16. ENERGY

Table 16–1. FEDERAL RESOURCES IN SUPPORT OF ENERGY
(In millions of dollars)

Function 270	1998 Actual	Estimate					
		1999	2000	2001	2002	2003	2004
Spending:							
Discretionary Budget Authority	3,077	2,888	2,836	3,169	3,020	2,992	2,965
Mandatory Outlays:							
Existing law	–2,440	–3,184	–5,142	–4,404	–4,336	–4,244	–4,281
Credit Activity:							
Direct loan disbursements	992	1,592	1,295	N/A	N/A	N/A	N/A
Guaranteed loans	.....	.....	.....	N/A	N/A	N/A	N/A
Tax Expenditures:							
Existing law	1,535	1,575	1,625	1,630	1,635	1,450	1,200
Proposed legislation	.....	1	379	671	660	787	1,040

N/A = Not available

Federal energy programs contribute to energy security, economic prosperity and environmental protection. Funded mainly through the Energy Department (DOE), they range from protecting against disruptions in petroleum supplies, to conducting research on renewable energy sources, to cleaning up DOE facilities contaminated by years of nuclear-related research activities. The Administration proposes to spend $2.8 billion for these programs. In addition, the Federal Government allocates about $1.6 billion a year in tax benefits, mainly to encourage development of traditional and alternative energy sources.

The Federal Government has a longstanding and evolving role in energy. Most Federal energy programs and agencies have no State or private counterparts and clearly involve the national interest. The federally-owned Strategic Petroleum Reserve (SPR), for instance, protects against supply disruptions and the resulting consumer price shocks, while Federal regulators protect public health and the environment and ensure fair, efficient energy rates. DOE's applied research and development (R&D) programs in fossil, nuclear, solar/renewable energy and energy conservation speed the development of technologies, usually through cost-shared partnerships with industry. The programs not only open new opportunities for American industry, but reach beyond what the marketplace demands today, putting the Nation in a better position to meet the demands of tomorrow.

Energy Resources

DOE maintains the SPR and invests in R&D to protect against petroleum supply disruptions and reduce the environmental impacts of energy production and use. The SPR was created in 1975 and now holds 563 million barrels of crude oil in underground salt caverns at four Gulf Coast sites. The SPR helps protect the economy and provide flexibility for the Nation's foreign policy in case of a severe energy supply disruption.

- In 2000, DOE will maintain its capability to reach its SPR drawdown rate of about four million barrels a day within 15 days and to maintain that rate for at least 90 days.

DOE's energy R&D investments cover a broad array of resources and technologies to make the production and use of all forms of energy—including solar and renewables, fossil, and nuclear—more efficient and less

environmentally damaging. These investments not only lay the foundation for a more sustainable energy future but also open major international markets for manufacturers of advanced U.S. technology and enhance our Nation's energy security.

Energy conservation programs, for which the budget proposes $838 million, are designed to improve the fuel economy of various transportation modes, increase the productivity of our most energy-intensive industries, and improve the energy efficiency of buildings and appliances. They also include grants to States to fund energy-efficiency programs and low-income home weatherization. Each of these activities benefits our economy and reduces emissions of carbon dioxide and other greenhouse gases. Many rely on partnerships with the private sector for cost-sharing and commercialization. Energy-efficiency technologies that have already come to market include heat-reflecting windows, high-efficiency lights, geothermal heat pumps, high-efficiency electric motors and compressors, and software for designing energy-efficient buildings.

In 2000, DOE's Energy Conservation program will:

- demonstrate low-cost, high-volume manufacturing processes for key components of fuel cells for ultra-clean automobiles;
- complete the development of advanced industrial turbines for efficient in-plant generation of electricity and steam;
- arrange for $400 million worth of energy-efficiency improvements at Federal facilities to be financed through regional and national energy-savings performance contracts; and
- weatherize 70,000 low-income homes.

Solar and renewable energy programs, for which the budget proposes $399 million, focus on technologies that will help the Nation use its abundant renewable resources such as wind, solar, and biomass to produce low-cost, clean energy that contributes no net carbon dioxide to the atmosphere. The United States is the world's technology leader in wind energy, with a growing export market and production costs that have fallen below five cents per kilowatt-hour. In addition, photovoltaics are becoming more useful in remote power applications, and new biofuels plants are being constructed. DOE also is coordinating the President's Million Solar Roofs initiative, which was introduced in the 1999 Budget, and States, cities, and Federal agencies to date have pledged 710,000 solar roof installations (a mixture of solar heat/hot water and photovoltaics) over the next nine years.

In 2000, DOE's Solar and Renewable Energy program will:

- support the President's Million Solar Roofs initiative through partnerships and technical assistance so that at least 29,000 solar roofs will be installed in 2000; and
- complete demonstrations of full-scale biomass co-firing with coal, commercial-scale conversion of agricultural wastes to ethanol, an advanced geothermal power cycle, and dispatchable power from a solar "power tower."

DOE's energy efficiency and renewable energy programs form a major part of the Administration's Climate Change Technology Initiative, which is intended to find ways to reduce emissions of carbon dioxide and other greenhouse gases in ways that benefit our economy rather than constrain it. (For more details, see Chapter 7, "Promoting Research.")

Fossil fuel energy R&D programs, for which the budget proposes $364 million, help industry develop advanced technologies to produce and use coal, oil, and gas resources more efficiently and cleanly. Federally-funded development of clean, highly-efficient gas-fired and coal-fired generating systems aim to reduce greenhouse gas emission rates, while reducing electricity costs. The programs also help boost the domestic production of oil and natural gas by funding R&D projects with industry to cut exploration, development, and production costs.

In 2000, DOE will:

- complete demonstration of new tertiary oil recovery technologies;
- begin testing the first commercial prototype solid-oxide fuel cell for distributed power generation; and

- verify the design of a fuel-cell/turbine hybrid power plant.

Nuclear fission power is a widely used technology, providing over 20 percent of the electric power consumed in the United States and about 17 percent worldwide without generating greenhouse gases. If fossil plants were used to produce the amount of electricity generated by these nuclear plants, more than 300 million additional metric tons of carbon would be emitted each year. Continued R&D addressing the issues that threaten the acceptance and viability of nuclear fission in the United States will help determine whether fission can fulfill its potential for supplying economically-priced energy while reducing greenhouse gas emissions.

In 2000, DOE will:

- receive Nuclear Regulatory Commission approval to test advanced "chip"-based nuclear plant instrumentation and control technology for increased reliability and safety;
- complete validation of artificial intelligence software for steam-tube inspection;
- and identify new reactor and/or fuel-cycle concepts that may improve the cost, performance, safety, or proliferation-resistance of civilian nuclear power.

Environmental Quality

In Non-defense Environmental Management, the budget proposes $331 million to manage the Nation's most complex environmental cleanup program, the result of more than four decades of research and production of nuclear energy technology and materials. (For information on DOE's Defense Environmental Management program, see Chapter 13, "National Defense.") This will reduce environmental risk and manage the waste at: (1) sites run by DOE's predecessor agencies; (2) sites contaminated by uranium and thorium production from the 1950s to the 1970s; and (3) DOE's uranium processing plants operated by the recently privatized United States Enrichment Corporation.

In 2000, DOE will:

- complete remediation at four geographic sites;
- increase the total number of geographic sites completed to 76 of 113; and
- make ready for disposal about 87 percent of the high-level waste at the West Valley, New York site.

DOE's Civilian Radioactive Waste Management Program oversees the management and disposal of spent nuclear fuel from commercial nuclear reactors and high-level radioactive waste from Federal cleanup sites. Following completion of the Viability Assessment for storing nuclear waste in Yucca Mountain, DOE plans to:

- complete an Environmental Impact Statement (EIS) in 2000 for use of the Yucca Mountain site;
- complete scientific and technical work identified in the Viability Assessment as necessary for the Secretary to make a nuclear waste site recommendation to the President in 2001; and
- if the site is determined to be suitable for a permanent nuclear waste repository, submit a license application to the Nuclear Regulatory Commission in 2002.

Energy Production and Power Marketing

The Federal Government is reshaping programs that produce, distribute, and finance oil, gas, and electric power. In February, 1998, DOE sold the Naval Petroleum Reserve, commonly known as Elk Hills, for $3.7 billion—the largest privatization of a federal entity in U.S. history. Elk Hills had been set aside early this century to provide an oil reserve for Navy ships, but in recent years was being operated by DOE as a commercial oil and gas field because it was no longer needed for its original purpose.

The four Federal Power Marketing Administrations, or PMAs, (Bonneville, Southeastern, Southwestern, and Western) market electricity generated by 127 multi-purpose Federal dams and manage 33,000 miles of federally-owned transmission lines in 34 States. The PMAs sell about six percent of the Nation's electricity, primarily to preferred customers such as counties, cities, and publicly-owned utilities. The PMAs face growing challenges as the

electricity industry moves toward open, competitive markets.

- In 2000, each PMA will operate its transmission system to ensure that service is continuous and reliable—that is, that the system achieves a "pass" rating each month under North American Reliability Council performance standards.

The Tennessee Valley Authority (TVA) is a Federal Government corporation and the Nation's single largest electric power generator. It generates four percent of the electric power in the country and transmits that power over its 17,000 mile transmission network to 159 municipal utilities and rural electric cooperatives that serve some eight million customers in seven States.

TVA is responding to changes that are bringing greater competition to the electric power industry by taking steps to increase its ability to supply power at competitive prices. The agency is now engaged in a major effort to cut its debt in half, from $28 billion in 1997 to $14 billion in 2009.

- In 2000, TVA will reduce its debt by $700 million.

(For information on TVA's non-power activities, see Chapter 21, "Community and Regional Development.")

In 2000, the Agriculture Department's Rural Utilities Service (RUS) will make $1 billion in direct loans to rural electric cooperatives, public bodies, nonprofit associations, and other utilities in rural areas for generating, transmitting, and distributing electricity. Its main goal is to finance modern, affordable electric service to rural communities. Included within this funding amount is a new $400 million Treasury rate loan proposal, which will help rural utility borrowers position themselves to be viable in a competitive, deregulated environment RUS borrowers continue to provide service the poorest counties in rural America and counties suffering the most from population out-migration.

- In 2000, RUS will upgrade 130 rural electric systems, benefitting over 1.6 billion customers and generating nearly 21,000 jobs.

Energy Regulation

The Federal Government's regulation of energy industries is designed to protect public health, achieve environmental and energy goals, and promote fair and efficient interstate energy markets. DOE improves the Nation's use of energy resources through its appliance energy efficiency program, which specifies minimum levels of energy efficiency for major home appliances, such as water heaters, air conditioners, and refrigerators. The Federal Energy Regulatory Commission (FERC), an independent agency within DOE, regulates the transmission and wholesale prices of electric power, including non-Federal hydroelectric power, and the transportation of oil and natural gas by pipeline in interstate commerce. FERC promotes competition in the natural gas industry and in wholesale electric power markets. Recent FERC reforms to give consumers competitive choices in services and suppliers will cut consumer energy bills by $3 billion to $5 billion per year.

In 2000, DOE will issue three final rules and three proposed rules and determinations on different categories of applicants. FERC will measure the extent to which natural gas and electricity prices more clearly and quickly reflect changing supply and demand conditions and will measure the reduction in wholesale electricity price differences among regions, to evaluate the success of its initiative to restructure interstate natural gas and electricity markets.

DOE Corporate Management

Acquisition Reform at the Department of Energy is a high priority of the Administration. Because more than 90 percent of the Department's budget is spent on contracts to operate its facilities, improving management and oversight of these contracts can improve mission support and save taxpayer dollars. DOE has established a Department-wide system to evaluate and use past performance data for contractor selections and will work with OMB to achieve short-term PBSC successes in 2000 and create incentives for more conversions.

Nuclear Regulatory Commission (NRC)

NRC, an independent agency, regulates the Nation's civilian nuclear reactors and the medical and industrial use of nuclear materials to ensure public health and safety and to protect the environment. NRC international activities also promote U.S. interests in nonproliferation and the safe and secure use of nuclear materials in other countries. NRC safety performance goals for 2000 include:

- no civilian nuclear reactor accidents;
- no significant accidental releases of radioactive material from storage and transportation of nuclear waste; and
- no offsite release of radioactivity beyond regulatory limits from low-level waste disposal sites.

Tax Incentives

Federal tax incentives are mainly designed to encourage the domestic production of fossil and other fuels, and to promote the vitality of our energy industries and diversification of our domestic energy supplies. Certain fuel producers many cut their taxable income as their fuel resources are depleted. An income tax credit helps promote the development of certain non-conventional fuels. It applies to oil produced from shale and tar sands, gas produced from a number of unconventional sources (including coal seams), some fuels processed from wood, and steam produced from solid agricultural byproducts. Another tax provision provides a credit to producers who make alcohol fuels—mainly ethanol—from biomass materials. The law also allows a partial exemption from Federal gasoline taxes for gasolines blended with ethanol. The Climate Change Technology Initiative proposes $3.6 billion in new tax incentives to help reduce greenhouse gases (see Table 33–4). These incentives provide for purchases of energy-efficient homes and heating/cooling equipment, electric and hybrid vehicles, rooftop solar systems, and combined heat-and-power systems. They also extend wind and biomass tax credits.