent as well as combined removal of NO_x, SO_x, and particulates, both for utility and industrial systems for new and retrofit applications.

- o Gas Stream Cleanup includes the technology for removal of contaminants from gasifier and combustor process streams prior to utilization in advanced power conversion cycles such as gas turbines and fuel cells. Both hardware and environmental protection are key concerns. Research is conducted in three major areas: (1) physical cleanup for coal based gas streams; (2) chemical cleanup for coal based gas streams; and (3) alkali and trace chemicals clean up for coal based gas systems.

- o Waste Management focuses primarily on waste sampling and characterization from coal preparation and emerging technology wastes.

FY 1988 BUDGET	Dollars In Millions
o Coal Preparation	
- Complete construction and testing of Gravimelt integrated system; begin operation runs with selected test coals. (FY 1987 - $1.0M)	$ 2.3
- Continue promising research and explore new concepts for physical and chemical coal cleaning. (FY 1987 - $3.5M)	$ 4.0
- Continue DOE/EPRI testing of most promising advanced concepts for fine coal cleaning. (FY 1987 - $1.5M)	$ 2.0
- Continue in-house research at laboratory scale to investigate and evaluate advanced physical and chemical coal cleaning concepts. Continue organic sulfur chemistry. Maintain a data base, characterize feed coal and coal cleaning products, and study the role of surface functional groups in coal treatment. (FY 1987 - $2.3M)	$ 2.2
o Flue Gas Cleanup	
- Continue research for TUNG scrubbing process. Complete induct spray dryer process POC test and evaluation for acid rain precursor control. Conduct boiler sorbent research. (FY 1987 - $4.4M)	$ 2.4
- Continue research on advanced NO_x/SO_2 chemistry and bench scale advanced concept development. (FY 1987 - $2.1M)	$ 1.4
- Continue advanced NO_x control research. (FY 1987 - $0.5M)	$ 0.3
- Continue research on advanced separation technology. (FY 1987 - $1.5M)	$ 3.0
- Complete fluidized bed copper oxide POC test and evaluation. (FY 1987 - $1.8M)	$ 1.5
- Initiate competitive procurement to scaleup most promising advanced flue gas processes for removal of SO_2 and NO_x at 3-5 MW scale. (FY 1987 - $0)	$ 1.9
- Continue research on the capture of fine respirable particles from coal-fired boilers. (FY 1987 - $0.5M)	$ 0.8

FY 1988 BUDGET (cont'd)	Dollars In Millions
o Flue Gas Cleanup (cont'd)	
- Continue research on enhanced mass transfer between injected solids and flue gas by using novel enhancement methods. (FY 1987 - $0.1M)	$ 0.5
o Gas Stream Cleanup	
- Continue subpilot and long term tests of integrated gasification combined cycle (IGCC) cleanup concepts, long term tests of PFBC concepts, R&D for direct coal fueled turbines (DCFT) concepts, and fundamental and systems research for all applications. (FY 1987 - $2.5M)	$ 1.0
- Continue establishment of zinc ferrite absorption and regeneration parameters and demonstration of fixed and moving bed reactor concepts for IGCC. Continue concept feasibility assessment for fuel cells, DCFT and coal fueled diesels (CFD). Complete construction and initiate testing of fixed-bed desulfurization of regenerative tail gases. Continue investigation of novel sorbents. Initiate research on advanced concepts for sulfur removal. (FY 1987-$2.6M)	$ 3.9
o Waste Management	
- Continue contracted efforts for sampling and characterization of organic and inorganic compounds in solid wastes, and energy recovery for waste stablization. Continue multi-site field monitoring of solid wastes generated by advanced energy technologies and initiate waste management systems analysis and planning. (FY 1987 - $0.5M)	$ 1.2
- Continue in-house activities on solid waste data base and supporting research. (FY 1987 - $0.2M)	$ 0.2
Total FY 1988	$28.6

Advanced Research and Technology Development

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Direct Utilization	$10.6	$ 9.0	$ - 0.7	$ 8.3
Materials and Components:				
Materials	6.8	5.0	-	5.0
Components	1.7	1.4	-	1.4
Subtotal, Materials and Components	8.5	6.4	-	6.4
Technology Crosscut:				
Environmental Activities	2.3	2.4	-	2.4
Technical and Economic Analyses	2.0	2.2	-	2.2
Technology Base Synthesis	0.8	0.6	-	0.6
Instrumentation Control and Diagnostics	1.7	1.2	-	1.2
Bioprocessing of Coal	1.0	0.2		0.2
Subtotal, Technology Crosscut	7.7	6.6	-	6.6
University/National Laboratory Coal Research:				
University Coal Research	5.5	3.6	-	3.6
University/National Laboratory Cooperative Program	0.0	0.4	-	0.4
Subtotal, University/National Cooperative Program	5.5	4.0	-	4.0
Total, Advanced Research and Technology Development	$32.4	$26.0	$ - 0.7	$ 25.3

BACKGROUND

- The Advanced Research and Technology Development (AR&TD) Program is directed toward the scientific and technical areas that underlie the development of all fossil energy technologies.

- The AR&TD coal science program focuses on mission-oriented fundamental research to increase understanding of the mechanisms of direct coal combustion.

- The AR&TD program includes generic studies of materials and components and investigations of instrumentation concepts in environments associated with advanced coal technologies.

- AR&TD differs from the Fossil Energy line programs; the latter have an end-item technology development orientation while AR&TD's mission is to pursue generic research in support of all Fossil Energy coal line programs.

- AR&TD addresses fundamental scientific and engineering problems that are barriers to Fossil Energy technological goals.

BACKGROUND (cont'd)

- o The AR&TD program is unique in that it is directed to specific scientific and technical areas which are closely connected to long-range Fossil Energy objectives.

- o The AR&TD budget request for FY 1988 is believed to be appropriate given the need to progressively reduce Federal budget deficits; however because acid rain and fundamental coal research are considered high FE priority this program's budget has been reduced less than that of Fossil Energy as a whole.

FY 1988 BUDGET	Dollars In Millions
o Direct Utilization	
- Conduct fundamental research in coal properties including work on physical and chemical properties of uncombusted coal based fuels, and of solid, liquid and gaseous products produced during the combustion process pertaining to coal. In-house research performed at PETC. (FY 1987 - $0.7M)	$ 0.6
- Support pulverized coal combustion research including work on coal devolatilization, radiant heat transfer in flames, and fuel-bound contaminant behavior. Support the IEA coal combustion science program. In-house research performed by METC and PETC. (FY 1987 - $5.3M)	$ 2.6
- Perform deposition research pertinent to slagging and fouling of boilers, fluidized bed heat exchanger tube wastage and pressurized and internal combustion environments. In-house research performed by METC and PETC. (FY 1987 - $2.1M)	$ 1.8
- Increase coal beneficiation research and studies of contaminant removal during the combustion process. Continue contaminant removal research in hot gas streams. Increase fundamental surface science investigations with particular emphasis on separation of acid rain precursors. In-house research performed by METC and PETC. (FY 1987 - $1.2M)	$ 1.9
- Support generic electrochemistry research. Continue research on fundamental aspects of molten carbonate and solid oxide fuel cells and novel concept study. (FY 1987 - $1.3M)	$ 1.4

FY 1988 BUDGET (cont'd)	Dollars In Millions
o Materials	
- Conduct research on alloys, mechanisms of erosion and corrosion, ceramics composites, and techniques for consolidation and joining of advanced aluminides. (FY 1987 - $6.8M)	$ 5.1
o Components	
- Fund two projects (fluidic devices and nozzle development) that support coal-fueled systems. (FY 1987 - $0.7M)	$ 0.5
- Continue fundamental research on solids transport. (FY 1987 - $1.0M)	$ 0.8
o Environmental Activities	
- Continue analyses of issues associated with air and water quality, solid waste disposal, and toxic substances. Continue support of occupational health and safety compliances services. (FY 1987 - $1.5M)	$ 1.7
- Continue research conducted under NAPAP with emphasis on quality assurance of data and analytical tools. (FY 1987 - $7.5M)	$ 0.7
o Technical & Economic Analyses	
- Continue studies supporting multi-year planning, FE strategy and program formulation; conduct contract studies that crosscut a number of FE programs, fund IEA activities. (FY 1987 - $2.0M)	$ 2.2
o Technology Base Synthesis	
- Initiate studies to insure research is correctly focused and addresses needs of fossil energy technologies. This would include identifying areas of overlapping research, etc. Continue or initiate crosscutting advanced research projects of a multidisciplinary nature. (FY 1987 - $0.8M)	$ 0.6

FY 1988 BUDGET (cont'd)	Dollars In Millions
o Instrumentation, Control & Diagnostics	
- Undertake studies to measure acoustic parameters of fluids for applications to multiphase flow. Reduce basic research into laser-based chemical species analysis and solid state sensor probes and the investigation of fiber optic sensors as a means to probe high-temperature coal conversion environments. In-house research performed by METC. (FY 1987 - $1.6M)	$ 1.2
o Bioprocessing of Coal	
- Conduct fundamental research in the bioprocessing of coal to gain an understanding of the biochemical mechanisms involved in coal desulfurization, liquefaction and gasification using microorganisms. (FY 1987 - $1.0M)	$ 0.2
o University Coal Research	
- Initiate approximately 20 new university projects on a variety of research topics including coal science, reaction chemistry, surface science, advanced process concepts, thermodynamics, engineering fundamentals, and environmental science; continue encouragement of collaboration between university and industrial researchers. (FY 1987 - $5.5M)	$ 3.6
o University/National Laboratory Cooperative Agreement	
- Initiate one joint project involving collaboration of a national laboratory with universities in an area such as catalyst research, biotechnology, or combustion. (FY 1987 - $0)	$ 0.4
Total FY 1988	$25.3

Coal Liquefaction

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Advanced Research	$ 4.5	$ 3.0	$ -	$ 3.0
Indirect Liquefaction	6.3	2.5	-	2.5
Direct Liquefaction	11.9	3.0	-	3.0
Support Studies/Engineering Evaluation	1.4	1.0	-	1.0
Total Coal Liquefaction	$24.1	$ 9.5	$ -	$ 9.5

BACKGROUND

- o This program supports basic and applied research to develop advanced technology for the production of synthetic liquid fuels from coal.
- o The Department focuses upon two approaches to producing liquid fuels from coal, direct liquefaction and indirect liquefaction.

FY 1988 BUDGET

	Dollars In Millions
o Advanced Research	
- Continue research on: novel catalytic, biological and other approaches to coal liquefaction; improving the understanding of liquefaction processes; and physical, chemical and thermodynamic properties of fossil fuel liquids. (FY 1987 - $4.5M)	$ 3.0
o Indirect Liquefaction	
- Continue laboratory research at PETC investigating new catalysts/reactor systems to efficiently convert coal derived gaseous feedstocks to gasoline, diesel, or jet fuels. Continue cost-shared process oriented projects with industry and universities. (FY 1987 - $4.0M)	$ 2.5
o Direct Liquefaction	
- Continue PETC in-house research. Continue bench scale industrial research in coprocessing and/or staged catalytic liquefaction. Continue research on novel approaches to to coal liquefaction. (FY 1987 - $4.9M)	$ 3.0

FY 1988 BUDGET (cont'd)

Dollars In Millions

o Support Studies/Engineering Evaluations

- Continue to develop solvent quality characterization and process evaluation information on advanced coal liquefaction processes. Continue mechanistic and characterization studies; novel catalyst development; and process studies at Sandia National Lab. (FY 1987 - $1.4M) $ 1.0

Total FY 1988 $ 9.5

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Combustion Systems

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Atmospheric Fluidized Bed Combustion	$ 3.3	$ 1.6	$ -	$ 1.6
Pressurized Fluidized Bed Combustion	5.8	7.0	- 0.4	6.6
Advanced Combustion Technology	2.8	2.5	-	2.5
Alternative Fuels Utilization	3.2	3.5	- 0.2	3.3
Limestone Injection Multistage Burners	- 1/	7.0	- 2.0	5.0
Total Combustion Systems	$15.1	$21.6	$ - 2.6	$ 19.0

1/ Previously, appropriations of $10M in FY 1986 and $3.8M in FY 1987 were made to EPA.

BACKGROUND

o The Department of Energy has developed a program to increase the contribution and application of the nation's coal resources through the development of acceptable combustion systems and fossil-derived fuels for all sectors of the marketplace. The programs within the overall Combustion Systems activity are Atmospheric Fluidized Bed, Pressurized Fluidized Bed, Alternative Fuels and Advanced Combustion Technology.

o In addition, funding for the LIMB program, conducted by EPA, is part of this activity.

FY 1988 BUDGET

Dollars In Millions

o Atmospheric Fluidized Bed Combustion

- Continue to conduct experimental and analytical erosion studies. (FY 1987 - $1.2M) $ 0.4

FY 1988 BUDGET (cont'd)	Dollars In Millions
o Atmospheric Fluidized Bed Combustion (cont'd)	
- Initiate advanced concepts follow-on effort for varying test levels through proof-of-concept with an increasing degree of cost share (25-50%) by the private sector. (FY 1987 - $1.0M)	$ 0.3
- Complete bench scale construction and begin operational testing of selected units within the Special Applications Program. (FY 1987 - $1.1M)	$ 0.9
o Pressurized Fluidized Bed Combustion	
- Complete testing of advanced hot gas cleanup devices and continue evaluation of PFB components, design alterations and changes in operating parameters to improve systems reliability, reduce costs and enhance environmental performance. (FY 1987 - $0.6M)	$ 0.5
- Continue modeling studies to predict tube erosion/corrosion and linking criteria. Also, based on prior testing at NYU determine mechanisms for tube wastage studies so as to identify promising candidate alloys that satisfy industrial standards and which will become candidates for long term laboratory testing. (FY 1987 - $0.3M)	$ 0.5
- Continue R&D at METC on PFB dynamics, systems analysis and combustion characterization. Continue technology and economic analysis assessments. Identify data gaps and evaluate the use of "nonconventional" sorbents in advanced PFB systems. (FY 1987 - $0.9M)	$ 1.4
- Complete cost-shared follow-on effort concerned with testing critical PFB process components and prepare final reports. (FY 1987 - $1.8M)	$ 0.5
- Continue Advanced Concepts Phase II development and maintain project schedule and scope of work by testing key critical process components such as the pressurized circulating bed combustor required to confirm proof-of-concept. (FY 1987 - $2.2M)	$ 3.7
o Advanced Combustion Technology	
- Continue base program for the development of the most promising advanced combustion systems for retrofit, light industrial, commercial/institional and residential application. Industrial and utility applications of advanced combustors, which were initiated in FY 1987, will be discontinued. This activity also includes project management support. (FY 1987 - $2.1M)	$ 1.8

FY 1988 BUDGET (cont'd)

	Dollars In Millions
o Advanced Combustion Technology (cont'd)	
- Continue in-house activities including combustion and system characterization of coal based fuels. This activity also includes data base development for technology transfer to the private sector. (FY 1987 - $0.7M)	$ 0.7
o Alternative Fuels Utilization	
- Continue identification, formulation and characterization of coal-based fuels in support of the advanced combustion systems program. This activity includes transport, handling and storage studies. Continue project management support and international cooperative research. Continue in-house activities in fuel rheology, emissions characterization, dense phase combustion tests of ultra fine beneficiated coal and data base development for technology transfer to the private sector. (FY 1987 - $3.2M)	$ 3.3
o Limestone Injection Multistage Burners	
- Provide funding to EPA to continue commercial-scale demonstration on tangentially-fired utility boiler. Complete design phase. (FY 1987 - $0)	$ 5.0
Total FY 1988	$19.0

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Fuel Cells

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Phosphoric Acid Systems	$15.5	$ 0	$ -	$ 0
Molten Carbonate Systems	7.6	3.2	-	3.2
Advanced Concepts	5.0	2.0	-	2.0
Total Fuel Cells	$28.1	$ 5.2	$ -	$ 5.2

BACKGROUND

o The objective of the Fuel Cells program is to support high risk, high payoff technology base development and to assist private industry in developing hydrocarbon fuel conversion technologies to increase the cost effective, efficient and environmentally acceptable use of conventional and alternative hydrocarbon fuels.

BACKGROUND (cont'd)

- o Phosphoric acid systems have advanced to the proof-of-concept stage with large scale testing underway. The Department proposes that any further technology development should be the responsibility of the private sector.

- o The technical feasibility of molten carbonate fuel cells operating at approximately 60 percent electrical conversion efficiency (natural gas to busbar) has been forecast by single cell testing. The complexity and associated capital costs of advanced fuel cell systems are projected to be less than those for first generation phosphoric acid fuel cell systems.

- o The solid oxide fuel cell is an advanced, high temperature solid state fuel cell that offers promise in electric utility and in cogeneration applications in industrial and commercial sectors.

- o Systems are being designed and components are being developed for eventual operation using coal and coal derived fuels.

FY 1988 BUDGET	Dollars In Millions
o Molten Carbonate Systems	
- Continue development and scaleup of the single most promising molten carbonate stack activity. (FY 1987 - $6.1M)	$ 3.1
- Continue technology base research on promising concepts, electrodes and materials development. (FY 1987 - $0.5M)	$ 0.1
o Advanced Concepts	
- Continue development of a solid oxide 25 to 200 kW generator module at a reduced level of effort. (FY 1987 - $4.2M)	$ 1.6
- Continue system studies and research on advanced concepts and evaluation of new concepts. (FY 1987 - $0.8M)	$ 0.4
Total FY 1988	$ 5.2

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Heat Engines

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Gas Turbines	$ 9.0	$ 6.3	$ -	$ 6.3
Diesel Engines	3.2	2.0	-	2.0
Total Heat Engines	$12.2	$ 8.3	-	$ 8.3

BACKGROUND

- o The principal goal of this program is to establish technical data which will enable the private sector to assess the commercial viability of coal-fueled power conversion systems.

- o The program goal is to assist the private sector, through selected research efforts, to develop the technology needed for direct firing of coal, either dry or suspended in a liquid carrier, or a coal-derived gaseous fuel cleaned at minimal cost.

- o The program focuses on key technical problems associated with substituting coal or coal-derived gaseous fuels for distillate fuels or natural gas turbine and diesel power conversion systems.

- o Applications for this technology include industrial cogeneration, combined cycle electric power generation, repowering of existing generating capacity, and both rail and marine transportation.

- o The FY 1988 budget request for Heat Engines is believed to be appropriate given the need to reduce the Federal budget deficit. Because of fiscal constraints, we are not able to fund multiple approaches in this program area. We believe that funding the most advantageous technical approaches will still provide for a strong development activity.

FY 1988 BUDGET	Dollars In Millions
o Gas Turbines	
- Continue coal-fueled gas turbine integrated systems tests aimed towards proof-of-concept in 1992 with two contractors rather than the original four, reducing the number of technical approaches planned. (FY 1987 - $8.4M)	$ 5.8
- Continue in-house evaluation of coal-liquid mixtures (CLM) in METC pressurized combustor test stand. (FY 1987 - $0.6M)	$ 0.5
o Diesel Engines	
- Continue in-house evaluation of CLM in METC diesel engine test facility. Continue coal-fueled diesel engine integrated system tests aimed towards proof-of-concept by 1994 with one contractor rather than the scheduled two reducing the number of technical approaches. (FY 1987 - $3.2M)	$ 2.0
Total FY 1988	$ 8.3

Underground Coal Gasification

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Gasification Technology Development	$ 1.2	$ 0	$ -	$ 0
Environmental and Advanced Research	.2	0	-	0
Total Underground Coal Gasification	$ 2.4	$ 0	$ -	$ 0

BACKGROUND

- o This program represents viable technologies for in situ conversion of coal to a cleaner burning, easily transportable gaseous fuel.
- o Current program efforts are directed toward the definition of sufficient technical, operational, and environmental parameters to allow industry to make decisions concerning the commercial development of the technology.

FY 1988 BUDGET	Dollars In Millions
o Ongoing activities will be brought to conclusion. This decision reflects the maturity of the technology and a desire to focus resources on higher priority programs. (FY 1987 - $2.4M)	$ 0

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Magnetohydrodynamics (MHD)

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Proof-of-concept Topping Cycle	$16.2	$ 0	$ -	$ 0
Proof-of-concept Bottoming Cycle	7.3	0	-	0
Proof-of-concept Seed Regeneration	0.1	0	-	0
Systems Studies, Support Research and Conceptural Designs	2.9	0	-	0
Total Magnetohydrodynamics	$26.5	$ 0	$ -	$ 0

BACKGROUND

- The current FY 1987 MHD program continues to implement the June 1984 cost-shared multiyear program which provides for basic supporting research and the development of components and subsystems which could eventually furnish the technology base for integrated, long duration, proof-of-concept testing.

FY 1988 BUDGET	Dollars In Millions
o No funds have been requested for FY 1988. The Department believes that the cost of continuing its MHD program is not affordable in light of current fiscal constraints.	$ 0

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Surface Coal Gasification

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Advanced Research	$ 2.8	$ 0.6	$ -	$ 0.6
Systems for Power Production	14.4	1.5	-	1.5
Systems for Industrial Fuel Gas Production	1.2	1.0	-	1.0
Systems for Synthesis Gas Production	1.7	1.2	-	1.2
Systems for Coproducts Production	4.1	1.0	-	1.0
Great Plains Coal Gasification Project	0.4	0.5	-	0.5
Total Surface Coal Gasification	$24.7	$ 5.8	$ -	$ 5.8

BACKGROUND

- The coal gasification program is organized to foster the development of advanced gasifier systems for the production of: electric power, synthesis gas (for synthetic natural gas, indirect liquefaction, and chemical feedstocks), industrial fuel gas, and coproducts (simultaneous production of solids, liquids, and gases).

- This activity also provides for basic and fundamental research related to Surface Coal Gasification processes including studies of reaction mechanisms and chemistry. In addition, this program supports the continued management and modeling of the Great Plains Project.

BACKGROUND (cont'd)

- o This new organization has resulted in a revised budget structure that better reflects the relationship between program content and the interests of the potential end-users.

FY 1988 BUDGET	Dollars In Millions
o Advanced Research	
- Continue research on the fundamental chemistry and reaction mechanisms of coal gasification and the use of catalysts to control product yield distributions. Discontinue work at UNDERC on ash and slag chemistry. (FY 1987 - $1.9M)	$ 0.4
- Continue work on separating hydrogen from synthesis gas using ion exchange membranes. Continue research on understanding the factors controlling the cleavage and restoration of bonds in coal molecules leading to the development of practical pretreatment methods to obtain higher product yields. (FY 1987 - $0.9M)	$ 0.2
o Systems for Power Production	
- Continue studies on entrained flow reactors and associated materials and component development efforts to determine effects of extreme gasification conditions; development of techniques for environmental characterization of power systems, sampling of operating systems and evaluate hot gas cleanup candidate technologies; and operation of fixed bed gasifier at METC to generate flue gas to evaluate and develop advanced hot gas cleanup systems. (FY 1987 - $2.1M)	$ 1.5
o Systems for Industrial Fuel Gas Production	
- Continue development of potentially lower cost method for oxygen production; advanced instrumentation research on slipstream gasifier testing; and operation of METC fluid-bed gasifiers to provide data on system integration and optimum configuration of subsystems. (FY 1987 - $1.2M)	$ 1.0
o Systems for Synthesis Gas Production	
- Continue DOE/Gas Research Institute (GRI) technical evaluation and engineering analysis of synthesis gas systems; studies on low cost hydrogen separation using novel concepts including membranes; and investigations on low cost shift catalysts. (FY 1987 - $0.8M)	$ 1.2

FY 1988 BUDGET (cont'd)

	Dollars In Millions
o Systems for Coproducts Production	
- Continue investigation of rapid coal devolatilization for maximum liquid yields; studies on ugrading of coal derived liquids; systems analysis and economic evaluation of mild gasification processes; investigation of novel electrochemical process for production of coal liquids; multi-solid fluid bed phenomena investigations; and development of recirculating catalyst for mild gasification process. (FY 1987 - $2.9M)	$ 1.0
o Great Plains Coal Gasification Project	
- Complete post operating assessments and information archiving. Administrative closeout expenses. (FY 1987 - $0.4M)	$ 0.5
Total FY 1988	$ 5.8

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Enhanced Oil Recovery

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Heavy Oil	$ 2.3	$ 2.1	$ -	$ 2.1
Light Oil	7.2	7.2	-	7.2
Tar Sands	1.7	0	-	0
Total Enhanced Oil Recovery	$11.2	$ 9.3	$ -	$ 9.3

BACKGROUND

- o Enhanced oil recovery represents a technology that can fill the gap between now and the critical time when the nation will likely rely more extensively on synthetic fuels (also being developed by our Oil Shale, Tar Sands, and Liquefaction programs).
- o The Department of Energy has developed a program to conduct generic technology base R&D activities; develop fundamental knowledge that can lead to improved and new process concepts; and to assist industry in obtaining a better understanding of the mechanisms and behavior of advanced and novel EOR processes for the recovery of presently unrecoverable light oil, heavy oil and tar sand resources.

BACKGROUND (cont'd)

- o FY 1988 funding will concentrate upon heavy and light oil recovery research. Developing advanced oil recovery techniques is a major thrust of the Fossil Energy R&D program for FY 1988.

FY 1988 BUDGET	Dollars In Millions
o Heavy Oil	
- Continue basic research at the National Institute for Petroleum and Energy Research (NIPER) in mobility control mechanisms of steamflood additives for increasing sweep efficiency, in foam generation and stability, and in correlating chemical/physical reservoirs properties with specific additive behavior. (FY 1987 - $1.5M)	$ 0.4
- Continue cooperative research with Venezuela and Mexico on a task shared basis through NIPER in petroleum characterization and recovery; work with the oil producing states to mitigate production declines; and conduct the related planning, technical and analytical assessments. (FY 1987 - $0.6M)	$ 0.2
- Initiate a geoscience characterization program as a means for overcoming reservoir heterogeneity constraints to thermal sweep efficiencies and effective fluid displacement and recovery. (FY 1987 - $0)	$ 0.5
- Initiate research in novel extraction approaches to extraction of presently deemed unrecoverable heavy oil resources through alternate reservoir access methods, advanced techniques for restimulating mature wells such as MEOR and other new technologies. (FY 1987 - $0)	$ 0.5
- Initiate fundamental studies on the chemical, physical and thermodynamic properties and behavior of reservoir and injection fluid interactions. (FY 1987 - $0)	$ 0.5
o Light Oil	
- Continue broad based program of research at NIPER in light oil recovery; work with oil producing states to mitigate production declines; and conduct the related planning, technical and analytical assessments. (FY 1987 - $1.2M)	$ 3.8
- Initiate a geoscience effort to address geological parameters impacting EOR including determination of residual oil saturation in the zones where EOR fluids are injected; quantification of the micro and macroscopic heterogeneities that cause channeling around targeted residual oil; development of analytical and diagnostic techniques to characterize reservoirs. (FY 1987 - $1.7M)	$ 0.6

FY 1988 BUDGET (cont'd)

o Light Oil (cont'd)

- Continue research in advanced process analysis to include systematic microbiological studies and explore the feasibility of other novel methods of access to as well as extraction of residual oil resources. (FY 1987 - $0.1M) $ 0.6

- Continue fundamental studies to better understand three-phase fluid movement in reservoirs, rock/fluid interaction phenomena including chemical absorption and desoprtion, relative permeability, wettability effects, ion exchange characteristics, surface chemistry and chemical potential of sedimentary rocks as a foundation for industry to design efficient, effective chemical recovery systems. (FY 1987 - $1.5M) $ 0.6

- Continue an in-house program of research in gas miscible, CO_2 recovery with emphasis on understanding reservoir heterogeneity effects on gas flooding, development of mobility control strategies to affect significant increases in sweep efficiency, and on fundamental studies to identify displacement mechanisms requisit to efficient, effective and predictable application of CO_2 and other gas recovery methods. (FY 1987 - $1.3M) $ 0.6

- Solicit small cooperative industry field tests to rapidly demonstrate promising lab scale EOR concepts particularly applicable to mature light oil fields in production decline. (FY 1987 - $1.5M) $ 1.0

o Tar Sands

- Reflects a decision to suspend activities and focus resources on higher priority areas such as Enhanced Oil Recovery)FY 1987 - $1.65M) $ 0

Total FY 1988 $ 9.3

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Advanced Process Technology

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Advanced Exploratory Research	$ 3.3	$ 1.6	$ -	$ 1.6
Arctic and Offshore Research	0.5	$ 0.4	-	0.4
Total Advanced Process Technology	$ 3.8	$ 2.0	-	$ 2.0

BACKGROUND

- o The Advanced Process Technology (APT) Program pursues new concepts to achieve quantum increases in efficiency and cost reduction of recovery techniques for oil, gas, and oil shale.

- o The goals of this research program are:

  - to conduct fundamental research relevant to recovery of oil, gas and oil shale.

  - to pursue application of discoveries from unexplored new concepts which may achieve quantum increases in the recovery of oil, gas and oil shale resources.

  - to develop a fossil energy-related knowledge base that will improve the economics of fossil fuel production in the Alaskan Arctic and expand the reserves.

FY 1988 BUDGET	Dollars In Millions
o Advanced Exploratory Research	
- Continue a program of fundamental studies including crosscutting research in petroleum, geoscience and chemistry; identify stability and contaminant problems associated with processing techniques applied to petroleum, tar sands and oil shale. Work performed at NIPER. (FY 1987 - $1.2)	$ 0.9
- Continue research on extraction technology and development of advanced instrumentation to measure reservoir characteristics and thermal fronts. (FY 1987 - $1.4)	$ 0.3
- Continue fuels research, correlation of fuels composition and processing needs for predictive models. (FY 1987 - $0.1)	$ 0.1
- Continue research on pollutants in aquifers adjacent to oil, gas and shale in-situ recovery operations, and development of mitigation strategies. Work performed by NIPER. (FY 1987 - $0.6)	$ 0.3
o Arctic and Offshore Research	
- Continue acquisition of data on ice island motions and ice floe interactions with structures, and development of the Arctic/Offshore oil and gas research data base. (FY 1987 - $0.5)	$ 0.4
Total FY 1988	$ 2.0

Oil Shale

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Oil Shale Technology Base	$ 7.8	$ 0.7	$ -	$ 0.7
Environmental Mitigation	3.2	0.3	-	0.3
Total Oil Shale	$11.0	$ 1.0	$ -	$ 1.0

BACKGROUND

- o Oil shale technology development represents the development of extraction and conversion processes designed to convert oil shale to a state of liquid fuels.
- o The Department of Energy has developed a program to provide a sound technologic basis for reduction of economic and environmental constraints to industrial development of the U.S. oil shale resources and to increase the amount of resource that may be used economically.
- o The program will focus on basic research using reference shales to systematically study the chemistry, kinetics, and emissions related to eastern and western shale processing.
- o FY 1988 funding estimates concentrated Petroleum research efforts towards heavy and light oil research, both nearer-term technologies when compared to Oil Shale and Tar Sands. The Oil Shale request for FY 1988 reflects this prioritization of the Petroleum programs.

FY 1988 BUDGET	Dollars In Millions
o Oil Shale Technology Base	
- Continue an integrated program of research at METC and LLNL, develop the experimental data, and associated models and systems analysis capabilities required by industry to determine how raw shale composition and process conditions affect the quantity and quality of product and air, water and solid waste emissions. (FY 1987 - $1.1M)	$ 0.7
o Environmental Mitigation	
- Continue research to identify and quantify trace element emissions and how they partition in the product and waste streams as a function of process condition and shale composition; conduct plannning, technical and analytical assessments. (FY 1987 - $0.7M)	$ 0.3
Total FY 1988	$ 1.0

Unconventional Gas Recovery

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Eastern Gas Shales	$ 0.8	$ 0.3	$ -	$ 0.3
Western Tight Gas Sands	5.4	0.3	-	0.3
Environmental and Advanced Research	1.8	1.0	-	1.0
Total Unconventional Gas Recovery	$ 8.0	$ 1.6	$ -	$ 1.6

BACKGROUND

- o This program fosters the development of advanced technologies for the extraction of natural gas from currently unrecoverable unconventional gas resources by reducing the uncertainty surrounding the potential magnitude of these resources and the conditions under which they will be produced.

- o The program will develop technologies to the point where concepts are proven and economics established.

FY 1988 BUDGET

Dollars In Millions

- o Eastern Gas Shales

  - Continue in-house support to maintain and update the technical data base and research with associated reservoir and stimulation models; continue systems analysis in support of production strategy development. (FY 1987 - $0.3M) $ 0.3

- o Western Tight Gas Sands

  - Continue in-house research on reservoir and stimulation model application; systems analyses; data base maintenance and expansion. Modeling focuses on integration of multiwell results and on regional studies of production patterns and reservoir behavior. (FY 1987 - $0.9M) $ 0.3

- o Environmental and Advanced Research

  - Continue in-house geologic, geophysical and geochemical studies in support of a program to explore deep source gas generation potential of organics subducted at tectonic plate margins. (FY 1987 - $0.5M) $ 0.3

FY 1988 BUDGET (cont'd)

	Dollars In Millions
o Environmental and Advanced Research (cont'd)	
- Continue research to explore, on a fundamental basis, geophysical and geochemical properties of gas hydrates and to examine gas hydrate recovery strategies based on an understanding of the gas release mechanisms. Conduct in-house technology assessment of processes to convert natural gas to liquids. (FY 1987 - $0.4M)	$ 0.7
Total FY 1988	$ 1.6

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Program Direction and Management Support

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Operating				
Headquarters Program Direction				
Salaries and Benefits	$ 8.5	$ 8.9	$ -	$ 8.9
Travel	0.4	0.5	-	0.5
Contract Services	5.4	1.5	- 1.0	0.5
Subtotal, Headquarters Program Direction	14.3	10.9	- 1.0	9.9
ETC Program Direction:				
Salaries and Benefits	17.5	13.6	-	13.6
Travel	1.0	0.7	-	0.7
Contract Services	28.5	13.3	- 2.2	11.1
Subtotal, ETC Program Direction	47.0	27.6	- 2.2	25.4
Federal Inspector for the Alaskan Natural Gas Transportation System	0.2	0.2	-	0.2
Total Program Direction	$61.5	$38.7	$ - 3.2	$ 35.5

BACKGROUND

o This activity provides funding for salaries, benefits and overhead expenses for the management of FE program at Headquarters, and the Energy Technology Centers:

- The Headquarters staff is responsible for overall program direction which implements DOE policy and communicates that policy to the Energy Technology Centers, sets program objectives, develops program plans and evaluates alternative program strategies, develops and defends budget requests to the Office of Management and Budget and to the Congress, approves procurement plans, monitors work progress, evaluates projects, and approves revisions in work plans as required to attain program goals.

BACKGROUND (cont'd)

- The Energy Technology Centers support day-to-day project management functions for assigned programmatic areas including contract and National Laboratory monitoring, development and maintenance of project budget, and procurement plans, and other activities related to program and site support.

- The Office of the Federal Inspector for the Alaska Natural Gas Transportation System is responsible for coordinating all Federal activities pertaining to the pipeline in order to assure timely, efficient, safe, and environmentally sound construction including the assessment of developments in the world energy market, specifically the U.S. and Canadian oil and gas situation as they affect the Alaska Natural Gas Transportation System.

FY 1988 BUDGET	Dollars In Millions
o Provide funds for 130 FTEs at Headquarters. This staff implements and communicates policy to the ETC's, sets program objectives, develops program plans and evaluates alternative strategies; develops and defends budget requests; approves procurement plans, monitors work programs. (FY 1987 - $8.4M)	$ 8.9
o Provide funds for 130 FTEs in support of the activities stated above. Both domestic and international travel is conducted. (FY 1987 - $0.4M)	$ 0.5
o Provide for contractual services that are generic to the entire FE program. Included are items such as printing, computer services, technical support services, conferences, etc. (FY 1987 - $5.4M)	$ 0.5
o Provide funds for ETC staff of 240 FTEs. Activities of the staff include contract and lab monitoring; development and maintenance of project, budget and procurement plans, and other activities related to program and site support. (FY 1987 - $17.5M)	$13.6
o Provide funds for 240 FTEs in support of the coordination of the above activities in the attainment of program goals, both on the domestic front and abroad. (FY 1987 - $0.9M)	$ 0.7
o Provide funds for facility operations, maintenance, finance and administrative support and other costs not appropriately chargeable to R&D projects, in support of this level of FTEs. (FY 1987 - $28.5M)	$11.1
o Provide funds for administrative and support functions; continue to assess developments in U.S. and Canadian energy markets and maintain liaison with project sponsors, producers, other government agencies, State of Alaska and Canadian government. (FY 1987 - $0.2M)	$ 0.2
Total FY 1988	$35.5

Plant & Capital Equipment

(Dollars In Millions)

FUNDING ACTIVITIES	FY 1987	Jan. Request FY 1988	Proposed Amendment	Revised Request
Capital Equipment	$ 1.5	$ 0.5	$ -	$ 0.5
Construction	1.7	0	-	0
Total, Plant and Capital Equipment	$ 3.2	$ 0.5	$ -	$ 0.5

BACKGROUND

- o Capital equipment is purchased annually to replace obsolete equipment so that the Energy Technology Centers (ETCs) and the National Laboratories analytical capabilities are constantly being upgraded.

- o General plant projects are essential to the safe, efficient operation of the ETCs and construction is dedicated to a number of improvements, alterations and additions at each of the Energy Technology Centers.

FY 1988 BUDGET	Dollars In Millions
o Capital Equipment	
- Provide ADP equipment for PETC. (FY 1987 - $1.5M)	$ 0.5
o Construction	
- No activity. (FY 1987 - $1.7M)	$ 0
Total FY 1988	$ 0.5

The attached table summarizes the funding request for the FY 1988 Fossil Energy R&D program.

U.S. DEPARTMENT OF ENERGY
Office of Fossil Energy
FY 1988 CONGRESSIONAL BUDGET REQUEST

SUMMARY TABLE

Budget Item	FY 1987 Request	FY 1987 Approp.	JANUARY FY 1988 Request	REVISED FY 1988 Request
COAL				
Control Tech and Coal Prep	$ 18.1	$ 37.8	$ 33.0	$ 28.6
Advanced Research & Tech Dev	27.2	32.4	26.0	25.3
Coal Liquefaction	9.1	24.1	9.5	9.5
Combustion Systems	9.2	15.1	21.6	19.0
Fuel Cells	5.0	28.1	5.2	5.2
Heat Engines	8.0	12.1	8.3	8.3
Underground Coal Gasification....	---	2.4	---	---
Magnetohydrodynamics	---	26.5	---	---
Surface Coal Gasification	5.6	24.7	5.8	5.8
Subtotal, Coal	82.2	203.2	109.4	101.7
GAS				
Unconventional Gas Recovery	5.3	8.0	1.6	1.6
PETROLEUM				
Advanced Process Technology	1.8	3.8	2.0	2.0
Enhanced Oil Recovery	4.5	11.2	9.3	9.3
Oil Shale	3.6	11.0	1.0	1.0
Subtotal, Petroleum	9.9	26.0	12.3	12.3
POLICY & MANAGEMENT ..... (includes Plant & Capital Equip)	40.2	64.7	39.1	35.9
COOPERATIVE VENTURE R&D POOLS ...	12.5	---	7.0*	4.5*
Subtotal, Fossil Energy R&D	$ 150.1	$ 301.9	$ 169.4	$ 156.0
Offsets from Prior Year Funds	- 67.3	- 6.0	- .5	- 6.1
TOTAL, FOSSIL ENERGY R&D	$ 82.8	$ 295.9	$ 168.9	$ 149.9

* To be submitted in a subsequent budget amendment