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U.S. Department of Energy

SECRETARY'S ANNUAL REPORT TO CONGRESS

January 1981

Volume II
Budget Highlights
1982

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U.S. Department of Energy

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1982

DEPARTMENT OF ENERGY
BUDGET HIGHLIGHTS
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OVERVIEW

The Department of Energy was organized to bring together the primary Federal government mechanisms available to deal with the serious energy supply and demand problems faced by our Nation and to manage the transition from an economy highly dependent on conventional oil resources to an economy based on careful use of energy sources with nearly unlimited potential. Since its establishment on October 1, 1977, the Department has conducted an aggressive program of research, development and demonstration coupled with financial incentives and sound regulatory policies in a wide range of energy technologies within the guidelines of national energy policy.

In addition to its primary mission in the energy area, the Department also has major responsibilities for the conduct of general science and national defense activities. Although these activities do not directly support our energy R&D mission, advancements in scientific knowledge and technology development in these areas contribute indirectly to energy research and development.

The Department of Energy request for FY 1982 supports a comprehensive set of programs representing a balanced approach to solving the energy problems facing the Nation. The budget request is summarized below:

	Budget Authority (in millions)	
	FY 1981	FY 1982
ENERGY		
Energy Conservation	$ 817	$ 922
Research, Development, and Applications	3,957	4,496
Regulation and Information	436	397
Direct Energy Production	298[a/]	1,029
Subtotal	$ 5,508	$ 6,844
Strategic Petroleum Reserve[b/]	3,331	3,898
TOTAL ENERGY	$ 8,839	$10,742
GENERAL SCIENCE	504	607
DEFENSE ACTIVITIES	3,667	4,704
DEPARTMENTAL ADMINISTRATION	284	402
LEGISLATIVE PROPOSAL - SPENT FUEL	300	---
TOTAL DOE	$13,594[c/]	$16,455

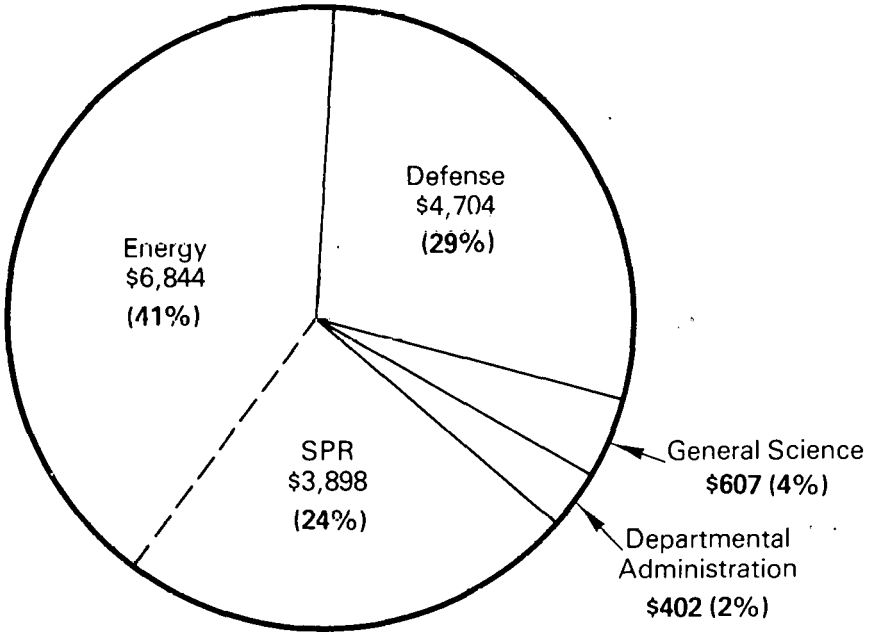
a/ Excludes $1,254 million in contract authority which will be liquidated by revenues.

b/ Includes $1,845 million in FY 1981 and $248 million in FY 1982 in receipts from crude oil entitlement sales credited to the Federal government.

c/ Includes enacted appropriations plus proposed supplementals of $199 million minus proposed rescissions of $102 million. All subsequent tables also include, where appropriate, these proposed FY 1981 supplementals and rescissions, details of which may be found on page 37.

Overall, the Department's request for FY 1982 represents a 21 percent increase over FY 1981 appropriations. The major areas of growth are in funding for the Defense Programs and Strategic Petroleum Reserve. In other areas, modest rates of growth support new initiatives in research and development and provide adequate funds to maintain programs most seriously affected by recent high rates of inflation.

The breakdown of DOE programs by primary mission is shown in the following figure:



The Energy functions, which represent 65 percent of the DOE budget, show an overall 22 percent increase over the FY 1981 appropriated amount. The energy activities include:

- Research and development and grant programs to encourage the conservation of energy;
- Programs to expand future energy supplies through research and development, demonstrations and financial incentives;
- Regulatory activities and the collection, analysis, and dissemination of energy information;
- Direct production and distribution of energy through uranium enrichment petroleum production, and power marketing activities; and
- Contingency planning for oil supply interruption through the operation of the Strategic Petroleum Reserve.

The General Science responsibility, which represents 4 percent of the DOE budget, was established by the Atomic Energy Act of 1954 to undertake basic search to expand our knowledge of the fundamental structure and behavior matter. The 20 percent increase in General Science reflects the DOE commitment to support meaningful research in High Energy Physics, Nuclear Physics and Life Science programs.

The Defense Programs responsibility, which represents 29 percent of the DOE budget, supports the national security mission of the Department of Defense through the development, testing and production of nuclear weapons and related activities. Like the General Science responsibility, the Defense role of the Department of Energy was established by the Atomic Energy Act and transferred to it upon its establishment on October 1, 1977. The increase in Defense Programs request for funding from $3,674 million in FY 1981 to $4,704 million in FY 1982 is principally related to production requirements to support new weapon systems.

Finally, the funding increase requested for Departmental Administration is principally attributed to the inflationary impacts on costs for support services and increases to the In-House Energy Management program.

The FY 1982 budget requested by the Department of Energy will provide for a balanced and effective program in support of our assigned responsibilities and the Nation's priorities. The following pages discuss the Department's FY 1982 activities in greater detail.

ENERGY PROGRAMS

The request for energy programs totals $10,742 million in budget authority for FY 1982, an increase of $1,903 million over FY 1981.

	Budget Authority (in millions)	
	FY 1981	FY 1982
ENERGY		
Conservation	$ 817	$ 922
Research, Development and Applications	3,957	4,496
Regulation and Information	436	397
Direct Production	298[a/]	1,029
Subtotal	$5,508	$6,844
Strategic Petroleum Reserve[b/]	$3,331	$ 3,898
TOTAL ENERGY	$8,839	$10,742

a/ Excludes $1,254 million in contract authority which will be liquidated by revenues.

b/ Includes $1,845 million in FY 1981 and $248 million in FY 1982 in receipts from crude oil entitlement sales credited to the Federal government.

The funding requested in FY 1982 will:

- Continue grants to schools and hospitals, weatherization assistance to low-income homeowners, and efforts to enhance public conservation awareness;
- Maintain funding to achieve the President's goal of meeting 20 percent of the Nation's energy needs through solar and hydropower applications by the year 2000;
- Pursue an aggressive fossil energy program, including $770 million in FY 1982 to construct two solvent refined coal demonstration facilities and the Low/Medium Btu (Memphis) plant;
- Continue the base R&D program in Magnetic Fusion and pursue efforts to demonstrate engineering feasibility by the early 1990's;
- Maintain efforts to deal with the long-term disposal of nuclear waste;
- Maintain the Department's regulatory and information programs;
- Operate the Department's business enterprises, which will generate a total of $3,250 million in revenues in FY 1982; and
- Maintain an aggressive oil acquisition program for the Strategic Petroleum Reserve.

CONSERVATION

The Department's conservation programs are designed to reduce the growth of energy consumption by encouraging and providing the means for more efficient use of energy. The Department uses technology development, information transfer, and grants as the principal mechanisms for achieving these goals. The Department's efforts are complemented by tax credits and regulatory programs to provide a comprehensive approach to reducing energy consumption.

In choosing programs to receive support funding, the Department makes every effort to select only those which offer the highest potential energy saving benefits.

	Budget Authority (in millions)	
Research and Development	FY 1981	FY 1982
Buildings and Community Systems	$ 88	$ 99
Residential/Commercial Retrofit	26	31
Industrial	54	52
Transportation	108	122
Conservation Multi-Sector	26	32
Subtotal	$302	$336
Grant Programs		
State and Local	$453	$539
Energy Impact Assistance	62	47
Subtotal	$515	$586
TOTAL CONSERVATION	$817	$922

Research and Development

The Department's research and development activities are designed to augment private sector conservation efforts and accelerate the development and deployment of innovative equipment, processes, and practices. Significant energy savings are possible over the next 30 years by changing existing methods of energy use, but in many cases this high potential for energy savings carries with it significant technical risks and long lead-times for implementation.

The FY 1982 budget includes $336 million for Conservation research, development, and information transfer activities, divided into five major categories: buildings and community systems, residential and commercial retrofit, industrial, transportation, and multi-sector.

Buildings and Community Systems

The purpose of the Buildings and Community Systems program is to both accelerate the rate of improvement in energy efficiency in the Nation's inventory of buildings and to develop and implement techniques and incentives for more efficient use of energy in community systems and consumer products. The FY 1982 budget provides $99 million for activities in this program area, including the following:

- o Continued development of methods to convert municipal waste to energy;
- o Completion of field demonstration programs on high efficiency heating systems, field tests of improved heat pumps, and completion of other consumer product research; and
- o Development of energy efficiency standards for most residential and commercial building types, including Federal facilities.

Residential and Commercial Retrofit

A related set of activities comprises the Residential/Commercial Retrofit program. This program, funded at $31 million in FY 1982, will demonstrate several different types of retrofit delivery systems which can bring energy conservation measures into existing buildings, and will train 18-20,000 energy auditors. The Residential Conservation Service will be expanded, through this program, to include multifamily and commercial building energy audits.

Industrial

The FY 1982 funding for industrial sector conservation activities is $52 million. This program develops and demonstrates new energy-efficient technologies for industrial applications and stimulates more rapid acceptance of existing energy conserving technologies. Work will continue on innovative methods of waste energy reduction, the development of higher efficiency industrial processes for energy intensive industries, and fabrication of demonstration hardware for cogeneration projects.

Transportation

Transportation energy conservation programs have the objectives of reducing the energy consumed by the transportation sector and reducing, to the extent practicable, transportation's almost complete dependence on petroleum. Near term goals include use of more energy efficient practices by drivers and fleet operators, and acceptance of electric vehicles as a viable transportation alternative. Longer term goals include development of new engine types, i.e., Stirling and advanced gas turbine, and advanced electric and hybrid vehicles. The FY 1982 budget of $122 million will also permit 610 new electric vehicles to be added to the market demonstration fleet.

Multi-Sector

Conservation multi-sector activities, funded at $32 million in FY 1982, can be grouped into two major program areas. One concentrates on encouraging individuals and small businesses to develop and demonstrate small-scale energy related technologies which match local and community energy resources and requirements. It also provides support to small businesses and individuals for the development of energy related inventions. Although most of these individual projects are small, they show promise of achieving substantial energy savings and very high benefit-cost ratios for the federal investment involved.

The other major activity area is concerned with applied basic research and exploratory development on advanced energy conversion and utilization technologies. Projects could be transferred to the transportation, industry, and buildings and community systems programs for engineering development and demonstration if technical and economic feasibility has been established.

Grant Programs

A number of programs provide federal funds to State and local governments to undertake conservation measures and to develop plans for coping with major supply interruptions and other emergencies. These programs are funded at $539 million in FY 1982.

Major FY 1982 grant activities include:

- $200 million to States for energy conservation retrofit measures in 5,400 school and hospital buildings;
- $200 million to States for weatherization assistance to low-income persons, particularly elderly and handicapped persons, who live in older, less energy-efficient housing; this should be sufficient to weatherize 140,000 homes;
- $102 million for the proposed Energy Management Partnership Act (EMPA). EMPA will consolidate the existing State energy conservation programs to provide integrated State energy planning and conservation assistance activities; and
- $25 million for energy emergency planning activities at the State level.

In addition to these State and local programs, $47 million is budgeted for assistance to communities which are adversely impacted, economically, socially and environmentally, by rapid increases in employment resulting from the development of major coal and uranium resources. These funds are passed through to the Farmer's Home Administration which dispenses the funds at the local level.

Deferral of FY 1981 Funds

The Department is also proposing a deferral of FY 1981 funds which would delay obligations until early in FY 1982 for Buildings and Community Systems ($1.6 million), Transportation ($1.5 million), Multi-Sector ($0.3 million), and Energy Impact Assistance ($7.0 million). This deferral represents about one percent of the funds appropriated for these programs. Slight slippages in some R&D project schedules will occur, with consequent delays in accomplishment of some objectives. Fewer planning and site development/land acquisition grants will be awarded in FY 1981 to eligible communities impacted by energy resource development activities.

RESEARCH, DEVELOPMENT, AND APPLICATIONS

Research, development, and applications programs are geared toward the expansion of future domestic energy supplies, both conventional and non-conventional, for dispersed as well as centralized applications. In addition to specific technology programs, the Department conducts vigorous environmental and basic research efforts to insure the environmental acceptability of energy technologies and to develop the technological base from which to draw in the future.

	Budget Authority (in millions)	
	FY 1981	FY 1982
Fossil Energy	$1,131	$1,572
Solar and Other Renewables	797	684
Electric Energy Systems	40	39
Energy Storage Systems	72	60
Magnetic Fusion	394	506
Nuclear Fission	1,002	959
Environment	237	280
Energy Supporting Research	270	346
Multiprogram General Purpose Facilities	25	50
Less Unobligated Balances	-11	---
TOTAL RESEARCH, DEVELOPMENT, AND APPLICATIONS	$3,957	$4,496

Fossil Energy

The Department's Fossil Energy programs include research, technical development, and demonstration of technologies which will permit greater reliance on the Nation's abundant domestic resources of coal, petroleum, oil shale, and natural gas. The budget request for these programs totals $1,572 million in FY 1982.

	Budget Authority (in millions)	
	FY 1981	FY 1982
Coal	$1,020	$1,465
Petroleum	60	58
Gas	31	29
Fossil Energy Resource Applications	20	20
TOTAL FOSSIL ENERGY	$1,131	$1,572

Coal

The Department's coal program seeks to develop methods which will permit more rapid substitution of our huge coal resources for petroleum and natural gas. The Department's research, development, and demonstration activities include new methods of coal extraction, processes for converting coal into liquid or gas, and new technologies for direct combustion of coal in an environmentally acceptable manner. Much of the work in this area directly supports the establishment of a synthetic fuel industry at the earliest practicable time, and many of the conversion technologies currently being supported by the Department through cost-shared demonstration projects are expected to move on to deployment in the commercial sector with the assistance of the newly established Synthetic Fuels Corporation.

The coal budget for FY 1982 is $1,465 million. This is an increase of almost 44 percent over the FY 1981 appropriation, and is due principally to the much higher budget request for construction funds required to support major demonstration facilities.

Three such facilities are included in the FY 1982 construction budget:

- The Solvent Refined Coal (SRC-I) plant at Newman, Kentucky ($496 million);
- The SRC II plant at Morgantown, West Virginia ($132 million); and
- The Low/Medium Btu plant at Memphis, Tennessee ($142 million).

The SRC I and II pilot plants will continue operations in support of their respective demonstration plants. Also, two other major liquefaction pilot plants will continue operations in FY 1982. These are the Exxon Donor Solvent plant in Baytown, Texas, and the H-Coal plant in Catlettsburg, Kentucky.

Atmospheric and pressurized fluidized bed combustion technologies designed to permit the burning of high-sulfur coal in an environmentally acceptable manner are strongly supported in the FY 1982 budget.

Fuel cell research, development, and demonstration is funded at $29 million in FY 1982. Efforts in phosphoric acid systems will be refocused on technology base development to support field demonstrations of integrated on-site and utility systems. The budget also provides increases for continued development of molten carbonate systems.

Magnetohydrodynamics (MHD), a longer term coal technology which offers promise in increasing the efficiency of electrical power generation, will receive $60 million to continue development efforts and to operate the two major test facilities, the Component Development and Integration Facility in Montana and the Coal Fired Flow Facility in Tennessee.

The Department is proposing to defer $42 million in FY 1981 funds for the second High-Btu Demonstration project because proceeding with that project will eliminate competition on the first High-Btu demonstration and reduce the government's ability to obtain satisfactory private sector cost sharing. Currently, two companies are completing detailed designs for the first High-Btu project, with one of these designs to be selected in the near future for construction of a demonstration plant. Proceeding with a second plant would deprive the government of the opportunity to select the most suitable design.

Petroleum

The Department's petroleum program goal is to increase the availability of domestic oil reserves by developing technology that will increase the productivity of existing petroleum sources and permit exploitation of reserves previously considered to be unrecoverable, such as tar sands and oil from shale rock.

Technologies currently in advanced stages of development have the potential for adding hundreds of billions of barrels to the Nation's domestic oil supply.

The FY 1982 funding level of $58 million emphasizes development of on-site conversion methods for recovery of oil from shale, and permits a balanced development program for light oil, heavy oil and tar sands resource recovery. Six million dollars is provided for joint projects and technical exchanges in enhanced oil recovery with Canada and Venezuela.

Gas

The FY 1982 budget for gas programs of $29 million provides funding for resource characterization and technology development directed at unconventional natural gas resources, including Eastern gas shales, coal bed methane, and Western tight gas sands. Program goals include making possible an incremental gas supply from unconventional gas resources of 2-4 trillion cubic feet per year (1-2 million barrels per day of oil equivalent) by 1990, and half again as much by 2000. The importance of this program is made clear by the expectation that unconventional gas resources could provide 25-30 percent of the total gas supply by the turn of the century.

Fossil Energy Resource Applications

The Department's activities in this area are designed to identify and overcome non-technical barriers to the utilization of our domestic fossil energy resources, with particular emphasis on accelerating the application of new or unfamiliar technologies. The Department supports programs in each of the major fossil resource areas, i.e., coal, petroleum, natural gas, and shale, and is also responsible for promoting and accelerating the production of energy resources from Federal lands by establishing production goals and by developing procedures for streamlining the Federal leasing and permitting system. The Department's Federal leasing responsibilities include both continental and Outer Continential Shelf (OCS) resources. The FY 1982 budget request for these activities is $20 million.

Solar and Other Renewables

Solar and other renewable energy resources offer the potential for significant contributions toward achieving energy self-sufficiency over the long term. The Department's FY 1982 funding request for these programs totals $684 million for the following activities:

	Budget Authority (in millions)	
	FY 1981	FY 1982
SOLAR ENERGY		
Solar	$ 555	$ 552
Alcohol Fuels	21	32
Subtotal Solar	$ 576	$ 584
HYDROPOWER	22	3
GEOTHERMAL	156	91
GEOTHERMAL RESOURCES DEVELOPMENT FUND	43	6
Subtotal Other Renewables	$ 221	$ 100
TOTAL SOLAR AND OTHER RENEWABLES	$ 797	$ 684

Solar Energy

Solar energy has a number of distinct advantages over conventional fuels. Being a renewable resource, it provides an important hedge against the depletion of fossil fuels. Solar energy systems are often cost-effective on a life-cycle basis when compared to conventional systems and they are more environmentally acceptable.

DOE's solar strategy takes account of the complexity of energy markets and the diversity of solar resources, regional needs, and environmental factors. It is also designed to be responsive to the comparative economics of competing energy technologies.

The range of potential markets for solar energy is quite broad, including high temperature process heat, low temperature space heat, mechanical power, electricity, fuels for transportation, and chemical feedstocks. The magnitude of these market needs varies considerably by region, as does the price and availability of competing fossil fuels.

Accordingly, the current strategy is sharply focused on three major areas:

1. Providing incentives and information and removing barriers to technologies that are cost-effective or nearly so. These technologies include wood combustion, passive design, active hot water systems, and alcohol fuels.

2. Helping the private sector achieve cost reductions in technologies that can make significant contributions in the near- to mid-term, for example, solar space heating, wind systems, agricultural and industrial process heat, biomass, and photovoltaics.

3. Developing technologies with significant long-term potential, including ocean systems, biomass plantations (aquatic and terrestrial), and solar thermal electric.

The FY 1982 budget request of $584 million for solar energy will enable the Department to:

- o Assist the private sector in developing cost-competitive, active solar heating and cooling systems, promote consumer acceptance of such systems, and reduce market barriers to the widespread use of active solar;
- o Conduct vigorous research, development, and demonstration programs for passive and hybrid, photovoltaic, and solar thermal applications;
- o Promote the use by industry of energy from wood, crop residues, animal wastes, and non-traditional crops;
- o Continue to develop larger and more cost-effective advanced wind energy systems;
- o Concentrate on advanced Ocean Thermal Energy Conversion concepts and components that will result in major system cost reductions;
- o Initiate, with DOD, an evaluation of the use of solar energy systems in conjunction with deployment of the MX missile;
- o Focus the Alcohol Fuels program on cellulose conversion;
- o Expand solar information outreach efforts;
- o Construct the small community solar thermal power experiments; and,
- o Continue to support international solar energy projects and to construct a permanent facility for the Solar Energy Research Institute.

The Department is proposing deferrals of FY 1981 funds to delay obligations for Solar Energy plant and capital equipment ($1.8 million) and Solar Energy operating expenses ($6.0 million). Program work will slip about two months but will have no significant impact on major program objectives.

Hydropower

The small hydropower industry is being revitalized as a result of the DOE demonstration program, FERC streamlined licensing procedures, USDA and other credit programs, and the 21 percent investment tax credit. The budget request of $3 million in FY 1982 will provide for completion of ongoing demonstrations and an orderly phase-out of the DOE small hydropower program.

Geothermal Energy

The major objectives of the geothermal energy program are to foster commercial development of hydrothermal resources for electric power production and non-electric direct heat applications and to evaluate the engineering and economic feasibility of recovering methane, hydraulic and thermal energy from geopressured resources and thermal energy from hot dry rock resources.

The budget request of $91 million in FY 1982 will permit:

- Continued construction of plants to demonstrate both flash-steam and binary cycle concepts for hydrothermal energy production;
- Accomplishment of resource assessment and engineering and economic analyses for prospective hydrothermal resource users;
- Determination of the technical and economic feasibility of exploiting geopressured resources;
- Continued construction of the Fenton Hill hot dry rock energy extraction loop to assess its economic viability; and,
- Development and demonstration of advanced technology components to reduce the cost of energy recovery from all geothermal resources.

The Geothermal Resources Development Fund uses its cumulative loan authority of $500 million to back loans for electric generating plants and direct heat applications using geothermal resources.

Electric Energy Systems

The objectives of the electric energy systems program are to reduce electric utility system transmission and distribution losses, increase systems efficiency through energy storage, advanced control technology, and new technology integration, and reduce the environmental hazards of high voltage transmission systems through electric field effects research. The FY 1982 funding request is for $39 million. Activities to be pursued during FY 1982 include:

- New technology integration research for planning, analysis and control of systems containing dispersed and intermittent generators and storage; and
- Transmission system research on high voltage direct current and alternating current above-ground systems, underground systems, and electric field environmental effects.

Energy Storage Systems

The goal of the Energy Storage Systems program is to develop cost-effective, efficient, reliable, and environmentally acceptable storage technologies to improve the link between energy sources and end use. Improvement in storage technology is particularly important to the development of intermittent energy sources such as solar because it will provide a means to furnish continuous service that will meet fluctuations in supply and demand.

The Energy Storage Systems program consists of technology development in batteries and related electrochemical processes, thermal, chemical, mechanical, and magnetic energy storage. Program objectives are achieved through R&D on design concepts, testing laboratory prototypes, and evaluation of full-size components working in an energy system. The funding request for FY 1982 is $60 million.

The Department is proposing a deferral of FY 1981 funds which will delay obligations of $1.8 million until early FY 1982. This deferral will have no significant impact on major program objectives.

Magnetic Fusion

The Magnetic Fusion Energy Engineering Act of 1980 has established a national goal of demonstrating the engineering feasibility of fusion energy by the early 1990's and operating a magnetic fusion demonstration plant at the turn of the century. In order to accomplish this, the strategy is to maintain a broad technical base program which supports two necessary and concurrent lines of investigation. One line is the engineering effort aimed at developing experience with the practical problems of creating and maintaining a burning plasma. The other line is one of scientific investigation aimed at resolving the technical uncertainties of achieving the burning plasma and developing more optimum reactor concepts. The synthesis of these efforts is intended to demonstrate fusion's engineering feasibility by the early 1990's and lay the basis for a program assessment of fusion's highest potential. A positive assessment leads to a commitment for the operation of a utility-size energy producing system around the turn of the century.

The FY 1982 budget of $506 million provides for support to continue the on-going physics program while augmenting it with the initiation of a broadly-based program of engineering work to accomplish the national goal for fusion energy. The engineering effort this year will focus on the preparation for a Fusion Engineering Device to be built and operated under the aegis of a new Center for Fusion Engineering. The plasma confinement effort will be aimed at completing a new tandem mirror experiment, strengthening the Elmo Bumpy Torus program, proceeding with the advancement of the Tokamak program, and preparing for operation of the Tokamak Fusion Test Reactor (TFTR). Funding is provided to complete construction on the TFTR as well as to continue construction activities on several next generation fusion devices including Mirror Fusion Test Facility-B at Lawrence Livermore Laboratory; Fusion Material Irradiation Test Facility at Richland; and Elmo Bumpy Torus, Large Coil Test Facility, and Impurity Study Experiment at Oak Ridge.

Nuclear Fission

The Nuclear Fission program of the Department of Energy includes several different activities which together provide the technological base to continue to develop nuclear power as an economic and environmentally acceptable source of electric power. Funding for nuclear fission programs is allocated as follows:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Commercial Nuclear Waste	$ 247	$ 257
Advanced Nuclear Systems	42	45
Conventional Reactor Systems	58	45
Breeder Reactor Systems	521[a/]	459
Spent Nuclear Fuel	23	7
Advanced Isotope Separation Technology	80	121
Uranium Resource Assessment	31	25
TOTAL NUCLEAR FISSION	$1,002	$ 959

a/ Not included in this total is an additional $92 million for the Clinch River Breeder Reactor, as provided by P.L. 96-536, Further Continuing Appropriations.

Commercial Nuclear Waste

The commercial nuclear waste program provides the technology for the treatment, handling, and disposal of radioactive waste from commercial sources. The program also includes remedial actions at various government and privately owned contaminated facilities. The FY 1982 budget request totals $257 million. Activities include:

- o Research and development for the identification of suitable sites for nuclear waste repositories;
- o Increased emphasis on low level waste treatment and disposal technology;
- o Conduct of the West Valley Demonstration Project under the provision of Public Law 96-368;
- o Remedial actions at uranium mill tailings sites; and
- o Continued remedial actions at authorized Manhattan Engineering District/Atomic Energy Commission sites, and surveillance and monitoring of surplus DOE contaminated facilities.

The Department plans to request a deferral of FY 1981 budget outlays of $18 million to stretch out Commercial Waste activities. This will slightly delay site investigations, allowing two sites to be qualified by 1985. It will also defer some technology development activities for transuranic waste.

Advanced Nuclear Systems

This program contains two efforts: Space and Terrestrial Applications and Advanced Systems Evaluations. The budget request for FY 1982 is $45 million, which principally provides for continued development of space systems to support DOE/NASA interagency agreements for the Galileo and International Solar Polar Missions.

Conventional Reactor Systems

This program contains three major activities: Light Water Reactor (LWR) Systems, Three Mile Island Activities, and Advanced Reactor Systems. The LWR program provides for development and demonstration to improve the safety and productivity of reactors, to improve their economy of uranium use, to reduce the lead time for constructing plants, and to reduce radiation exposure received by operating personnel. In addition, the program seeks to reduce proliferation risks by increasing efforts in research on the reduction of enrichment in the fuels of research and test reactors. The FY 1982 budget request also includes funds for continued examination and data collection on the Three Mile Island reactor equipment to identify measures for enhancing the safety and reliability of civilian nuclear power plants. The FY 1982 request for these activities is $45 million.

Breeder Reactors

The goal of the Department's efforts is to maintain breeder reactors as viable energy options that can provide environmentally safe, economic, proliferation-resistant, and inexhaustible energy sources capable of deployment to meet the nation's future energy needs and to decrease dependence upon foreign energy supplies. The program contains three components: Liquid Metal Fast Breeder Reactor (LMFBR), Water Cooled Breeder, and Fuel Cycle R&D. The total FY 1982 budget request for these programs is $459 million. Highlights of program activities for Breeder Reactors include:

- o Continuation of the base technology program in safety, physics, fuel components, materials, and test facilities;
- o Completion of acceptance testing at the Fast Flux Test Facility;
- o Continued construction on the Fuels and Materials Examination Facility, Safety Research Experimental Facility and the Energy Technology Engineering Center; and
- o Continuation of the Water Cooled Breeder program.

Spent Nuclear Fuel

The Spent Nuclear Fuel program addresses the question of adequate interim storage for spent fuel prior to its ultimate disposal in a nuclear waste repository. The FY 1982 request for Spent Nuclear Fuel is $7 million, which will continue activities to develop advanced storage techniques, and support international spent fuel storage study commitments. The acquisition of away-from-reactor storage capacity requires new legislation.

Advanced Isotope Separation Technology

The objective of the Advanced Isotope Separation Technology program is to develop a more economical technology for enrichment of uranium for use as fuel in power reactors. The effort involves the development of three processes - two laser techniques and a plasma technique - to demonstrate the principles and components required. During FY 1982, the three processes will be operated for about six months in preprototype testbed facilities. This will lead to the selection of one process in FY 1982 which will proceed to a development module, a demonstration facility and then to a production facility. The FY 1982 funding request for the program is $121 million.

Uranium Resource Assessment

The objective of the Uranium Resource Assessment program is to assess and expand the domestic nuclear fuel base. The program provides information on the estimated extent, availability and economics of domestic nuclear fuel requirements, and makes resource information and assessment technology available to industry for discovery and production of uranium resources. The FY 1982 funding request is for $25 million.

Environment

The Administration and the Congress have emphasized the need to protect the environment while accelerating the development of energy technologies. The Department is required to formulate programs so that the Nation can effectively pursue options to solve its energy problems with minimal environmental impact. Environmental health and safety factors are accorded the same importance as economic considerations, and are closely integrated into departmental decisionmaking. The budget for FY 1981 and FY 1982 is allocated as follows:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Overview and Assessment	$ 53	$ 65
Biological and Environmental Research	172	204
Program Direction	12	11
TOTAL ENVIRONMENT	$ 237	$ 280

Overview and Assessment

The goal of this program is to assure that national environmental protection goals are incorporated in the formulation of energy policies, implementation of energy programs, and operation of DOE facilities. The budget request for FY 1982 is $65 million. Activities include:

- o National Environmental Policy Act compliance;
- o Implementation of hazardous waste management programs at DOE facilities;
- o Conduct of pollution control technology assessments for energy technologies;
- o Surveys and certifications of mill tailings and Manhattan Engineering District/Atomic Energy Commission sites; and
- o Implementation of a pilot program to monitor health of contractor and government employees working at DOE facilities.

Biological and Environmental Research

The goals are to support a comprehensive research program to obtain scientific data for determining health and environmental effects associated with energy technology developments and conservation options, and to analyze the potential impact of energy-related activities on human health and environment. The budget request for FY 1982 is $204 million. This program will support:

- Research on renewable energy sources, including biomass;
- Research on the health and environmental effects of synfuels, advanced combustion, and increased use of fossil fuels;
- Implementation of a comprehensive research program on CO_2 and climate to study the climate impact of CO_2 and the environmental effects of climate change; and
- Research on the health and environmental effects of low level ionizing radiation from the nuclear power and defense activities.

Energy Supporting Research

The role of energy supporting research is to expand the scientific and engineering knowledge base on which the Nation's future energy options depend, and to provide independent, objective analysis and assessments of research and technical needs relating to energy. The FY 1982 funding request for this effort is $346 million, allocated as follows:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Basic Energy Sciences	$ 246	$ 311
Technical Assessment Projects	13	20
University Research Support	8	12
Advisory and Oversight Program Direction	3	3
TOTAL ENERGY SUPPORTING RESEARCH	$ 270	$ 346

The Basic Energy Sciences (BES) program will continue to support fundamental research in the disciplines of physical and biological sciences, geosciences, engineering and mathematics. In FY 1982, the budget request of $311 million provides for responsible increases to this program, recognizing the importance of basic research in relation to the Nation's energy technology development. Basic Energy Sciences will continue to support some of the Nation's most highly qualified scientists, engineers and mathematicians and operation of a national network of research facilities, some of which are unique in the world.

Program growth in BES for FY 1982 will enable important research use of major new facilities: the National Synchrotron Light Source, the Combustion Research Facility and High Voltage Electron Microscopes at Argonne and Oak Ridge National Laboratories and Lawrence Berkely Laboratory. Construction will be initiated on the High Temperature Materials Laboratory at Oak Ridge National Laboratory to study the relationship between materials properties at elevated temperatures and their structure, composition and environment.

The Technical Assessment Projects program provides funding for high risk/high payoff science applications not sufficiently developed to include in existing technology programs. Independent, objective assessments of existing technology programs and related issues are also conducted within this program. The FY 1982 budget request of $20 million will support approximately 25 advanced technology projects and 12 assessments. Also included is a one year initiative for social and economic sciences research.

University Research Support sustains longer range basic and applied research at universities supporting advanced graduate students and faculty for work in the energy field. The FY 1982 budget request includes funding for 13 institutional and 10 minority awards, 130 graduate traineeships, and support for 2,300 faculty and students in university laboratory cooperative programs. The request also seeks to fund 10 reactor sharing agreements, refueling of 5 research reactors, and assessments of energy related manpower.

Advisory and Oversight Program Direction funds the personnel who administer the University Research Support and Technical Assessment Projects programs and who conduct analyses for the Director of the Office of Energy Research and the Secretary of Energy, as mandated by law.

Multiprogram General Purpose Facilities

The objective of the Multiprogram General Purpose Facilities program is to systematically replace and rehabilitate general purpose facilities at the Department's 12 multiprogram laboratories. The Department's investment in offices, laboratories, warehouses, electrical and mechanical utilities, roads, and railroads is substantial. The average age of buildings and utilities is 25 years. The Multiprogram General Purpose Facilities program was established in recognition that replacement of aging general purpose facilities is a legitimate cost of conducting research and development work at the laboratories. For FY 1982, the program requests $50 million, an increase of $25 million, to continue construction projects begun in FY 1981, and to initiate four new starts.

REGULATION AND ENERGY INFORMATION

The third category of DOE energy programs deals with regulation and energy information activities. The regulatory activities assigned to the Department are the responsibility of the Economic Regulatory Administration, the Office of Hearings and Appeals, and the Federal Energy Regulatory Commission. Energy information programs are the responsibility of the Energy Information Administration. Funding for these activities totals $397 million in FY 1982.

	Budget Authority (in millions)	
	FY 1981	FY 1982
Economic Regulatory Administration	$247	$176
Office of Hearings and Appeals	8	8
Federal Energy Regulatory Commission	76	86
Energy Information Administration	105	127
TOTAL REGULATION AND ENERGY INFORMATION	$436	$397

Economic Regulatory Administration (ERA)

The programs of the Economic Regulatory Administration promote near-term opportunities to reduce the consumption of oil and gas and to foster energy conservation. This is accomplished primarily through the implementation and enforcement of the Fuel Use Act and the Public Utility Regulatory Policies Act. The ERA is also responsible for contingency planning for energy supply emergencies and for the maintenance of the standby gasoline rationing system.

	Budget Authority (in millions)	
	FY 1981	FY 1982
Fuels Conversion	$ 24	$ 30
Utility Programs and Regulatory Intervention	18	26
Compliance	71	52
Petroleum Operations	14	11
Emergency Preparedness	1	19
Gasoline Rationing	115	35
Program Administration	4	3
TOTAL ERA	$247	$176

The level of funding for ERA of $176 million in FY 1982 will support actions to:

- Implement legislation prohibiting the use of oil and natural gas in new powerplants and major fuel burning installations and the requirement for conversion of existing plants to coal, renewables, and other alternate fuels;

- Provide technical and financial assistance to State Public Utility Commissions to support conservation initiatives and rate reform, and assist States in their contingency planning for serious energy supply interruptions;

- Facilitate improvements in electric power supply and reliability, and allow DOE intervention in regulatory proceedings;

- Complete major refiners' compliance audits through the period of price controls and support litigation of violations;

- Continue petroleum programs not related to price and allocation controls; and

- Maintain the standby gasoline rationing system. The request for gasoline rationing assumes appropriation of $72 million in FY 1981 supplemental funds, which will provide for full development of the automated components of the system.

Office of Hearings and Appeals (OHA)

The Office of Hearings and Appeals is responsible for the Department's adjudication processes other than those for which the FERC or the Board of Contract Appeals has responsibility. OHA reviews and grants exceptions to individual firms or persons where a Department-issued rule, regulation, or order results in a serious hardship, gross inequity or unfair distribution of burdens. The Office is also responsible for deciding final appeals in matters under the jurisdiction of the Secretary and in enforcement matters prior to the issuance of a Remedial Order. The FY 1982 budget request for these activities is $8 million.

Federal Energy Regulatory Commission (FERC)

FERC is charged with the responsibility of regulating certain interstate aspects of the electric power, natural gas, and oil pipeline industries to assure adequate energy supplies at just and reasonable rates, and allowing fair rates of return to provide incentives for increased production of energy supplies.

	Budget Authority (in millions)	
	FY 1981	FY 1982
Gas Regulation	$40	$43
Hydropower Regulation	13	17
Oil Pipeline Regulation	6	8
Electric Power Regulation	17	18
TOTAL FERC	$76	$86

The FY 1982 funding request of $86 million will enable FERC to:

- Develop regulations to implement policies for natural gas and electric power pricing;

- Encourage development of new sources, and increased production of known sources of natural gas;
- Establish tariffs and encourage expansion of the oil pipeline system and determine the cost and valuation of the Trans-Alaska Pipeline System;
- Encourage the development of hydropower and ensure the safety of licensed dams;
- Simplify and expedite the regulatory process; and
- Reduce the pending workload.

Energy Information Administration (EIA)

The EIA is responsible for providing independent statistical information and analyses to the Department, other Federal agencies, the Congress, industry, and the public as an aid to informed decisionmaking and for regulatory activities. EIA also responds to DOE's need for energy information services by providing energy systems analysis and design, data collection and processing, and energy applied analysis to various components of the Department.

	Budget Authority (in millions)	
	FY 1981	FY 1982
Energy Applied Analysis	$ 11	$ 16
Collection, Production, and Dissemination	31	60
Information Validation	14	14
Data Information Services	49	37
TOTAL EIA	$105	$127

The FY 1982 funding request of $127 million provides for:

- Augmentation of the Short-Term Integrated Forecasting System to include contingency planning capabilities, which will provide evaluation of the impacts of energy disruptions on economic and energy markets;
- Development of regional level energy forecasts required by the Emergency Energy Conservation Act (EECA) and continued systems development in support of both EECA and the Natural Gas Policy Act;
- Model development, simplification, and enhancement in the areas of domestic and international energy supply and demand;
- Development and enhancement of new energy data collection systems, such as the National Energy Information System, and expansion of the data collection systems for energy consumption and renewable energy sources;
- Continuing validation of data requirements, data collection systems, and raw data; and
- Provision of data support services to other Departmental elements.

DIRECT ENERGY PRODUCTION

The Department produces energy directly as a result of the programs to enrich uranium, produce oil from Naval Petroleum Reserves, and market electric power produced by Federal hydropower projects. FY 1982 estimated production and distribution costs total $2,685 million and estimated revenues total $3,250 million. The revenues received from the sale of enriched uranium are authorized to be used to offset the costs of providing the service. The revenues generated from the sale of oil from the Naval Petroleum Reserves and the power sales of four of the five Power Marketing Administrations are deposited directly in the Treasury. Bonneville Power Administration revenues are deposited in a revolving fund.

	Budget Authority (in millions)	
	FY 1981	FY 1982
Production and Distribution Costs		
Uranium Enrichment	$1,360[a/]	$2,079
Naval Petroleum Reserve	198	226
Power Marketing	179	380
TOTAL	$1,737	$2,685
Revenues		
Uranium Enrichment	$1,254	$1,656
Naval Petroleum Reserve (Proprietary Receipts)	970	1,217
Power Marketing (Proprietary Receipts)	372	377
TOTAL	$2,596	$3,250

[a/] Includes FY 1980 deferral of $185 million taken as a reduction to the appropriation providing a net new budget authority of $1,175 million. Excludes $1,254 million in contract authority which will be liquidated by revenues.

The net appropriation requirements for the Department's Direct Energy Production activities are:

	FY 1981	FY 1982
Production and Distribution Costs	$ 1,737	$ 2,685
Less: Uranium Enrichment Revenues	-1,254	-1,656
FY 1980 Deferral Applied	-185	-
Total Appropriation Requirements	$ 298	$ 1,029

Uranium Enrichment

The Department enriches uranium in three gaseous diffusion plants located at Oak Ridge, Tennessee; Portsmouth, Ohio; and Paducah, Kentucky to meet domestic, foreign, and U.S. Government requirements for uranium enrichment services. The FY 1982 budget request provides for the production of 14.1 million separative work units (SWU). Sales are projected at 13.9 million SWU resulting in revenues of $1,656 million.

The FY 1982 request also provides for continued design and construction of the Gas Centrifuge Enrichment Plant at Portsmouth, Ohio, on the same schedule as was presented in the FY 1981 request. Initial production capacity of 2.2 million SWU is scheduled for 1989 with additional production capacity in 1.1 million SWU increments added as necessary to meet demand.

Naval Petroleum Reserves

The Naval Petroleum Reserves contain the ninth largest known reserve in the United States, at Elk Hills, California. The legislatively mandated purpose of the Naval Petroleum Reserves program is to produce the reserves at the maximum sustainable rate of production. The FY 1982 request provides funds for continued operation and development of the reserves, including the drilling of 103 development wells, an exploratory drilling program at Elk Hills, and the continued implementation of the pilot phase of the Enhanced Oil Recovery System at Teapot Dome, Wyoming. The request anticipates that the Federal share of the production will be approximately 158,000 barrels per day. Since early FY 1981, the Government share of the production, less the small refiner set-aside, has been exchanged for crude oil delivered to the Strategic Petroleum Reserve. It is anticipated that this exchange program will continue in FY 1982.

Power Marketing

The Power Marketing Administrations (PMA) sell electricity generated by Federal hydropower projects. Preference for sale of power is given to public bodies and cooperatives. Revenues from selling power and transmission services of the five PMA's offset annual operations and maintenance costs, repay the capital investment and interest and assist capital repayments on irrigation features of certain projects. The FY 1981 appropriations and 1982 budget authority request for the PMA's are shown below:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Alaska	$ 3	$ 4
Bonneville	---	136
Southeastern	2	7
Southwestern	28	22
Western Area	146	211
TOTAL POWER MARKETING	$ 179	$ 380

The budget request for the Western Area Power Administration increases from $146 million in FY 1981 to $211 million in FY 1982 primarily due to transmission line improvement and system construction. Southwestern Power Administration has a $6 million decrease from $28 million in FY 1981 to $22 million in FY 1982 primarily due to reduced construction activity. Southeastern Power Administration has a $5 million increase from $2 million in FY 1981 to $7 million in FY 1982 in order to fully implement its power policies and earn power revenues for deposit to the Treasury. Alaska Power Administration has a $1 million increase from $3 million in FY 1981 to $4 million in FY 1982 for major maintenance and equipment replacement programs.

For FY 1981 and FY 1982, the Bonneville Power Administration will continue its operations on the basis of self-financing authority, thus requiring no appropriations. In FY 1975, Congress granted Bonneville authority to borrow funds up to $1,250 million for construction of transmission facilities. In compliance with a technical change that the Administration is requiring in the presentation of the FY 1982 budget, DOE is displaying for the first time its estimate of borrowing authority to be utilized in FY 1982. This is an estimate of the usage of current borrowing authority and not a request for additional borrowing authority. This change will not affect in any manner the way in which the fund or borrowing authority is administered.

STRATEGIC PETROLEUM RESERVE

In December, 1975, legislation was enacted to establish a Strategic Petroleum Reserve of up to one billion barrels of oil in order to reduce the Nation's vulnerability to the effects of a severe petroleum supply interruption.

The development of the government-owned oil reserve is scheduled to achieve a total storage level of 750 million barrels by 1989 (depending on the availability of supplies) in a secure and reliable system capable of crude oil withdrawal of up to 4.5 million barrels per day. Intermediate goals include the completion of facility development and fill of Phase I of the system (248 million barrels) by 1982, with an average daily drawdown capability of approximately 1.7 million barrels per day.

The FY 1982 budget request for the Strategic Petroleum Reserve, including entitlements, is $3,898 million. Major elements of the budget are shown in the table below:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Planning	$ 8	$ 9
Petroleum Acquisition and Transportation	1,383	3,436
Storage Facilities Development	83	193
Program Direction	12	12
Subtotal	$1,486	$3,650
Petroleum Acquisition and Transportation from Entitlements Receipts[a/]	1,845	248
TOTAL STRATEGIC PETROLEUM RESERVE	$3,331	$3,898

a/ Receipts from crude oil entitlement sales credited to the Federal government.

New budget authority of $193 million is requested in FY 1982 for facilities development, which includes $103 million to initiate construction of Phase III (538-750 million barrels) and $15 million to analyze regional storage needs and requirements.

Oil acquisition for the Reserve, which had been halted in 1979 due to the effect of the Iranian crisis on international market conditions, resumed in the fall of 1980 with agreements to exchange the Government's share of oil from the Naval Petroleum Reserves for crude oil to be delivered to the Strategic Petroleum Reserve. Acquisition activities are continuing and are not confined to such exchanges. The Department is seeking $3,684 million in FY 1982 to support an aggressive oil acquisition program. This figure includes $248 million in entitlements for oil acquisition earned during FY 1981, but which are subject to appropriation in FY 1982. Entitlements in FY 1981 are estimated to be $1,845 million.

The combination of exchanges and purchases should result in an average fill rate of approximately 200,000 barrels per day in FY 1981, which will fully utilize all available funds, rising to approximately 230,000 barrels per day during FY 1982 until the available storage capacity is filled.

GENERAL SCIENCE

The General Science programs explore fundamental principles in the physical and biological sciences through research and experimentation. Basic research is conducted in the High Energy and Nuclear Physics programs, which are administered as national trusts to advance knowledge on the frontiers of science. The mission of these programs is to enhance our knowledge of the basic properties and interactions of atomic nuclei, the constituents of sub-nuclear matter and the fundamental forces of nature. The benefits of these programs are mainly of a long term nature applicable to all sectors of the economy; however, shorter term spinoff applications in energy and other areas do occur.

Funding for these programs is allocated as follows:

	Budget Authority (in millions)	
	FY 1981	FY 1982
High Energy Physics	$ 352	$ 416
Nuclear Physics	110	136
Life Sciences Research and Nuclear Medicine Applications	46	54
High Energy and Nuclear Physics Program Direction	1	1
FY 1980 Deferral	-5	---
TOTAL GENERAL SCIENCE	$ 504	$ 607

High Energy Physics

High Energy Physics is an exploratory field of basic research in which studies are conducted on the fundamental building blocks of matter and the fundamental forces of nature in an attempt to understand more fully the relationships and transformations between energy and matter. The method of achieving the program objectives involves the use of large accelerator facilities to provide various types of high energy particle beams, and sophisticated detection and analysis apparatus to study the particle interactions.

The objective of the program is to generate research results on new states of matter and energy and on the unification of the four fundamental forces.

One of the major activities to meet this objective is a long-term, three phase construction project to enhance our research capabilities at Fermilab. For FY 1982, this effort will include completion of the Energy Saver project, continuation of Tevatron I and initiation of Tevatron II. Another major project which will be continued in FY 1982 is the Intersecting Storage Accelerator (ISABELLE) at Brookhaven National Laboratory. This facility is projected to begin operation in FY 1986, and will give the United States world leadership in proton-proton colliding beam capabilities.

The FY 1982 request for High Energy Physics is $416 million.

ıclear Physics

The goal of the Nuclear Physics program is to attain a deeper understanding of the interactions, structure, and properties of nuclei through experimental medium energy and heavy ion nuclear research and theoretical investigations. The study of nuclear physics is conducted by experimentation and relies heavily on high technology instrumentation and facilities developed specifically for these activities.

In FY 1982, budget authority of $136 million is requested. Emphasis will be placed on expanding research programs at new and upgraded scientific facilities and proceeding with a broadly-based theoretical research program. Facility utilization will be increased 10 percent over FY 1981 levels, with a slight increase in scientific manpower support.

Equipment purchases will rise to meet the need to reinstrument frontier nuclear research facilities, and construction will be continued on the National Superconducting Cyclotron Laboratory. Construction will be initiated on the Argonne Tandem Linear Accelerator System (ATLAS), and on-campus research facilities at Yale University and the University of Washington will be upgraded.

Life Sciences Research and Nuclear Medicine Applications

Basic and applied research is undertaken in the General Life Sciences and Nuclear Medicine Applications program. This program supports new applications of radiation and radioisotopes for the diagnosis and treatment of human disease and also the transfer of nuclear technology to clinical medicine. Basic biological research is also conducted to study the structure and functions of genetic material, cell membranes and sub-cellular particles to determine fundamental biological mechanisms related to energy pollutants. Another objective is research related to the production of highly pure, stable isotopes of carbon, oxygen, and nitrogen to be used in studying the biological behavior of pollutants in the environment. The budget request for these activities is $54 million in FY 1982.

DEFENSE ACTIVITIES

The role of the Department of Energy in Defense Activities is to provide for our national security requirements in support of the Department of Defense. This includes a wide range of programs to produce nuclear weapons, nuclear materials, improve naval reactor designs and manage the nuclear waste generated by these activities. The Department is also charged with responsibility for safeguards and security related to facilities and materials. Verification of nuclear test treaty compliance and non-proliferation are also carried out in Defense Programs. Research and development of Inertial Confinement Fusion is conducted under the Weapons activities because of its relevance to nuclear weapons development. Total funding for DOE Defense Activities in FY 1981 is $3,667 million. The requested funding level for FY 1982 is $4,704 million. Most of the increase is due to new requirements for nuclear weapons and nuclear materials, as outlined in the President's recent Nuclear Weapons Stockpile memorandum. The funding levels by major program are indicated below:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Weapons Activities	$ 2,326	$ 3,049
Materials Production	666	837
Verification and Control Technology	40	50
Nuclear Materials Security and Safeguards	47	48
Security Investigations	16	24
Defense Waste Management	300	350
Naval Reactor Development	303	346
FY 1980 Deferrals	-31	-
TOTAL DEFENSE ACTIVITIES	$ 3,667	$ 4,704

Weapons Activities

The FY 1982 budget request for nuclear weapons activities is $3,049 million. This program provides for the research, development, engineering, testing, and production of all U.S. nuclear weapons; maintenance of reliable weapons for their stockpile life, and retirement and disposal of nuclear weapons from the stockpile. In FY 1982, the weapons program will continue to provide new technology to maintain a modern nuclear force, along with the design and development of new weapon systems in response to defense requirements. Increases are provided for continued production of weapon systems as well as initiation of production of several new systems. Funding is allocated as follows:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Research, Development & Testing	$ 1,155	$ 1,292
Production and Surveillance	1,130	1,715
Program Direction	41	42
TOTAL WEAPONS ACTIVITIES	$ 2,326	$ 3,049

In FY 1982, the research, development, and testing effort will continue to explore and provide technologies necessary to maintain the United States nuclear forces and design and develop new weapon systems in response to defense requirements. Major objectives in the research, development, and testing area include maintaining the capability to design, test, and certify new weapons required for national defense; advancing the state-of the-art of nuclear weapons technology to assure that the United States is in the forefront of all technological initiatives, and monitoring the nuclear weapons stockpile to assure continued reliability and effectiveness.

The research, development, and testing program also includes $210 million in FY 1982 for research on inertial confinement fusion, which is primarily used to support the development of nuclear weapons. Ultimately, however, ICF may develop into a potentially inexhaustible energy source. Activities in this area focus on target experiments and major facility construction. Construction of the NOVA and ANTARES high energy laser facilities, located at the Lawrence Livermore National Laboratory and the Los Alamos National Scientific Laboratory, will be continued as well as the phase II upgrade of the Particle Beam Fusion Accelerator at Sandia National Laboratories, Albuquerque, to provide for a higher power experimental facility. Target development facilities at the Lawrence Livermore National Laboratory and Los Alamos National Scientific Laboratory will be funded to provide targets for major experiments.

The production and surveillance program continues to produce weapons and will initiate the production of new weapons to meet DOD requirements. The major objectives are to produce and deliver new warheads, projectiles, and bombs for the United States nuclear weapons stockpile, to provide and maintain modern manufacturing capabilities and capacities required for future production of weapons for enhancement of United States nuclear forces, and to maintain the United States nuclear weapons stockpile in a high state of readiness and reliability.

Materials Production

The Department is requesting $837 million in FY 1982 to provide for the production of nuclear materials necessary to support weapons production activities as well as research and development. The FY 1982 program provides for operation of N Reactor at Richland and second-year steps toward conversion of that reactor to produce weapons grade plutonium. Second-year activities in the upgrading and restarting of the Purex chemical processing plant at Richland are also included. Operation of three production reactors and upgrade of the L Reactor at Savannah River, and special isotope separations research and development will continue. Activities to increase production by producing supergrade plutonium and blending it with fuel-grade plutonium will be pursued and an expanded effort will be directed to reactor safety, maintenance, and facility restoration.

Verification and Control Technology

This program conducts research activities directed toward the advancement of verification technology related to nuclear treaties, and arms control measures. The FY 1982 request of $50 million provides for continued technical and scientific efforts to support the Threshold Test Ban Treaty, Peaceful Nuclear Explosives Treaty and the proposed Comprehensive Test Ban. The control activities furnish analytical support for export control requirements, nonproliferation policy and weapon analysis issues.

Nuclear Materials Security and Safeguards

The objective of this program is to ensure that effective, comprehensive safeguards and security systems are maintained for protecting DOE nuclear weapons, materials, facilities, classified material and other DOE resources. The program also develops safeguards technology and information needed to support U.S. efforts to prevent the proliferation of nuclear weapons. In FY 1982, the Department requests $48 million to formulate policy; provide oversight of field safeguards and security operations; manage research and development activities in physical protection, material control and accountancy, and crisis management; provide field implementation assistance; and support U.S. nuclear nonproliferation objectives. This program will also carry out DOE emergency preparedness activities.

Security Investigations

This activity covers the costs related to performance of security investigations for personnel, who, in performance of their official duties, must have access to Restricted Data, National Security Information, Special Nuclear Material, or who occupy a designated Critical Sensitive position. The FY 1982 budget for these activities is $24 million.

Defense Waste Management

This program provides for the interim storage of nuclear waste from DOE activities, and the development and demonstration of technologies to implement long-term waste disposal options. The FY 1982 program provides for continuation of the waste operations program, including the upgrade of waste handling, storage and continued long term technology research and development efforts. In the terminal storage program, $13 million of deferred funds from FY 1981, along with the FY 1982 request of $2 million will be available to reserve the Waste Isolation Pilot Plant (WIPP) site in New Mexico as a potential site for a future repository, consistent with the Administration decision not to proceed with construction of the project. These activities would include site protection and limited site characterization efforts. The FY 1982 request of $350 million is allocated as follows:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Interim Waste Operations	$ 177	$ 250
Long Term Waste Management Technology	90	82
Terminal Storage	20	2
Decontamination and Decommissioning	4	7
Transportation R&D	7	7
Program Direction	2	2
TOTAL DEFENSE WASTE MANAGEMENT	$ 300	$ 350

An additional deferral of $4 million in FY 1981 Long-Term Technology funding is proposed to slightly stretch out activities dealing with high-level alternative waste forms, and processes for immobilization of transuranic waste.

Naval Reactors Development

This program provides for the design, development, and testing of improved naval nuclear propulsion plants and reactor cores having longer fuel life, increased reliability, improved performance, and simplified operating and maintenance requirements. These reactors are necessary to meet a variety of military requirements. The FY 1982 budget request of $346 million will continue to improve existing submarine and surface ship reactor cores and develop new advanced reactor concepts and propulsion plants.

DEPARTMENTAL ADMINISTRATION

Departmental Administration includes general management and support; policy analyses and system studies; international affairs; intergovernmental, public and consumer affairs; facilities design and energy efficiency improvement; and miscellaneous activities. The FY 1982 budget authority request is $402 million, an increase of $118 million over the FY 1981 level. The distribution of the request is shown below:

	Budget Authority (In millions)	
	FY 1981	FY 1982
Policy Analysis and System Studies	$ 25	$ 29
International Affairs	8	12
Management and Support	260	326
Liaison and Outreach Activities	41	45
Facilities Management	43	90
Miscellaneous Accounts	-87	-100
General Reduction	-6	---
TOTAL DEPARTMENTAL ADMINISTRATION	$ 284	$ 402

Policy Analysis and System Studies

The objective of the policy analysis and systems studies program is to provide leadership in the development of integrated energy policies and programs and to coordinate a broad range of policy-related functions cutting across organizational lines. The activities to be pursued during FY 1982 include:

- Response to short-term analytical requirements mandated by Congress and those directed by the President or the Secretary;
- Continued refinement of the Departmental planning, programming and budgeting system for resource allocation;
- Support of a program of fundamental, long-term policy studies, and
- Conduct of mid- to longer-term policy analyses and evaluations.

International Affairs

There are three objectives of the international affairs program. The primary objective is to formulate the Department's international energy policy and represent the Department in international energy discussions, negotiations, and cooperative efforts. In addition, the program is to assure that U.S. international energy policy is consistent with domestic energy goals. Finally, the program participates in the development and implementation of U.S. international energy policy objectives, particularly with developing and industrializing nations.

The activities to be pursued during FY 1982 include:

- o Maintaining the schedule of cooperative energy assessments with selected developing and industrializing nations;
- o Undertaking a broad range of both short-term and long-term studies and analyses of the international energy situation;
- o Participating in international energy discussions and negotiations; and
- o Providing foreign energy intelligence support for the Department.

Management and Support

The objectives of the management and support activities are to provide administrative support services to DOE headquarters, multiprogram operations offices, and regional organizations; implement Departmental policies and initiatives; and ensure compliance with Departmental policies, OMB/OPM directives, Congressional actions, Executive Orders and Federal Regulations. The $326 million request for new budget authority in FY 1982 is distributed as follows:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Salaries and Expenses	$ 154	$ 177
Travel	5	7
Support Services	93	134
Capital Equipment	5	5
Minority Economic Impact	3	3
TOTAL MANAGEMENT AND SUPPORT	$ 260	$ 326

The FY 1982 request is a $66 million increase over the request for FY 1981, a 25 percent increase accounted for by inflationary increases in support services, primarily increased charges for rent, communications, postage, and computer services.

Liaison and Outreach Activities

In the category of liaison and outreach activities are those centralized funtions of the Department involved in providing information, public awareness, coordination with State, local, and territorial governments and Indian Tribes, and Departmental advisory committee management. The FY 1982 request of $45 million is an increase of $4 million from the FY 1981 budget authority. The distribution of the request is as follows:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Intergovernmental Affairs	$ 15	$ 16
Public Affairs	7	7
Consumer Affairs	7	7
Technical Information Services	12	15
TOTAL LIAISON AND OUTREACH ACTIVITIES	$ 41	$ 45

Facilities Management

The objectives of the facilities management activities are to meet the President's goal of a 20 percent reduction in energy consumption by 1985, to retrofit all Federal buildings for energy conservation by 1990, to eliminate use of petroleum and natural gas in DOE major fuel burning installations, and to provide architect-engineering services for non-defense construction projects prior to requesting line-item Congressional authorization and budget authority. The FY 1982 request of $85 million for In-House Energy Management is an increase of $46 million over FY 1981. For plant engineering and design the FY 1982 request of $5 million is $1 million more than was made available for FY 1981.

Miscellaneous Accounts

These activities provide for the goods sold and services performed for qualified non-DOE elements, the revenues associated with those goods and services, and the common use stores inventories of the Department. The distribution of the FY 1982 request is shown below:

	Budget Authority (in millions)	
	FY 1981	FY 1982
Cost of Work for Others	$ 44	$ 48
Miscellaneous Revenues	-143	-168
Change in Inventories	12	20
TOTAL MISCELLANEOUS ACCOUNTS	$ -87	$ -100

FY 1981 SUPPLEMENTAL AND RESCISSION REQUEST

In conjunction with the FY 1982 budget, the Department is requesting $199 million in supplemental FY 1981 funding; and is proposing $102 million FY 1981 rescissions.

SUPPLEMENTALS

Defense Activities

Supplemental funding of $51 million is requested for operating expenses and capital equipment related to research, development, and testing of nuclear weapons.

Gasoline Rationing

A supplemental request for $72 million is being submitted to fund full development of the automated components of the standby gasoline rationing system, including an automated ration rights issuance system and printing of secure ration coupons.

Miscellaneous Revenues

Supplemental funding of $41 million is requested to cover an anticipated shortfall in FY 1981 revenues primarily due to reduced revenues from steam sales at N-Reactor and sales of nuclear materials for power reactors to Italy, which had been included in the FY 1981 revenue estimate as enacted by Congress.

Pay Cost

A supplemental of $35 million is requested to cover the cost of the October 1980 pay raise.

RESCISSIONS

Fossil Energy R&D

Three rescissions of FY 1981 fossil energy R&D funds are proposed, including a $3.0 million reduction to operating funds for the Rivesville Atmospheric Fluidized Bed project, $17.5 million from demonstration and testing for Coal Oil Mixtures, and $5 million in Phase 0 design funds added by Congress for a Surface Coal Gasification demonstration plant.

Energy Conservation

Rescissions are proposed for two programs within Conservation. The rescissions requests are composed primarily of funds for projects with questionable energy savings. These include:

	Rescission Request (BA in millions)
INDUSTRIAL ENERGY CONSERVATION	
Formcoking and Coke Pelletizing	$ 17.8
Industrial Process Efficiency	5.0
Cogeneration	4.5
Waste Energy Efficiency	5.0
Implementation and Commercialization	3.0
Program Direction	0.5
TOTAL PROPOSED RESCISSION	$ 35.8
TRANSPORTATION ENERGY CONSERVATION	
Turbine Development	$ 7.0
Stirling Engines	5.0
TOTAL PROPOSED RESCISSION	$ 12.0

Alcohol Fuels Test Facility

A rescission of $2.5 million is proposed from the Ethanol from Biomass facility due to the creation of a loan guarantee program which will promote construction of ethanol facilities by the private sector rather than the Federal government.

Nuclear Energy

The decision has been made to withdraw Federal support from the High Temperature Reactor program in FY 1981 in view of the long and costly development required for commercialization of these reactors. A rescission of $26 million is proposed to terminate the program as soon as possible.

SPECIAL ANALYSES

FEDERAL FOSSIL PROGRAM
FY 1982 Budget
(In millions of dollars)

	FY 1981		FY 1982	
	BA	BO	BA	BO
DOE FOSSIL TECHNOLOGY				
Coal				
Advanced Environmental Control.....	43	56	46	43
Advanced Research & Development	46	48	63	62
Coal Liquefaction	521	342	886	783
Combustion Systems	36	42	77	57
Fuel Cells	32	25	29	26
Heat Engines & Heat Recovery	36	38	29	35
In-Situ Coal Gasification	10	5	11	9
Magnetohydrodynamics	67	71	60	47
Mining R&D	48	35	30	50
Surface Coal Gasification	159	133	219	218
University Coal Research Labs	5	---	---	---
Program Direction	12	12	13	13
Capital Equipment, Coal	5	---	4	---
Subtotal	1,020	808	1,465	1,343
Petroleum				
Advanced Process Technology	4	7	4	4
Drilling & Offshore Technology	2	2	0	1
Enhanced Oil Recovery	18	26	23	23
Oil Shale	32	24	27	12
Program Direction	1	1	2	2
Capital Equipment, Petroleum	3	---	2	2
Subtotal	60	60	58	44
Gas				
Enhanced Gas Recovery	31	29	29	29
Cost Outlay Adjustment	---	61	---	---
TOTAL TECHNOLOGY	1,111	958	1,552	1,416
DOE FOSSIL APPLICATIONS				
Fossil Energy Applications	20	16	20	20
DIRECT PRODUCTION				
Naval Petroleum Reserves (NPR)	198	194	226	279
OTHER DOE FOSSIL (Includes Basic Energy Sciences and Environment)	98	96	118	117
TOTAL DOE FOSSIL FUNDING[1/]	1,525	1,360	2,034	1,949

1/ Does not include fossil-related funding available through Alternative Fuels Production Appropriation.

FEDERAL FOSSIL PROGRAM
FY 1982 Budget
(In millions of dollars)

	FY 1981		FY 1982	
	BA	BO	BA	BO
OTHER FEDERAL FOSSIL				
Department of Interior				
Bureau of Land Management	101	92	115	110
US Geological Survey	177	173	206	201
Fish & Widlife Service	5	5	6	6
Surface Mining Reclamation & Enforcement	175	158	246	134
Bureau of Mines	56	67	56	56
TOTAL DOI FOSSIL	514	495	629	507
TOTAL FEDERAL FOSSIL FUNDING	2,039	1,855	2,663	2,456

FEDERAL SOLAR PROGRAM
FY 1982 BUDGET
(In millions of dollars)

	FY 1981		FY 1982	
	BA	BO	BA	BO
DOE SOLAR				
Active Solar Heating and Cooling	44	39	32	39
Passive Solar Heating and Cooling ...	33	28	32	36
Photovoltaic Energy Systems	160	143	161	162
Solar Thermal Energy Systems	142	168	85	97
Biomass Energy Systems	46	45	56	34
Wind Energy Systems	86	79	74	84
Ocean Energy Systems	39	39	37	33
International Solar Energy Program ..	12	12	13	13
Solar Information Systems	1	1	13	13
Solar Energy Research Institute	5	5	24	13
MX-RES	0	0	10	8
Program Direction	7	7	7	7
Solar Market Analysis	9	28	8	8
General Reduction	-29	---	---	---
Subtotal	555	594	552	567
DOE ALCOHOL FUELS	21	17	32	27
OTHER DOE SOLAR RELATED FUNDING (Includes Support from Energy Storage Systems, Electric Energy Systems, Hydropower, Basic Energy Sciences, Environment, ERA, EIA).....	63	64	52	65
TOTAL DOE FUNDING[a/]	639	675	636	659

a/ Excludes Biomass/Alcohol Fuels feasibility studies and cooperative agreements funded out of Alternative Fuels Production Appropriation.

FEDERAL SOLAR PROGRAM
FY 1982 BUDGET
(In millions of dollars)

	FY 1981		FY 1982	
	BA	BO	BA	BO
OTHER FEDERAL SOLAR				
Solar/Conservation Bank (HUD)[a/]	48	19	50	54
Solar for Developing Countries (AID)	54	33	170	78
MX-RES (DOD)	6	5	25	20
Economic Development Administration (Commerce)	33	8	33	29
Solar in Agriculture (USDA)	23	23	25	25
Other (Interior, TVA, DOD, etc.)	52	52	62	50
Subtotal Other Federal[b/]	216	140	365	256
TOTAL FEDERAL FUNDING[c/]	855	815	1,001	915
Tax Expenditures and Exemptions		431		656

a/ Solar funding only.

b/ Excludes outlays from FY 1980 appropriations of $1.05 billion in Treasury's Biomass Energy Development account.

c/ Does not include loans secured by general Federal credit programs (e.g. Farmers Home Administration).

NUCLEAR WASTE MANAGEMENT
FY 1982 BUDGET
DEPARTMENT OF ENERGY
(In millions of dollars)

	FY 1981		FY 1982	
	BA	BO	BA	BO
DOE NUCLEAR WASTE MANAGEMENT				
Commercial Nuclear Waste	247	245	257	302
Spent Nuclear Fuel	23	17	7	7
Defense Waste Management	300	312	350	387
TOTAL WASTE MANAGEMENT	570	574	614	696

FEDERAL CONSERVATION PROGRAMS
FY 1982 BUDGET
(In millions of dollars)

	FY 1981		FY 1982	
	BA	BO	BA	BO
DOE CONSERVATION				
Buildings and Community Systems	88	77	99	99
Industrial	54	63	52	52
Transportation	108	97	122	108
State and Local	453	448	539	620
Multi-Sector	26	21	32	30
Energy Impact Assistance	62	23	47	64
Residential/Commercial Retrofit	26	6	31	17
Subtotal DOE	817	735	922	990
OTHER FEDERAL CONSERVATION				
Solar/Conservation Bank (HUD)[a/]	73	28	77	82
Conservation Investments in Federal Buildings	399	283	482	412
Subtotal Other	472	311	559	494
TOTAL FEDERAL FUNDING	1,289	1,046	1,481	1,484
Tax Credits and Exemptions.....	$ 730		$ 850	

[a/] Conservation funding only.

ALTERNATIVE FUELS ACTIVITIES

In 1980, Congress completed the allocation of funds from the $19 billion Energy Security Reserve established by Public Law 96-126, the FY 1980 Interior and Related Agencies Appropriations Act, to accelerate the development of alternative fuels as substitutes for imported oil. In so doing, Congress provided funds for the Synthetic Fuels Corporation, for alternative fuels projects which could be initiated by the Department of Energy but transfer to the Corporation at a later date, and for other activities, including alcohol fuel, biomass, and urban waste synthetic fuel projects, which would remain the responsibility of the Department. The allocation of funds is as follows:

Allocation of Funds from the Energy Security Reserve
(In Millions)

	FY 1980 Budget Authority
Available to the Department of Energy	
Loan guaranty reserves, price supports, and purchase guarantees	$ 5,000 [a/]
Feasibility studies and cooperative agreements	500 [a/]
Program administration	18 [a/]
Financial assistance to alcohol fuels and other biomass projects	525
Financial assistance to municipal waste projects	220
Subtotal, Department of Energy	$ 6,263
Available to the Department of Agriculture	
Financial assistance to alcohol fuels projects	525
Available to the Synthetic Fuels Corporation (SFC)	12,212 [b/]
TOTAL ENERGY SECURITY RESERVE	$19,000

a/ From this total of $5,518 million, funds which are not committed or not conditionally committed on June 30, 1981, shall transfer to the Synthetic Fuels Corporation, up to a limit of $5,310 million. To the extent that these funds are committed to projects which meet the eligibility requirements of the SFC, the corporation may elect to accept them by transfer from the Department.

b/ $6,000 million was made available to the Corporation upon enactment of Public Law 96-304 on July 8, 1980. The remaining $6,212 million will become available to the Corporation after June 30, 1982.

ALTERNATIVE FUELS ACTIVITIES

No additional funding is requested in FY 1982 for these activities. However, since most of these funds were made available late in FY 1980 and required the issuing of regulations and competitive solicitations, program execution activities are heavy in FY 1981 and will continue in FY 1982.

During FY 1981, solicitations were extended for a second round of cooperative agreements and feasibility studies (the first round took place in FY 1980). Over 230 proposals for cooperative agreements were received, and 23 were recommended for award. Almost 850 proposals for feasibility studies were submitted, and 56 were recommended for award.

Also, the Department received proposals for 21 projects from its solicitation for awards of up to $5 billion in financial assistance (loan guarantees, purchase, and price commitments). The proposed projects employ such resources as oil shale, tar sands, coal (both liquefaction and gasification), and peat.

Activities in FY 1982 should include monitoring industrial projects supported by cooperative agreements and feasibility studies, and making financial assistance commitments for alcohol fuel and urban waste energy facilities.

DEPARTMENT OF ENERGY
FY 1982 BUDGET
Budget Authority by Organization
(In millions)

	FY 1981	FY 1982
Defense Programs	$ 3,065	$ 4,008
Energy Research	1,148	1,456
Environment	283	334
Nuclear Energy	1,574	1,630
Fossil Energy	1,111	1,552
Resource Applications	3,952	5,128
Conservation and Solar	1,473	1,532
Alcohol Fuels	21	32
Federal Energy Regulatory Commission	76	86
Economic Regulatory Administration	132	141
Office of Hearings and Appeals	8	8
Gasoline Rationing	115	35
Energy Information Administration	105	127
Policy and Evaluation	25	29
Intergovernmental Affairs	15	16
Consumer Affairs	7	8
Public Affairs	7	7
Departmental Administration	217	326
Subtotal	$13,334	$16,455
Proposed Legislation/Spent Fuel	300	---
Prior Year Balances	- 40	---
Total DOE	$13,594[a/]	$16,455

a/ Excludes $1,254 million in contract authority which will be liquidated by revenues.

STATISTICAL APPENDIX

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

SUMMARY BY APPROPRIATION

APPROPRIATIONS BEFORE THE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEES:	FY 1981 ESTIMATE BA	FY 1981 ESTIMATE BO	FY 1982 ESTIMATE BA	FY 1982 ESTIMATE BO
ATOMIC ENERGY DEFENSE ACTIVITIES -				
OPERATING EXPENSES	2,993.0	2,885.5	3,696.3	3,572.1
PLANT & CAPITAL EQUIPMENT	673.7	694.3	1,007.9	905.9
TOTAL ATOMIC ENERGY DEFENSE ACTIVITIES	3,666.7	3,579.8	4,704.2	4,478.0
GENERAL SCIENCE AND RESEARCH -				
OPERATING EXPENSES	378.0	372.0	445.0	443.3
PLANT & CAPITAL EQUIPMENT	126.4	138.3	162.3	153.4
TOTAL GENERAL SCIENCE AND RESEARCH .	504.4	510.3	607.3	596.7
ENERGY SUPPLY RESEARCH AND DEVELOPMENT -				
OPERATING EXPENSES	2,282.0	2,260.7	2,307.0	2,436.8
PLANT & CAPITAL EQUIPMENT	381.2	425.5	457.5	508.4
TOTAL ENERGY SUPPLY RESEARCH AND DEVELOPMENT	2,663.2	2,686.2	2,764.5	2,945.2
URANIUM SUPPLY AND ENRICHMENT ACTIVITIES	1,285.8	196.3	568.9	272.0
FEDERAL ENERGY REGULATORY COMMISSION	76.4	79.0	85.9	84.7
GEOTHERMAL RESOURCES DEVELOPMENT FUND	43.3	1.3	5.6	1.8

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

SUMMARY BY APPROPRIATION - continued

APPROPRIATIONS BEFORE THE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEES:	FY 1981 ESTIMATE BA	FY 1981 ESTIMATE BO	FY 1982 ESTIMATE BA	FY 1982 ESTIMATE BO
POWER MARKETING:				
ALASKA POWER ADMINISTRATION - OPERATING & MAINTENANCE	3.2	3.2	3.5	3.5
BONNEVILLE POWER ADMINISTRATION	---	16.7	136.2*	-189.2
SOUTHEASTERN POWER ADMINISTRATION - OPERATION & MAINTENANCE	1.7	1.7	7.2	6.9
SOUTHWESTERN POWER ADMINISTRATION - OPERATION & MAINTENANCE	28.5	37.5	21.3	29.3
WESTERN AREA POWER ADMINISTRATION - CONSTRUCTION, REHABILITATION	141.5	141.3	210.8	210.9
WESTERN AREA POWER ADMINISTRATION - COLORADO RIVER BASIN	3.5	-9.6	---	-2.6
SOUTHWESTERN POWER ADMINISTRATION - CONTINUING FUND	---	---	.3	---
WESTERN AREA POWER ADMINISTRATION - EMERGENCY FUND	.2	.3	.5	.5
TOTAL POWER MARKETING	178.6	191.1	379.8	59.3
DEPARTMENTAL ADMINISTRATION	284.2	293.5	401.7	369.5
PAYMENTS TO STATES	.1	.1	.1	.1
SPENT FUEL STORAGE FUND	300.0	-100.0	---	200.0
SUBTOTAL APPROPRIATIONS BEFORE THE ENERGY AND WATER DEVELOPMENT SUBCOMMITTEES:	9,002.7	7,437.6	9,518.0	9,007.3

* Reflects revolving fund authority to borrow in anticipation of revenues.

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

SUMMARY BY APPROPRIATION - continued

APPROPRIATIONS BEFORE THE INTERIOR AND RELATED AGENCIES SUBCOMMITTEES:	FY 1981 ESTIMATE BA	FY 1981 ESTIMATE BO	FY 1982 ESTIMATE BA	FY 1982 ESTIMATE BO
FOSSIL ENERGY				
FOSSIL ENERGY RESEARCH AND DEVELOPMENT	687.5	713.2	761.5	741.6
FOSSIL ENERGY CONSTRUCTION	423.3	245.0	790.2	675.2
TOTAL FOSSIL ENERGY	1,110.8	958.2	1,551.7	1,416.8
ENERGY PRODUCTION, DEMONSTRATION & DISTRIBUTION	226.7	238.6	253.9	306.9
ENERGY CONSERVATION	817.1	734.7	921.7	990.0
ECONOMIC REGULATION	255.2	212.0	184.1	216.0
STRATEGIC PETROLEUM RESERVE	3,330.9	3,018.0	3,898.4	3,660.1
ENERGY INFORMATION ADMINISTRATION	104.7	102.3	127.2	127.2
ALTERNATIVE FUELS PRODUCTION	---	200.0	---	225.0
SUBTOTAL, APPROPRIATIONS BEFORE THE INTERIOR AND RELATED AGENCIES SUBCOMMITTEES:	5,845.4	5,463.8	6,937.0	6,942.0
TOTAL, DEPARTMENT OF ENERGY FEDERAL FUNDS	14,848.1	12,901.4	16,455.0	15,949.3
RECAP OF FEDERAL FUNDS:				
NEW AUTHORITY	13,496.9	12,818.4	16,455.0	15,923.1
SUPPLEMENTALS	199.1	146.2	---	52.9
RESCISSIONS	-101.9	-63.2	---	-26.7
CONTRACT AUTHORITY	1,254.0	---	---	---
TOTAL, DEPARTMENT OF ENERGY	14,848.1	12,901.4	16,455.0	15,949.3
OTHER FUNDS:				
ADVANCES FOR COOPERATIVE WORK	44.2	53.4	39.1	39.1

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ATOMIC ENERGY DEFENSE ACTIVITIES APPROPRIATIONS

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
NAVAL REACTORS DEVELOPMENT				
Plant Development	67.9	71.2	88.0	87.0
Reactor Development	150.6	157.4	176.0	162.0
Reactor Operation and Eval	74.5	73.4	73.0	70.0
Program Direction	10.4	10.3	9.5	9.5
SUBTOTAL NAVAL REACTOR DEVELOPMENT	303.4	312.3	346.5	328.5
WEAPONS ACTIVITIES				
Research, Development & Testing	1,154.8	1,114.6	1,292.4	1,276.8
Production and Surveillance	1,130.2	1,055.6	1,715.3	1,496.0
Program Direction	40.5	40.3	41.4	41.5
SUBTOTAL WEAPONS ACTIVITIES	2,325.5	2,210.5	3,049.1	2,814.3
VERIFICATION AND CONTROL TECHNOLOGY				
Verification & Control Technology	37.7	36.5	48.2	47.3
Program Direction	1.8	1.8	1.8	1.8
SUBTOTAL VERIFICATION AND CONTROL TECHNOLOGY	39.5	38.3	50.0	49.1
MATERIALS PRODUCTION				
Materials Production	664.4	661.7	835.2	825.6
Program Direction	1.4	1.4	1.7	1.8
SUBTOTAL MATERIALS PRODUCTION	665.8	663.1	836.9	827.4

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ATOMIC ENERGY DEFENSE ACTIVITIES APPROPRIATIONS - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
DEFENSE WASTE MANAGEMENT				
Interim Waste Management	176.7	206.3	250.5	259.9
Long Term Waste Management	90.7	85.8	82.0	83.9
Terminal Storage	20.0	7.0	2.0	27.6
Decontamination and Decommissioning	4.1	4.1	7.1	7.1
Transportation	7.0	7.0	6.9	6.9
Program Direction	1.8	1.8	1.6	1.6
SUBTOTAL DEFENSE WASTE MANAGEMENT	300.3	312.0	350.1	387.0
NUCLEAR MATERIALS SECURITY AND SAFEGUARDS DEVELOPMENT				
Nuclear Materials Security and Safeguards	43.0	39.4	44.0	44.0
Program Direction	4.2	4.1	4.0	4.0
SUBTOTAL NUCLEAR MATERIALS SECURITY AND SAFEGUARDS DEVELOPMENT	47.2	43.5	48.0	48.0
SECURITY INVESTIGATIONS	16.0[a/]	16.0	23.6	23.7
SUBTOTAL ATOMIC ENERGY DEFENSE ACTIVITIES	3,697.7	3,595.7	4,704.2	4,478.0
Cost Outlay Adjustment	---	-15.9	---	---
FY 1980 Deferral - NE	-1.0	---	---	---
FY 1980 Deferral - DP	-30.0	---	---	---
TOTAL ATOMIC ENERGY DEFENSE ACTIVITIES	3,666.7	3,579.8	4,704.2	4,478.0
RECAP:				
New Authority	3,610.6	3,532.4	4,704.2	4,469.2
Supplementals	56.1	47.4	---	8.8
TOTAL, ATOMIC ENERGY DEFENSE ACTIVITIES	3,666.7	3,579.8	4,704.2	4,478.0

a/ In FY 1981 this was included in the Departmental Administration appropriation.

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ATOMIC ENERGY DEFENSE ACTIVITIES APPROPRIATIONS - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
APPROPRIATIONS SUMMARY				
OPERATING EXPENSES	2,993.0	2,885.5	3,696.3	3,572.1
PLANT & CAPITAL EQUIPMENT	673.7	694.3	1,007.9	905.9
TOTAL, ATOMIC ENERGY DEFENSE ACTIVITIES	3,666.7	3,579.8	4,704.2	4,478.0

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

GENERAL SCIENCE AND RESEARCH APPROPRIATIONS

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
BASIC SCIENCES				
LIFE SCIENCES RESEARCH AND NUCLEAR MEDICINE APPLICATIONS				
General Life Sciences	25.9	24.6	32.1	30.9
Nuclear Medicine Applications	20.0	19.0	21.7	21.0
SUBTOTAL LIFE SCIENCES RESEARCH	45.9	43.6	53.8	51.9
HIGH ENERGY PHYSICS				
Physics Research	76.0	75.4	86.1	86.1
Facility Operations	222.8	226.4	254.8	248.8
High Energy Technology	50.6	50.0	71.6	71.6
Other Capital Equipment	2.8	2.8	3.1	3.1
SUBTOTAL HIGH ENERGY PHYSICS	352.2	354.6	415.6	409.6
NUCLEAR PHYSICS				
Medium Energy Physics	51.8	50.5	58.6	60.1
Heavy Ion Physics	50.1	52.4	67.4	66.2
Nuclear Theory	7.0	6.7	9.1	9.1
Other Capital Equipment	1.3	1.2	1.4	1.4
SUBTOTAL NUCLEAR PHYSICS	110.2	110.8	136.5	136.8
HIGH ENERGY AND NUCLEAR PHYSICS PROGRAM DIRECTION	1.1	1.1	1.4	1.4
SUBTOTAL BASIC SCIENCES	509.4	510.1	607.3	599.7
COST OUTLAY ADJUSTMENT	---	.2	---	-3.0
FY 1980 DEFFERAL - ER	-5.0	---	---	---
TOTAL GENERAL SCIENCE AND RESEARCH ..	504.4	510.3	607.3	596.7
APPROPRIATIONS SUMMARY				
OPERATING EXPENSES	378.0	372.0	445.0	443.3
PLANT & CAPITAL EQUIPMENT	126.4	138.3	162.3	15[illegible]
TOTAL, GENERAL SCIENCE AND RESEARCH	504.4	510.3	607.3	596.7

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ENERGY SUPPLY RESEARCH AND DEVELOPMENT APPROPRIATIONS

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
SOLAR ENERGY R&D				
SOLAR APPLICATIONS FOR BUILDINGS				
Active Solar Heating & Cooling ...	43.7	38.9	32.5	38.7
Passive Solar Heating & Cooling ..	33.4	28.3	32.0	36.2
Photovoltaic Energy Systems	160.2	142.9	161.5	161.8
SUBTOTAL SOLAR APPLICATIONS FOR BUILDINGS	237.3	210.1	226.0	236.7
SOLAR APPLICATIONS FOR INDUSTRY				
Solar Thermal Energy Systems	141.8	167.7	85.3	97.1
Biomass Energy Systems	46.4	44.9	56.0	34.0
SUBTOTAL SOLAR APPLICATIONS FOR INDUSTRY	188.2	212.6	141.3	131.1
SOLAR APPLICATIONS FOR POWER				
Wind Energy Systems	85.8	79.4	73.6	84.0
Ocean Energy Systems	39.0	39.4	36.8	53.2
SUBTOTAL SOLAR APPLICATIONS FOR POWER	124.8	118.8	110.4	137.2
ALCOHOL FUELS				
Production Incentives	---	17.4	---	---
Technical Development and Utilization	13.3	---	27.0	21.2
Market Development	3.0	---	---	---
Management & Program Control	4.6	---	5.6	5.4
SUBTOTAL ALCOHOL FUELS	20.9	17.4	32.6	26.6

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ENERGY SUPPLY RESEARCH AND DEVELOPMENT APPROPRIATIONS - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
International Solar Energy Program	12.0	11.8	13.0	13.2
Solar Information Systems	1.4	1.0	12.6	12.9
Solar Energy Research Institute	5.0	5.0	23.8	12.5
MX-RES	---	---	9.5	7.7
Program Direction	7.2	7.2	6.8	6.9
TOTAL SOLAR ENERGY R&D	596.8	583.9	576.0	584.7
GEOTHERMAL				
Hydrothermal Commercialization	67.9	77.2	35.0	48.9
Geopressured Resources	35.8	34.8	26.5	32.2
Geothermal Technology Development	49.9	43.9	28.1	38.5
Program Direction	2.4	2.4	2.0	2.0
TOTAL GEOTHERMAL	156.0	158.3	91.6	121.6
HYDROPOWER				
Small Scale Hydropower	11.0	14.7	2.7	8.4
Feasibility Studies Loan Program	10.0	7.5	---	7.1
Program Direction	.8	.8	.5	.5
TOTAL HYDROPOWER	21.8	23.0	3.2	16.0
NUCLEAR				
CONVENTIONAL REACTOR SYSTEMS				
High Temperature Reactor Technology	13.8	18.6	---	---
Light Water Reactor Systems	35.0	35.5	28.0	31.8
Three Mile Island Activities	6.5	8.7	10.0	9.6
Advanced Reactor Systems	1.0	1.2	5.0	5.0
Program Direction	1.5	1.5	1.5	1.5
SUBTOTAL CONVENTIONAL REACTOR SYSTEMS	57.8	65.5	44.5	47

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ENERGY SUPPLY RESEARCH AND DEVELOPMENT APPROPRIATIONS - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
COMMERCIAL NUCLEAR WASTE				
Commercial Waste Management	201.4	196.3	198.4	240.7
Remedial Action	42.5	45.6	55.8	58.5
Program Direction	2.7	2.6	3.0	3.2
SUBTOTAL COMMERCIAL NUCLEAR WASTE ...	246.6	244.5	257.2	302.4
SPENT NUCLEAR FUEL				
Domestic	19.0	13.9	6.0	6.0
International	3.0	3.0	.9	.9
Program Direction	.5	.5	.5	.5
SUBTOTAL SPENT NUCLEAR FUEL	22.5	17.4	7.4	7.4
ADVANCED NUCLEAR SYSTEMS				
Space and Terrestrial Applications	38.0	38.9	40.8	42.6
Advanced Systems Evaluations	3.0	3.0	3.0	3.2
Program Direction	1.0	1.0	1.2	1.2
SUBTOTAL ADVANCED NUCLEAR SYSTEMS ...	42.0	42.9	45.0	47.0
BREEDER REACTOR SYSTEMS				
Liquid Metal Fast Breeder Reactor	401.9	440.3	363.8	448.6
Water Cooled Breeder Reactor	60.2	67.2	58.0	64.0
Gas Cooled Breeder Reactor	---	3.1	---	---
Fuel Cycle Research and Development	47.5	55.0	26.1	30.4
Program Direction	11.2	11.2	10.6	10.6
SUBTOTAL BREEDER REACTOR SYSTEMS	520.8	576.8	458.5	553.6
TOTAL NUCLEAR	889.7	947.1	812.6	958.3

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ENERGY SUPPLY RESEARCH AND DEVELOPMENT APPROPRIATIONS - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
FUSION				
Confinement Systems	120.4	119.0	158.0	151.5
Development and Technology	74.1	73.5	75.4	73.6
Applied Plasma Physics	72.2	72.1	76.6	75.0
Planning and Projects	120.9	173.3	159.5	183.7
Center for Magnetic Fusion Energy	3.4	3.6	32.8	32.8
Program Direction	3.3	3.3	3.9	3.9
TOTAL FUSION	394.3	444.8	506.2	520.5
ELECTRIC ENERGY SYSTEMS				
System Architecture and Integration	19.0	21.3	12.9	13.0
Power Delivery	20.0	19.4	18.9	19.2
Generation and Storage Applications	---	---	6.3	6.3
Program Direction	.9	.9	.8	.8
TOTAL ELECTRIC ENERGY SYSTEMS	39.9	41.6	38.9	39.3
ENERGY STORAGE SYSTEMS				
Battery Storage	38.5	40.0	29.8	33.5
Thermal and Mechanical Storage	32.3	33.2	28.4	29.2
Program Direction	1.1	1.1	1.3	1.3
TOTAL ENERGY STORAGE SYSTEMS	71.9	74.3	59.5	64.0
ENVIRONMENT				
Overview and Assessment	52.5	50.6	65.2	63.3
Biological and Environmental Research	172.2	167.1	204.2	200.5
Program Direction	12.1	12.1	10.7	10.7
TOTAL ENVIRONMENT	236.8	229.8	280.1	274.5

DEPARTMENT OF ENERGY
FY 1982 Budget
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ENERGY SUPPLY RESEARCH AND DEVELOPMENT APPROPRIATIONS - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
SUPPORTING RESEARCH AND TECHNICAL ANALYSIS				
BASIC ENERGY SCIENCES				
Nuclear Sciences	33.7	33.7	39.5	39.5
Materials Sciences	95.1	105.8	118.2	117.8
Chemical Sciences	67.9	67.0	84.0	85.0
Engineering, Mathematical, and Geosciences	25.9	25.8	37.9	37.9
Advanced Energy Projects	6.6	6.6	9.4	9.4
Biological Energy Research	7.7	7.7	10.0	10.0
Inertial Plasma Physics Research	7.0	7.0	9.0	9.0
Program Direction	2.6	2.6	2.9	2.9
Other Capital Equipment	.1	.1	.1	.1
SUBTOTAL BASIC ENERGY SCIENCES	246.6	256.3	311.0	311.6
TECHNICAL ASSESSMENT PROJECTS				
Assessment Projects	2.5	2.5	3.8	3.8
Advanced Technology Projects	8.0	6.6	13.0	13.0
Satellite Power System	---	.2	---	---
Advanced Electric Battery Dev	2.0	2.0	---	---
Social and Economic Sciences	---	---	3.0	3.0
SUBTOTAL TECHNICAL ASSESSMENT PROJECTS	12.5	11.3	19.8	19.8
UNIVERSITY RESEARCH SUPPORT				
University Institutional Agreements	2.9	2.9	4.8	4.8
University Reactor Fuel Assistance	1.4	1.4	1.6	1.6
University Laboratory Cooperative Program	3.5	3.5	3.6	3.6
Energy Graduate Traineeship Program	---	---	2.0	2.0
Energy Manpower Assessment Program	---	---	.5	.5
STOTAL UNIVERSITY RESEARCH SUPPORT	7.8	7.8	12.5	12.5

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ENERGY SUPPLY RESEARCH AND DEVELOPMENT APPROPRIATIONS - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
ADVISORY AND OVERSIGHT PROGRAM DIRECTION	3.0	3.0	3.1	3.1
MULTI-PROGRAM FACILITIES	25.0	18.1	50.0	30.0
TOTAL SUPPORTING RESEARCH AND TECHNICAL ANALYSIS	294.9	296.5	396.4	377.0
SUBTOTAL, ENERGY SUPPLY RESEARCH AND DEVELOPMENT	2,702.1	2,799.3	2,764.5	2,955.9
LESS ADJUSTMENTS				
Less General Reduction	-28.4	---	---	---
Less Unobligated Balance	-10.5	---	---	---
Less Cost Outlay Adjustment	---	-113.1	---	-10.7
TOTAL ENERGY SUPPLY RESEARCH AND DEVELOPMENT	2,663.2	2,686.2	2,764.5	2,945.2

APPROPRIATIONS SUMMARY

OPERATING EXPENSES	2,282.0	2,260.7	2,307.0	2,436.8
PLANT & CAPITAL EQUIPMENT	381.2	425.5	457.5	508.4
TOTAL, ENERGY SUPPLY RESEARCH AND DEVELOPMENT	2,663.2	2,686.2	2,764.5	2,945.2
RECAP:				
New Authority	2,689.6	2,711.7	2,764.5	2,946.1
Supplementals	2.3	2.2	---	.1
Rescissions	-28.7	-27.7	---	-1.0
TOTAL, ENERGY SUPPLY RESEARCH AND DEVELOPMENT	2,663.2	2,686.2	2,764.5	2,945.2

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

URANIUM SUPPLY AND ENRICHMENT ACTIVITIES APPROPRIATION

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
URANIUM ENRICHMENT ACTIVITIES				
Gaseous Diffusion Program	950.4	972.3	1,316.1	1,317.5
Gas Centrifuge Program	356.3	354.4	759.8	479.0
Contract Prefinancing	50.0	---	---	---
Program Direction	3.1	3.1	3.1	3.1
SUBTOTAL URANIUM ENRICHMENT ACTIVITIES	1,359.8	1,329.8	2,079.0	1,799.6
URANIUM RESOURCE ASSESSMENT				
Assessment Program	25.9	42.4	20.8	20.4
Program Direction	4.9	4.8	4.2	4.2
SUBTOTAL URANIUM RESOURCE ASSESSMENT	30.8	47.2	25.0	24.6
ADVANCED ISOTOPE SEPARATION TECHNOLOGY				
Advanced Isotope Separation Technolgy	79.3	73.6	119.7	121.7
Program Direction	.9	.9	1.2	1.2
SUBTOTAL ADVANCED ISOTOPE SEPARATION TECHNOLOGY	80.2	74.5	120.9	122.9
SUBTOTAL URANIUM SUPPLY AND ENRICHMENT ACTIVITIES	1,470.8	1,451.5	2,224.9	1,947.2
OFFSETTING REVENUES	-1,254.0	-1,254.0	-1,656.0	-1,656.0
CONTRACT AUTHORITY	1,254.0	---	---	---
SUBTOTAL URANIUM SUPPLY AND ENRICHMENT ACTIVITIES	1,470.8	197.5	568.9	291.2
COST OUTLAY ADJUSTMENT	---	-1.2	---	-19.2
FY 1980 DEFERRAL - RA	-185.0	---	---	---
TOTAL URANIUM SUPPLY AND ENRICHMENT ACTIVITIES	1,285.8	196.3	568.9	272.0
RECAP:				
New Authority	31.8	196.3	568.9	272.0
Supplementals	*	*	---	---
Contract Authority	1,254.0	---	---	---
TOTAL URANIUM SUPPLY AND ENRICHMENT ACTIVITIES	1,285.8	196.3	568.9	272.0

*Less than .1 million.

DEPARTMENT OF ENERGY
FY 1982 Budget
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FEDERAL ENERGY REGULATORY COMMISSION APPROPRIATION

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
REGULATION				
OIL REGULATION	6.1	7.5	8.1	8.0
GAS REGULATION	39.7	41.8	43.1	42.4
HYDROPOWER REGULATION	13.6	13.1	16.6	16.4
ELECTRIC POWER REGULATION	17.0	16.6	18.1	17.9
TOTAL FEDERAL ENERGY REGULATORY COMMISSION	76.4	79.0	85.9	84.7
RECAP:				
New Authority	74.4	77.1	85.9	84.6
Supplementals	2.0	1.9	---	.1
TOTAL, FEDERAL ENERGY REGULATORY COMMISSION	76.4	79.0	85.9	84.7

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

GEOTHERMAL RESOURCES DEVELOPMENT FUND APPROPRIATION

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
GUARANTEE RESERVE FUND	42.0	---	4.3	---
LOAN EVALUATION FUND	1.1	1.1	1.1	1.6
PROGRAM DIRECTION	.2	.2	.2	.2
TOTAL GEOTHERMAL RESOURCES DEVELOPMENT FUND	43.3	1.3	5.6	1.8
RECAP:				
New Authority	1.3	1.3	5.6	1.8
Reappropriation	42.0	---	---	---
TOTAL, GEOTHERMAL RESOURCES DEVELOPMENT FUND	43.3	1.3	5.6	1.8

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

POWER MARKETING ADMINISTRATIONS APPROPRIATIONS

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
POWER MARKETING - ALASKA POWER ADMINISTRATION				
Operating Expenses	2.1	2.1	2.1	2.1
General Investigation	1.1	1.1	1.4	1.4
Offsetting Collections	---	---		
TOTAL ALASKA POWER ADMINISTRATION	3.2	3.2	3.5	3.5
POWER MARKETING - BONNEVILLE POWER ADMINISTRATION	---	16.7	136.2	-189.2
POWER MARKETING - SOUTHEASTERN POWER ADMINISTRATION				
Operation and Maintenance	1.4	1.4	1.3	1.1
Purchase Power and Wheeling	4.9	4.9	5.9	5.8
Offsetting Receipts	-4.6	-4.6		
TOTAL SOUTHEASTERN POWER ADMINISTRATION	1.7	1.7	7.2	6.9
POWER MARKETING - SOUTHWESTERN POWER ADMINISTRATION				
Operation and Maintenance	7.3	7.3	8.5	16.5
Purchase Power and Wheeling	10.8	19.8	9.2	9.2
Construction	10.9	10.9	3.6	3.6
Offsetting Receipts	-.5	-.5		
TOTAL SOUTHWESTERN POWER ADMINISTRATION	28.5	37.5	21.3	29.3

DEPARTMENT OF ENERGY
FY 1982 Budget
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POWER MARKETING ADMINISTRATIONS APPROPRIATIONS - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
POWER MARKETING - WESTERN AREA POWER ADMINISTRATION				
Construction and Rehabilitation ..	36.3	36.3	96.7	96.7
System Operation & Maintenance ...	44.2	44.0	56.9	57.0
Purchase Power and Wheeling	76.3	76.3	57.2	57.2
Offsetting Receipts	-15.3	-15.3		
TOTAL WESTERN AREA POWER ADMINISTRATION	141.5	141.3	210.8	210.9
POWER MARKETING - COLORADO RIVER BASIN				
Operation and Maintenance	74.5	21.8	---	-2.6
Offsetting Receipts	-74.5	-40.9	---	---
Construction	3.5	9.5	---	---
TOTAL POWER MARKETING - COLORADO RIVER BASIN	3.5	-9.6	---	-2.6
SOUTHWESTERN POWER ADMINISTRATION - CONTINUING FUND	---	---	.3	---
WESTERN AREA POWER ADMINISTRATION - EMERGENCY FUND	.2	.3	.5	.5
TOTAL POWER MARKETING ADMINISTRATIONS	178.6	191.1	379.8	59.3
RECAP:				
Borrowing Authority.....	---	---	136.2	---
New Authority	175.1	187.7	243.6	59.2
Supplementals	3.5	3.4	---	.1
TOTAL, POWER MARKETING ADMINISTRATION	178.6	191.1	379.8	59.3

DEPARTMENT OF ENERGY
FY 1982 Budget
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DEPARTMENTAL ADMINISTRATION APPROPRIATION

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
POLICY ANALYSIS AND SYSTEM STUDIES				
Policy Analysis & System Studies	16.5	16.5	20.6	20.6
Program Direction	8.4	8.4	8.1	8.1
SUBTOTAL, POLICY ANALYSIS AND SYSTEM STUDIES	24.9	24.9	28.7	28.7
INTERNATIONAL AFFAIRS				
Country Energy Assessment Program	2.0	2.0	3.8	3.8
International Policy Studies	.5	.5	1.5	1.5
Program Direction	6.2	6.2	7.1	7.1
SUBTOTAL, INTERNATIONAL AFFAIRS	8.7	8.7	12.4	12.4
MANAGEMENT AND SUPPORT	260.2[a/]	276.0	325.7	325.6
INTERGOVERNMENTAL AFFAIRS				
Community Assistance	9.3	9.3	11.1	11.1
State and Local	.5	.5	.8	.8
Indian Affairs	1.1	1.1	1.5	1.5
Technical Assistance	.5	.5	---	---
Program Direction	3.2	3.2	2.2	2.2
SUBTOTAL, INTERGOVERNMENTAL AFFAIRS	14.6	14.6	15.6	15.6
PUBLIC AFFAIRS				
Public Affairs	3.3	3.3	3.3	3.3
Program Direction	3.9	3.9	3.5	3.5
SUBTOTAL, PUBLIC AFFAIRS	7.2	7.2	6.8	6.8
IN-HOUSE ENERGY MANAGEMENT	38.8	26.6	84.9	52.2

a/ Contains a separate FY 1981 appropriation for The Office of the Secretary in the amount of $4.9 million.

DEPARTMENT OF ENERGY
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DEPARTMENTAL ADMINISTRATION APPROPRIATION - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
OTHER SUPPORTING ACTIVITIES				
Plant Eng. and Design	4.0	5.9	5.0	4.2
General Purpose Facilities	---	11.0	---	---
SUBTOTAL, OTHER SUPPORTING ACTIVITIES	4.0	16.9	5.0	4.2
COST OF WORK FOR OTHERS	43.8	43.8	47.6	47.6
MISCELLANEOUS REVENUES	-143.3	-143.3	-167.9	-167.9
CHANGES IN INVENTORIES, WORKING CAPITAL	12.0	12.0	19.6	19.6
CONSUMER AFFAIRS				
Education Programs	5.0	5.0	5.2	5.2
Other Consumer Affairs	.6	.6	1.1	1.1
Program Direction	1.1	1.1	1.2	1.2
SUBTOTAL, CONSUMER AFFAIRS	6.7	6.7	7.5	7.5
TECHNICAL INFORMATION SERVICES	12.6	12.6	15.8	15.8
SUBTOTAL DEPARTMENTAL ADMINISTRATION	290.2	306.7	401.7	368.1
GENERAL REDUCTION - AD	-6.0	---	---	---
COST OUTLAY ADJUSTMENT	---	-13.2	---	1.4
TOTAL DEPARTMENTAL ADMINISTRATION	284.2	293.5	401.7	369.5

DEPARTMENT OF ENERGY
FY 1982 Budget
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FOSSIL ENERGY APPROPRIATIONS

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
COAL				
Mining Research and Development	48.0	35.4	32.0	50.4
Coal Liquefaction	520.7	341.9	886.3	782.8
Surface Coal Gasification	159.4	132.7	216.4	217.8
In-Situ Coal Gasification	9.9	5.3	10.5	8.6
Advanced Research and Technology Development	46.4	48.4	63.1	62.1
Advanced Environmental Control Technology	43.4	55.8	46.3	43.4
Heat Engines and Heat Recovery	36.4	38.1	29.0	35.3
Combustion Systems	35.7	42.3	76.7	56.5
Fuel Cells	32.0	24.5	28.6	26.3
Magnetohydrodynamics	66.5	71.0	60.0	47.1
University Coal Research	5.0	---	---	---
Program Direction	12.3	12.4	12.5	12.6
Capital Equipment	4.6	---	3.8	---
TOTAL COAL	1,020.3	807.8	1,465.2	1,342.9
PETROLEUM				
Enhanced Oil Recovery	18.0	26.5	23.1	23.2
Oil Shale	32.0	24.1	27.2	12.3
Drilling & Offshore Technology	2.0	1.9	---	1.0
Advanced Process Technology	3.5	7.1	3.7	4.4
Program Direction	1.5	.9	1.6	1.6
Capital Equipment - Petroleum	2.5	---	2.2	2.2
TOTAL PETROLEUM	59.5	60.5	57.8	44.7
GAS				
Enhanced Gas Recovery	30.1	28.4	27.6	28.1
Program Direction	.4	.3	.5	.5
Capital Equipment - Gas	.5	---	.6	.6
TOTAL GAS	31.0	28.7	28.7	29.2
SUBTOTAL FOSSIL ENERGY APROPRIATIONS	1,110.8	897.0	1,551.7	1,416.8
COST OUTLAY ADJUSTMENT	---	61.2	---	---
TOTAL FOSSIL ENERGY APPROPRIATIONS	1,110.8	958.2	1,551.7	1,416

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

FOSSIL ENERGY APPROPRIATIONS - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
APPROPRIATIONS SUMMARY				
FOSSIL ENERGY RESEARCH AND DEVELOPMENT	687.5	713.2	761.5	741.6
FOSSIL ENERGY CONSTRUCTION	423.3	245.0	790.2	675.2
TOTAL, FOSSIL ENERGY APPROPRIATIONS	1,110.8	958.2	1,551.7	1,416.8
RECAP:				
New Authority	1,134.8	974.5	1,551.7	1,424.4
Supplementals	1.5	1.4	---	.1
Rescissions	-25.5	-17.7	---	-7.7
TOTAL, FOSSIL ENERGY APPROPRIATION	1,110.8	958.2	1,551.7	1,416.8

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ENERGY PRODUCTION, DEMONSTRATION AND DISTRIBUTION APPROPRIATION

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
DOMESTIC ENERGY SUPPLY				
Coal	1.6	1.6	1.2	1.2
Shale Oil	1.5	1.5	5.5	5.5
Oil and Gas	5.1	4.8	1.5	1.5
Industrialization Planning	---	---	.8	.8
Program Direction	4.0	4.0	3.0	2.9
SUBTOTAL, DOMESTIC ENERGY SUPPLY	12.2	11.8	12.0	11.9
PETROLEUM RESERVES				
NAVAL PETROLEUM RESERVES				
Reserves 1 and 2 (California)	183.9	174.8	202.0	251.5
Reserve 3 (Wyoming)	13.4	18.7	22.9	26.7
Headquarters	.9	.9	1.0	1.0
SUBTOTAL NAVAL PETROLEUM RESERVES	198.2	194.4	225.9	279.2
NAVAL OIL SHALE RESERVES	3.9	3.8	2.5	2.1
FEDERAL LEASING	2.8	2.7	3.5	3.3
EXECUTIVE DIRECTION	1.0	1.0	2.5	2.5
SOLAR - EPD&D				
Federal Buildings (Market Test and Applications)	1.8	21.0	---	---
Market Analysis	6.0	6.5	6.8	7.2
Program Direction	.8	.8	.7	.7
SUBTOTAL SOLAR	8.6	28.3	7.5	7.9
SUBTOTAL ENERGY PRODUCTION, DEMONSTRATION AND DISTRIBUTION	226.7	242.0	253.9	306.9
COST OUTLAY ADJUSTMENT	---	-3.4	---	---
TOTAL, ENERGY PRODUCTION, DEMONSTRATION AND DISTRIBUTION	226.7	238.6	253.9	306.9

DEPARTMENT OF ENERGY
FY 1982 Budget
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ENERGY PRODUCTION, DEMONSTRATION AND DISTRIBUTION APPROPRIATION - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
RECAP:				
New Authority	226.1	238.0	253.9	306.9
Supplementals	.6	.6	---	*
TOTAL, ENERGY PRODUCTION, DEMONSTRATION AND DISTRIBUTION	226.7	238.6	253.9	306.9

* Less than $.1 million.

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ENERGY CONSERVATION APPROPRIATION

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
BUILDINGS AND COMMUNITY SYSTEMS				
BUILDINGS SYSTEMS				
Buildings Systems	17.8	15.4	27.1	25.7
Residential Conservation Service	5.1	6.7	6.8	6.9
SUBTOTAL, BUILDINGS SYSTEMS	22.9	22.1	33.9	32.6
COMMUNITY SYSTEMS				
Community Systems	13.8	11.4	10.4	10.4
Urban Waste	10.9	10.1	9.1	9.9
Small Business	.8	.6	1.0	.9
SUBTOTAL, COMMUNITY SYSTEMS	25.5	22.1	20.5	21.2
CONSUMER PRODUCTS				
Technology & Consumer Products	20.3	12.2	23.3	23.7
Appliance Standards	6.0	5.7	5.8	5.8
SUBTOTAL, CONSUMER PRODUCTS	26.3	17.9	29.1	29.5
FEDERAL PROGRAMS				
Analysis & Technology Transfer	5.9	5.6	5.7	5.8
Federal Energy Management Program	1.0	1.0	3.1	2.8
SUBTOTAL, FEDERAL PROGRAMS	6.9	6.6	8.8	8.6
EMERGENCY BUILDING TEMPERATURE RESTRICTIONS	-.5	1.2	---	---
PROGRAM DIRECTION	6.8	6.8	7.2	7.3
TOTAL BUILDINGS AND COMMUNITY SYSTEMS	87.9	76.7	99.5	99.2

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ENERGY CONSERVATION APPROPRIATION - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
INDUSTRIAL				
Waste Energy Reduction	19.8	19.0	16.7	17.5
Process Efficiency	15.0	22.7	16.5	17.9
Implementation and Deployment	4.5	5.6	5.6	3.5
Cogeneration	12.0	12.6	9.5	9.4
Program Direction	2.6	2.6	3.3	3.3
TOTAL INDUSTRIAL	53.9	62.5	51.6	51.6
TRANSPORTATION				
Vehicle Propulsion R&D	55.9	52.7	58.4	43.4
Electric & Hybrid Vehicle R&D	36.8	28.5	45.4	47.7
Transportation System Utilization	6.7	7.5	9.2	8.1
Alternate Fuels Utilization	5.3	5.4	5.4	5.5
Program Direction	3.0	3.0	3.3	3.3
TOTAL TRANSPORTATION	107.7	97.1	121.7	108.0
STATE AND LOCAL				
EPCA Grant Program	37.8	37.8	---	---
ECPA Grant Program	10.0	10.0	---	---
Hospital & School Grant Program	181.2	154.3	200.0	216.0
Other Local Government Buildings Grant Program	---	16.0	---	---
Weatherization Assistance Program	182.0	192.9	200.0	266.0
Energy Extension Service	20.0	20.0	---	---
Energy Management Partnership Act	---	---	101.6	101.5
Emergency Energy Conservation Act of 1979	12.0	7.0	24.5	24.0
Program Direction	9.9	9.9	12.5	12.5
TOTAL, STATE AND LOCAL	452.9	447.9	538.6	620.0

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ENERGY CONSERVATION APPROPRIATION - continued

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
MULTI-SECTOR				
Appropriate Technology	12.0	10.1	13.8	12.3
Inventors Programs	5.8	3.4	5.4	5.5
Energy Conversion Technology	8.0	7.4	12.0	11.4
Program Direction	.7	.7	.4	.4
TOTAL, MULTI-SECTOR	26.5	21.6	31.6	29.6
ENERGY IMPACT ASSISTANCE	62.0	23.0	47.6	64.5
RESIDENTIAL AND COMMERCIAL RETROFIT	26.2	5.9	31.1	17.1
SUBTOTAL, ENERGY CONSERVATION	817.1	734.7	921.7	990.2
TOTAL ENERGY CONSERVATION	817.1	734.7	921.7	990.0
RECAP:				
New Authority	864.5	752.1	921.7	1,008.0
Supplementals	.4	.4	---	*
Rescissions	-47.8	-17.8	---	-18.0
TOTAL ENERGY CONSERVATION	817.1	734.7	921.7	990.0

* Less than $.1 million.

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ECONOMIC REGULATION APPROPRIATION

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
ECONOMIC REGULATORY ADMINISTRATION				
FUELS CONVERSION	24.4	27.5	30.7	27.1
UTILITY PROGRAMS AND REGULATORY INTERVENTION	17.8	16.3	25.6	17.8
COMPLIANCE	70.9	70.1	52.0	52.7
PETROLEUM OPERATIONS	14.0	13.8	10.5	11.6
EMERGENCY PREPAREDNESS	1.2	1.2	19.3	17.3
PROGRAM ADMINISTRATION	3.6	3.1	3.0	3.2
SUBTOTAL, ECONOMIC REGULATORY ADMINISTRATION	131.9	132.0	141.1	129.7
GASOLINE RATIONING	115.0	71.8	35.3	78.6
OFFICE OF HEARINGS AND APPEALS	8.3	8.2	7.7	7.7
TOTAL ECONOMIC REGULATION	255.2	212.0	184.1	216.0
RECAP:				
New Authority	176.9	177.2	184.1	172.5
Supplementals	78.3	34.8	---	43.5
TOTAL, ECONOMIC REGULATION	255.2	212.0	184.1	216.0

DEPARTMENT OF ENERGY
FY 1982 Budget
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STRATEGIC PETROLEUM RESERVE APPROPRIATION

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
STRATEGIC PETROLEUM RESERVE				
Planning	8.0	10.5	9.0	10.1
Petroleum Acquisition and Transportation	1,383.3	1,765.4	3,436.0	2,338.1
Storage Facilities Development	82.8	230.7	193.5	206.2
Program Direction	11.4	11.4	11.9	12.3
SUBTOTAL, STRATEGIC PETROLEUM RESERVE	1,485.5	2,018.0	3,650.4	2,566.7
Petroleum Acquisition and Transportation from Entitlements Receipts	1,845.4	1,000.0	248.0	1,093.4
TOTAL, STRATEGIC PETROLEUM RESERVE	3,330.9	3,018.0	3,898.4	3,660.1

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FY 1982 Budget
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ENERGY INFORMATION ADMINISTRATION APPROPRIATION

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
ENERGY APPLIED ANALYSIS	10.7	8.8	15.7	15.7
COLLECTION PRODUCTION & DISSEMINATION	31.2	30.9	60.1	60.1
INFORMATION VALIDATION	14.3	14.2	14.1	14.1
DATA INFORMATION SERVICES	48.5	48.4	37.3	37.3
TOTAL, ENERGY INFORMATION ADMINISTRATION	104.7	102.3	127.2	127.2
RECAP:				
New Authority	104.1	101.7	127.2	127.2
Supplementals	.6	.6	---	*
TOTAL, ENERGY INFORMATION ADMINISTRATION	104.7	102.3	127.2	127.2

* Less than $1 million.

DEPARTMENT OF ENERGY
FY 1982 Budget
(In millions of dollars)

ALTERNATIVE FUELS PRODUCTION APPROPRIATION

	FY 1981 ESTIMATE		FY 1982 ESTIMATE	
	BA	BO	BA	BO
TOTAL, ALTERNATIVE FUELS PRODUCTION	---	200.0	---	225.0