



OTA Report Brief

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Energy Efficiency in the Federal Government: Government by Good Example?

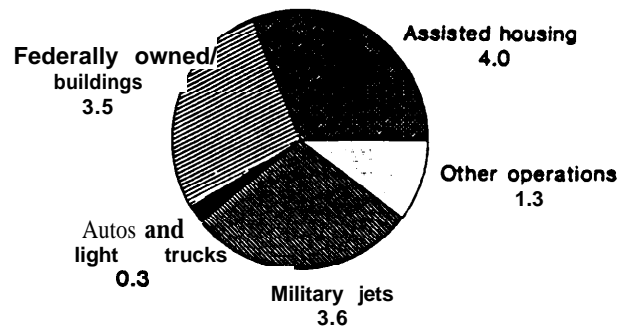
The Federal Government is the Nation's largest single energy consumer. In fiscal year 1989, it spent \$8.7 billion on direct energy purchases for its own facilities and operations, and about \$4 billion more subsidizing the energy expenses of low-income households (see figure 1). Much of this energy is inefficiently used. For example, it appears that commercially available, cost-effective measures including high efficiency lighting and carefully operated heating, ventilating, and air-conditioning (HVAC) equipment could profitably conserve at least 25 percent of the energy used in Federal buildings with no sacrifice to comfort or productivity.

Improving energy efficiency has several benefits both for the government and for the Nation. Inefficient use of energy needlessly exacerbates reliance on imports of oil from foreign sources, contributes to local and global environmental concerns such as smog and climate change, and consumes capital and operating expenditures which could be better invested elsewhere.

The Federal Government has an opportunity to set a good example for efficient energy use while reducing Federal spending, reliance on imported oil, and adverse environmental impacts. There is no single technology which will revolutionize Federal (or private sector) energy use. Rather, for nearly every application of energy, there are measures available that can improve efficiency. From lighting to HVAC equipment to automobiles, revised Federal procurement rules could expand market opportunities for producers of efficient technologies, demonstrate measures useful in the private sector, and encourage more research and development by manufacturers.

The best practices found in Federal facilities and operations today demonstrate that Federal energy inefficiency is not inevitable. Since the mid-1970s, the government has worked to improve its energy efficiency, although the level of effort has varied. According to the Department of Energy, between 1975 and 1989 these efforts saved close to 7 billion dollars' worth of energy (about 5 percent of the government's direct energy spending), far more

Figure 1—Federal Spending on Energy, Fiscal Year 1989



SOURCE: OTA, adapted from data provided by U.S. Department of Energy, U.S. Department of Housing and Urban Development, and U.S. Department of Health and Human Services.

than the \$2.5 billion invested in energy conservation measures. Despite this achievement, considerably greater savings are still possible, since existing programs have not been fully implemented and the use of many cost-effective energy efficient measures is low. For example, inefficient, costly-to-operate lighting is still common throughout the millions of square feet of office space owned or leased by the Federal Government.

The failure of Federal agencies to fully employ energy efficient measures results from several constraints, many of which also apply to the private sector (see table 1). All of the constraints could be overcome using existing and new initiatives to implement the best practices in use today (see table 2). However, overall, energy efficiency is not central to most agencies' missions and has received a relatively low priority. Reflecting the low priority, there is a shortage of trained personnel to select and implement measures. Successful implementation typically requires site-specific engineering and financial analyses, and an ongoing effort to ensure that measures work initially and continue to work. For example, the benefits of adding an energy monitoring and control system to a facility depend on the type of HVAC equipment in place and possible plans to replace existing equipment, as well as the buildings' external characteristics and internal layout and occupancy.

Table 1—Constraints on Improved Federal Energy Efficiency

Resource constraints:

Low priority

Lack of investment funding

Shortage of personnel

Information constraints:

Opportunities not systematically assessed

Uncertain technical and economic performance

Lack of Incentive:

Dollar savings do not accrue to energy savers

Procurement policies favor status quo

SOURCE: Office of Technology Assessment, 1991.

Table 2—Policy Options To Improve Federal Energy Efficiency

Dedicate resources:

Designate funds for economic investments

Support a staff of energy management professionals

Promote applied R&D:

Demonstrate full potential at model facilities

Publicize successful efforts

Encourage agency efforts:

Set performance standards based on opportunities

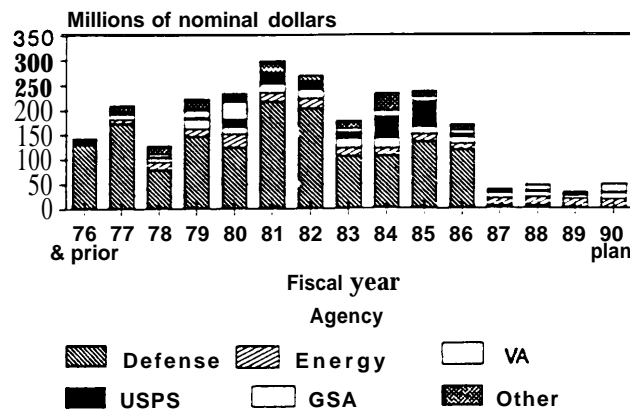
Create incentives for agencies and individuals

Revise and simplify procurement

SOURCE: Office of Technology Assessment, 1991.

The capital needed to make even short-term investments is also scarce, again reflecting energy efficiency's low priority. Although many measures have potential annual returns on investment of 30 to over 100 percent, the total capital budget earmarked specifically for energy efficiency projects in federally owned facilities dropped from a high of \$297 million in 1981 to under \$50 million in 1990, a decline of over 80 percent in nominal dollars (see figure 2). Adjusted for inflation, that decline was nearly 90 percent. The trend has begun to reverse, with the General Services Administration and the Department of Defense alone increasing their energy efficiency investments from under \$7 million in fiscal year 1989 to \$40 million in 1991. Private sector financing in the form of utility rebate programs and shared energy savings contracts are being used to supplement direct Federal funds. Taking full advantage of cost-effective energy efficiency measures would require initial investment of several billion dollars. These investments would be rapidly paid back and continue to reduce Federal energy expenditures for years.

Figure 2—Direct Federal Energy Efficiency Funding, Fiscal Years 1976-90



SOURCE: U.S. Department of Energy, Federal Energy Management Program, "Annual Report to Congress on Federal Government Energy Management and Conservation Programs," fiscal years 1981-89; and "Federal Ten-Year Building Plan," DOE/E-0047, September 1983.

Other constraints are also important. For example, program planning and budgeting have been hampered by a lack of governmentwide analyses of the potential energy and cost savings and of the resources required to attain those savings. There is also a lack of incentive for agencies and for facility personnel, although there are notable exceptions which could be more widely applied. Finally, Federal procurement is naturally complex, reflecting the diverse goals of the process and the great variety of goods and services. Difficulties of identifying and justifying novel energy-efficient products and services impede their use. Efforts to ease constraints on energy efficiency imposed by procurement policies are under way but, again, could be accelerated if given a higher priority.

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