

## 15. ENERGY

**Table 15-1. FEDERAL RESOURCES IN SUPPORT OF ENERGY**

(In millions of dollars)

Function 270	1996 Actual	Estimate					
		1997	1998	1999	2000	2001	2002
<b>Spending:</b>							
Discretionary Budget Authority .....	4,900	4,256	4,703	4,891	4,645	4,498	4,391
Mandatory Outlays:							
Existing law .....	-3,122	-2,913	-2,766	-3,703	-2,823	-3,021	-3,715
Proposed legislation .....				-24	-35	-65	-1,226
<b>Credit Activity:</b>							
Direct loan disbursements .....	1,036	2,527	2,093	1,731	2,663	1,814	1,682
<b>Tax Expenditures: <sup>1</sup></b>							
Existing law .....	2,200	2,255	2,230	2,425	2,505	2,490	2,520
Proposed legislation .....		-14	-64	-96	-99	-101	-102

<sup>1</sup> Excludes alcohol fuels excise tax.

The Federal Government's energy programs contribute not just to energy security, but to economic prosperity. Funded mainly through the Department of Energy (DOE), they range from protecting against disruptions in petroleum supplies, to conducting research on renewable energy sources, to developing radioisotope power sources for space missions, to restructuring wholesale electricity markets throughout the United States. The Administration proposes \$4.7 billion for these programs in 1998. In addition, the Federal Government allocates about \$3 billion a year in tax breaks mainly to encourage the development of both traditional and alternative sources of energy.

The Federal Government has a longstanding role in energy, one that has changed over the last half-century and will continue to evolve. Most of the programs and agencies identified below perform functions that have no State or private counterparts, and that clearly involve the national interest. The federally-owned petroleum reserves, for instance, protect against supply disruptions and consumer price shock, while Federal regulators protect the public's health and environment as they ensure fair, efficient energy rates. DOE's basic research programs focus on the

long-term, high-risk problems that lack any obvious short-term payoff and, thus, are programs that industry has no incentives to fund.

### Energy Security, and Energy Research and Development

DOE maintains the Strategic Petroleum Reserve (SPR) and operates various research and development (R&D) investments to protect against disruptions in petroleum supplies and reduce the environmental impacts of energy production and use.

Created in 1975, SPR now has 563 million barrels of crude oil in underground salt caverns at four Gulf Coast sites. In an emergency, the oil reserves would meet military needs and cut the economic costs of large, sudden oil price increases caused by a severe interruption of our oil supply. As the United States was entering the Persian Gulf War in early 1991, for instance, the President announced an energy emergency, prompting an SPR drawdown that—along with the allied nations' early and overwhelming military success—caused oil prices to drop by \$10 per barrel (or, by about a third of their price).

DOE's R&D energy investments cover a broad array of resources and technologies to make the production and use of all forms of energy—including renewables, fossil, and nuclear—more efficient and less environmentally damaging. Federal R&D support can help develop these technologies, which benefit society by cutting emission rates of greenhouse gases, acid rain precursors, and air pollutants. Investments in these areas are not only laying the foundation for a more sustainable energy future, but also opening major international markets for manufacturers of advanced U.S. technology.

Energy conservation programs, for which the budget proposes \$688 million in 1998, 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. Many of these programs rely on private-sector partners to cut Federal spending and increase the likelihood that these technologies will be used commercially. 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. Meanwhile, five other technologies that have been available for at least five years have generated, to date, \$11 billion in total consumer and business savings on energy bills.

Solar and renewable energy programs, for which the budget proposes \$330 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. The United States is the world's technology leader in wind energy, with a growing export market. In addition, utilities are producing some solar thermal power, photovoltaics are becoming increasingly useful in remote power applications, and DOE is now working with Amoco on producing ethanol from wood and paper wastes.

Fossil fuel energy R&D programs, for which the budget proposes \$346 million, help indus-

try to develop advanced technologies to produce and use coal, oil, and gas resources more efficiently and cleanly. The program's successes will affect many consumers. For instance, the federally-funded development of clean, highly-efficient gas-fired generating systems will make electricity production less expensive than other technologies. 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.

### **Basic Energy Research**

The Nation receives enormous benefits from investing in DOE's basic research and specialized research facilities, for which the budget proposes \$1.5 billion. The programs focus on research related to energy production, conversion, and use, and to identifying and mitigating the health and environmental effects of those activities. One Federally-funded basic research project discovered how to cut energy losses from electric grid transformers by 90 percent, thus paving the way for about \$1 billion less in lost power for electric companies and, in turn, lower prices for consumers.

DOE's state-of-the-art scientific facilities also provide the cutting-edge experimental and theoretical techniques that provide insights into dozens of applications—from next-generation semi-conductors to microbiological studies of tumor growth. The facilities are available on a competitive basis for researchers funded by the National Science Foundation, other Federal agencies, and public and private entities. DOE also invests in research to develop the scientific and technological foundation for the next generation of user facilities.

### **Environmental Management and Stewardship**

DOE manages the Nation's most complex environmental cleanup program, the result of over four decades of research and production of nuclear energy technology and materials at both Federal and private sector locations. The Department also faces the crucial task of developing a long-term solution to the problem that the Nation's commercial spent nuclear fuel poses.

**Environmental Management:** The budget proposes \$934 million to reduce the environmental risk and manage the waste at: (1) sites run by DOE's predecessor agencies that involved researching and producing uranium and thorium; (2) sites contaminated with uranium production from the 1950s to the 1970s; and (3) DOE's uranium processing plants that the United States Enrichment Corporation runs. In recent years, the clean-up and safe disposal of radioactive and hazardous wastes and materials has progressed substantially. Over 60 percent of private sites contaminated during the research, processing, and production of uranium and thorium will be cleaned up by the end of 1998, allowing these private sites and facilities to return to productive use.

**Civilian Radioactive Waste Management Program (RW):** RW oversees the management and disposal of spent nuclear fuel from commercial nuclear reactors, and high-level radioactive waste from Federal cleanup sites. In 1998, DOE expects to complete the first stage of evaluating a Nevada site as a possible geologic repository—representing an important step in a long process that eventually will produce a DOE site recommendation to the President and a DOE license application to the Nuclear Regulatory Commission.

### **Energy Production and Power Marketing**

The Federal Government is reshaping programs that produce, distribute, and finance oil, gas, and electric power—hoping to eventually de-Federalize them and their agencies. The Naval Petroleum Reserve, commonly known as Elk Hills, is a federally-owned oil and gas field located in California. Set aside early this century to provide an oil reserve for Navy ships, the Government no longer needs it for that purpose. Congress voted in 1996 to require the sale of Elk Hills, which produced \$368 million of oil, gas, and other products in 1995. The Government plans to sell the reserve in 1998 and deposit the proceeds to the Treasury.

The five Federal Power Marketing Administrations (Alaska, Bonneville, Southeastern, Southwestern, and Western) market electricity generated at 129 multi-purpose Federal dams through over 33,000 miles of federally-owned transmission lines, located in 34 States. The

Government plans to finish selling the Alaska Power Administration, as Congress authorized, to the State of Alaska and current customers in 1998. The PMAs sell about six percent of the Nation's total electricity, and sell it at preferred rates to such public entities as counties, cities, and publicly-owned utilities and power authorities. The PMAs, however, face growing challenges as the electricity industry moves toward open, competitive markets—and away from regulated monopolies.

In 1998, the PMAs will begin to use their receipts from selling electric power to cover the full costs of Civil Service Retirement System and Post-Retirement Health Benefits for their employees. Currently, the PMAs cover the full costs for employees who work under the Federal Employees Retirement System.

The Tennessee Valley Authority (TVA) is a Federal Government corporation and the Nation's largest electric utility, serving 7.3 million customers in seven States. TVA supplies power through 11 coal-fired plants, 30 hydropower facilities, and three nuclear power plants. It also operates a series of water supply, flood control, recreation, and economic development programs. TVA power sales will grow an estimated 3.7 percent—from \$5.8 billion in 1997 to an estimated \$6 billion in 1998. For the first time, TVA in 1997 will reduce the debt it owes to the investing public. The planned \$50 million debt repayment in 1997 and the planned \$225 million debt repayment in 1998 reflect TVA's efforts to ensure the agency's financial health, position itself to succeed as competition increases in the Nation's electricity markets, and serve the interests of TVA's customers and bondholders and the Federal Government. (For information on TVA's non-power activities, see Chapter 20, Community and Regional Development.)

In 1997, the Agriculture Department's Rural Utilities Service (RUS) will make \$1.4 billion in direct loans to nonprofit associations, rural electric cooperatives, public bodies, and other utilities in rural areas for generating, transmitting, and distributing electricity. RUS charges interest at or below Treasury rates for debt of comparable maturity, in order to cut the high cost of electric service to

rural customers that results from the low customer density in rural areas.

DOE also has large reserves of uranium that the Government no longer needs for their original purpose, including high enriched uranium (HEU) from dismantled nuclear weapons. The Government plans to sell some of that material in a manner that will not disrupt uranium markets—\$100 million worth of natural uranium a year through 2001 and \$200 million in 2002. If, after an inter-agency review, the President declares that the remaining HEU exceeds national security needs, DOE will sell, in 2002, another \$750 million of low enriched uranium, derived from HEU for commercial use through 2007.

### **Energy Regulation**

The Federal Government's regulation of energy industries is designed to protect public health and safety, and promote fair and efficient interstate energy markets. The Federal Energy Regulatory Commission (FERC), an independent agency within DOE, regulates the transmission and wholesale prices of electric power, including non-Federal hydro-electric power, and the transportation of oil and natural gas by pipeline in interstate commerce. Over the long run, FERC seeks to increase economic efficiency by promoting competition in the natural gas industry and in wholesale electric power markets. FERC's recent reforms give consumers competitive choices in services and suppliers that were not available just a few years ago. Its actions will cut consumer energy bills by \$3 billion to \$5 billion a year.

The Nuclear Regulatory Commission (NRC), an independent agency, regulates nuclear facilities—commercial nuclear reactors, the medical and industrial use of nuclear materials, and the transport and disposal of nuclear waste. The NRC seeks to protect public health and the environment from nuclear materials. The companies and other entities that the NRC regulates finance most of its budget through fees.

DOE also seeks to improve the Nation's use of energy resources through its appliance energy efficiency program. Federal regulations specify minimum levels of energy efficiency for all major home appliances, such as water heaters, air conditioners, and refrigerators.

### **Tax Incentives**

Federal tax incentives are mainly designed to encourage the domestic production or use of fossil and other fuels, and to promote the vitality of our energy industries and diversification of our domestic energy supplies. The largest incentive lets certain fuel producers 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.