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REPORT TO THE CONGRESS



BY THE COMPTROLLER GENERAL
OF THE UNITED STATES

Energy Conservation At Government Field Installations-- Progress And Problems

Because energy conservation is a matter of major national concern, GAO visited 77 Government installations to determine how effectively they were undertaking the Federal energy reduction program.

Generally installations have been active in efforts to reduce energy consumption. However, much more can and should be done to save energy through improved program management, more internal reviews, better energy-use information systems, stricter compliance with Federal standards and regulations, and modifications to existing facilities.

LCD-76-229

AUG. 19, 1976

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COMPTROLLER GENERAL OF THE UNITED STATES
WASHINGTON, D.C. 20548

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To the President of the Senate and the
Speaker of the House of Representatives

Because energy conservation is a matter of major national concern, we visited 77 Government field installations to determine how effectively they were implementing the Federal energy reduction program.

This report shows that installations generally have been active in efforts to reduce energy consumption. It demonstrates, however, that much more can be done to save energy.

We made our review pursuant to the Budget and Accounting Act, 1921 (31 U.S.C. 53), and the Accounting and Auditing Act of 1950 (31 U.S.C. 67).

We are sending copies of this report to the Director, Office of Management and Budget; the Administrator, Federal Energy Administration; the Administrator of General Services; and the heads of other Federal departments and agencies.

A handwritten signature in cursive script that reads "Thomas B. Steitz".

Comptroller General
of the United States

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ABBREVIATIONS

DOD	Department of Defense
FEA	Federal Energy Administration
GAO	General Accounting Office
GSA	General Services Administration

D I G E S T

In June 1973 the President started a program to reduce energy use in the Federal Government. Every 1-percent reduction in Federal energy use a year saves 3 million barrels of crude oil, costing about \$30 million.

During 1975 GAO visited 77 military and civil installations around the country and found that generally they had been active in attempting to conserve energy.

GAO concluded, however, that much more can be done.

Some installations had good energy program management, many did not. Deficiencies included a lack of conservation plans, an absence of any individual or group to manage the program, and a plethora of responsible individuals who did not devote much time to energy matters or receive or generate the information needed for management. (See ch. 2.)

At some locations energy conservation programs and practices were not reviewed by installations' energy conservation officers, internal audit, or other independent groups. Reviews by external groups from headquarters or intermediate levels also were missing. (See ch. 2.)

A need for greater leadership and more aggressiveness in promoting energy conservation existed. Energy conservation ideas were not exchanged between installations. Employee awareness of the desirability of conserving was not pushed. Other employees, although aware, were antagonistic or apathetic to the idea of cutting energy use. (See ch. 2.)

The Federal Energy Administration stated that overall the Government was meeting the President's

energy reduction goals. However, many installations GAO visited were not achieving these goals. Compounding the situation was the continuation of a previously reported problem of measuring energy usage completely and accurately. (See ch. 3.)

Greater conservation efforts in vehicle operations were needed. The Government as a whole and many installations we visited had not met mileage reduction goals. A large number did not have complete and accurate mileage information. (See ch. 4.)

Acquisition of subcompact and compact vehicles was growing, but many locations had yet to acquire their first one. Some installations advocated carpooling; others did not. (See ch. 4.)

Although installations revised their lighting, heating, and cooling levels for buildings, over one-half did not attain the standards set forth in Federal regulations. Family housing and commercially leased buildings were particular problem areas. Engineering surveys were needed to focus on means to reduce consumption, and building modification projects had to be identified, funded, or undertaken. (See ch. 5.)

More attention needed to be given to modifying mission and training operations to conserve energy. For example, some installations revised aircraft operations to conserve energy; others did not. Major changes in operations would be lucrative areas for energy savings, but a determination has to be made at the highest level that potential energy shortages are important enough to warrant such modifications. (See ch. 6.)

RECOMMENDATIONS

The Administrator, Federal Energy Administration, in conjunction with the Administrator of General Services and the heads of other Federal departments and agencies, should take a number of actions to strengthen the Government's energy conservation program, such as the following.

Program management

1. Promote good energy program management procedures and practices at Government installations.
2. Reassess the adequacy of energy conservation goals.
3. Make reviews and inspections of energy conservation activities.
4. Stimulate employee awareness of the need for energy conservation and attempt to negate employee apathy and antagonism.

Energy consumption data

1. Carry out GAO's prior recommendation that the Federal Energy Administration issue guidelines for use by Federal agencies in developing complete and accurate energy-use information systems and monitor closely the agencies' progress in developing their systems.
2. Eliminate the inconsistencies between agencies in the treatment of program changes when making comparisons with the baseline period. Also, in presenting consumption data, distinguish between energy savings resulting from the energy reduction program and those resulting from major workload reductions.

Vehicles

1. Enforce more strictly the Government regulations on mileage reductions and smaller car acquisitions.
2. Enforce the requirement for mileage reports on General Services Administration and agency-owned vehicles and commercially leased and privately owned vehicles authorized for official travel.
3. Attain greater carpooling participation.

Facilities

1. Enforce more stringently the Government's lighting, heating, and air-conditioning standards.
2. Make in-house and external engineering surveys of ways to reduce consumption.
3. Identify, fund, and undertake facility modification projects that will increase energy efficiency.

Mission and training

1. Delve more deeply into alternative ways to conserve energy in aircraft and ship operations.
2. Require installations to change mission and training operations to conserve energy except in those cases where the effective carrying out of objectives will be adversely affected.
3. Determine whether potential energy shortages are of enough significance to warrant cut backs in mission and training operations. If so, decide on the operations to be cut back. (See ch. 7.)

Implementation of provisions of the Energy Policy and Conservation Act will further strengthen the conservation program. This act, which was approved on December 22, 1975, requires the Federal Government to use fuel efficient passenger vehicles, develop a 10-year plan for energy conservation in owned or leased buildings, and consider energy efficiency in procurement policies and decisions. (See ch. 7.)

The Federal Energy Administration, General Services Administration, and Department of Defense agreed, for the most part, with GAO's findings, conclusions, and recommendations. However, they pointed out problems in reporting and achieving mileage reductions and in distinguishing between energy savings from workload reductions and those from the energy conservation program. (See ch. 7 and apps. I, II, and III.)

CHAPTER 1

INTRODUCTION

U.S. energy consumption grew at an average annual rate of about 3 percent from 1950 to 1965. From 1965 to 1973 energy consumption grew at an even higher rate of about 4.3 percent a year. Domestic energy supply, on the other hand, was growing more slowly. Its growth rate was only about 3 percent a year until 1970, and in the current decade domestic supply has actually declined slightly.

This growing gap between domestic consumption and domestic supply has been largely made up by the rapid increase in oil imports, which cost about \$27 billion annually. In 1975 the United States depended on imports to meet over 18 percent of its energy demand.

Basically, there are three alternatives for reducing the gap between domestic production and domestic consumption--(1) increase supply, (2) decrease demand, and (3) a combination of the two. The Federal Government can contribute greatly to the second by exerting itself in energy conservation and providing strong leadership.

The Federal Government uses from 2 to 3 percent of the energy consumed in the United States. Although the Government's percentage appears small, it represents the equivalent of about 300 million barrels of crude oil, costing about \$3 billion a year. Therefore, even a 1-percent reduction in energy use saves 3 million barrels of crude oil and \$30 million.

The Government's example-setting implications are just as important as the absolute amounts of energy consumed in its programs. The Government's efforts to reduce its own demand has an impact on its ability to provide necessary leadership to influence other energy users to conserve energy.

In June 1973 the President directed Federal agencies to reduce their energy consumption 7 percent during fiscal year 1974. In October 1974 he directed the agencies to use 15 percent less energy in fiscal year 1975 than in fiscal year 1973. The Federal Energy Administration (FEA) informally advised the Federal agencies that the goal for fiscal year 1976 was zero energy growth from that consumed in 1975.

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FEA was created because of the concern over both energy supply and demand and the need to establish a focal point in the Federal Government for dealing with energy matters. FEA reported that, in comparison with the 1973 base period, the Government actually achieved energy savings of 24 percent in fiscal year 1974 and maintained that level of savings in fiscal year 1975. According to FEA, the 2-year savings were the equivalent of 188 million barrels of crude oil and \$1.7 billion in energy costs.

Cited actions to conserve energy included reducing illumination levels, turning thermostats up in summer and down in winter, buying and leasing smaller cars, cutting back on motor vehicle mileage, reducing cruising speeds for aircraft and ships, reducing ship steaming time, reducing flying hours, and encouraging carpools. In addition, guidelines have been issued for energy savings in new building construction and in retrofitting existing buildings.

We made the review to determine how effectively the Government's energy reduction program was being implemented at the installation level. We wanted to know if all installations were actively participating in the program and if still further reductions in energy demand were possible. We visited 77 Government installations around the country.

CHAPTER 2

PROGRAM MANAGEMENT

Management of the energy conservation program needed improvement at many installations. In contrast, other installations had adopted good program management features.

The basic framework for energy conservation in the Federal Government is set forth in Federal Management Circular 74-1 and in various Federal Property Management Regulations. Agencies have issued implementing and supplemental instructions at both headquarters and local levels.

The installations visited varied in the extent that they had established local energy conservation programs. Some installations had prepared a formal energy conservation plan and/or issued implementing regulations, instructions, directives, guidelines, checklists, or memorandums. Some installations also set up energy conservation boards or committees to discuss energy matters and exchange ideas.

In addition, energy conservation officers were appointed to manage and monitor the installation conservation programs. Inspection teams and building monitors were used to insure that stated policies were adhered to in actual practice.

Employees were made aware of the need to conserve energy through articles in publications, individual letters, meetings, posters, stickers, and other media.

At our suggestion, one installation increased its energy reduction goal to 35 percent after finding that the President's goal of 15 percent had been significantly exceeded.

The above management actions are constructive. Unfortunately many of the installations did not take such actions. Several did not have energy conservation programs or plans setting forth objectives, guidelines, responsibilities, and review and followup procedures.

No single individual was assigned responsibility for managing the program at some installations. At other installations the assigned individual devoted only a small percentage of time to energy matters.

Monitoring efforts were also lacking. Conservation officers did not know whether goals were being met and did not have energy data on all installation activities. Program operations were not reviewed to ascertain that conservation efforts were continuing at an optimum level. Additional areas for energy conservation or areas needing attention were not identified.

Internal audit and other independent review groups at some installations also did not look at the energy conservation activities. There were no reviews by headquarters and other independent groups. Further, headquarters energy conservation offices did not make reviews.

These reviews not only would encourage compliance with regulations but would be useful in identifying additional ways to conserve energy and making installations aware of conservation measures adopted by other installations and offices which could apply to their operations. During our review we did not note exchanges of conservation ideas between individual installations.

Operations personnel often did not make periodic inspections of temperature and lighting levels. When made, the inspections were incomplete and sometimes did not provide the means to identify repeat violators.

We observed a need for increased efforts to make employees more aware of the need for their cooperation to further reduce energy consumption. At many locations they were not given guidelines or tips on ways to conserve energy. On the other hand, some employees, although aware of the energy problem, were not interested in cutting back heating and lighting to conserve energy.

Greater leadership and more aggressiveness in promoting energy conservation would be beneficial. Actions should be pursued to develop conservation plans, implement the functions desired of energy conservation officers, make reviews of energy conservation activities, exchange conservation ideas, and bring about employee awareness and adherence.

CHAPTER 3

ENERGY USE INFORMATION SYSTEMS

Installations' energy reports often did not provide complete and accurate data on energy consumption. Moreover, although the Federal Energy Administration stated that the Government was meeting the President's energy reduction goals, many of the installations we visited were not achieving these goals.

In March 1974 we reported to FEA that very few agencies had energy use information systems to accurately determine consumption (B-178205, Mar. 29, 1974). We spelled out problems in quantifying energy usage.

Although improvements have been made, we found that many problems still prevail. The energy reports or data available at one-half of the installations visited did not give a true picture of their energy consumption. Some of the data was inaccurate, incomplete, inconsistent, duplicative, and unsupported.

Some of the data deficiencies were significant. For example, one installation did not report 325,000 gallons of fuel oil consumed during the first half of fiscal year 1975. Another installation understated their natural gas consumption by 7.9 million cubic feet during that period. A third installation omitted motor vehicle gasoline consumption. At several installations energy consumption shown on weekly, monthly, and quarterly reports did not agree and could not be reconciled.

Some installations reported fuel as consumed when it was purchased rather than when it was actually used. We also noted instances where consumption information on leased buildings was not maintained. In addition, reports often did not contain information on smaller buildings and facilities.

Many installations reported their consumption to higher management levels by energy type but did not convert this usage into a common denominator, such as British thermal units, to get an overall picture of their energy consumption. Therefore, the installations knew how well they were doing by energy type but not as an entire installation. For example, a 25-percent reduction in electricity and a 5-percent reduction in automotive gasoline could result in an overall reduction of only 10 percent instead of the 15-percent goal.

Control of aircraft fuel consumption was inhibited by the practice of serving other than the installation's own aircraft. Some installations believed that they had little control of the quantity of fuel issued at their installation because aircraft of tenants and other installations also obtained fuel there. The installation's aircraft in turn obtained large amounts of fuel away from their home station. A breakdown of total fuel consumption information between installation aircraft and other aircraft would enable the installation to monitor consumption of the aircraft it controls.

We also noted problems with the baseline figures. Actual energy consumption for fiscal year 1973, adjusted to reflect changes in programs, personnel levels, space, and vehicles, was established as the baseline against which to measure agency performance in saving energy.

The baselines of the installations were a hodgepodge. Some installations used estimates for the baseline rather than actual consumption. Other installations used fiscal year 1974 instead of fiscal year 1973 as the baseline for comparison with 1975 consumption.

Many installations did not adjust the baseline to show program changes. Other installations made adjustments but we found no documentation to support them. Still others made adjustments for some program changes but not for others.

The effect of the adjustments can be considerable. For example, one installation reported energy savings of 17 percent and 23 percent for fiscal year 1974 and the first 6 months of fiscal year 1975, respectively, when compared with the 1973 adjusted baseline. Actual reductions in consumption were much lower--1.7 percent in the first half of 1974 and 3.0 percent in the first half of 1975.

Some installations that reported large energy savings had sizeable workload reductions. They were unable to separate the energy savings between those due to conservation and those resulting from operational cutbacks.

As discussed in the March 1974 report, the lack of an adequate information system hinders quantification of the results of the efforts to conserve energy. Our observations during this review indicate that much work still remains to be done at Government field installations to get complete and accurate data. Improvements also would facilitate more accurate agency-wide energy reports.

In addition, the problems of baseline adjustments for program changes and the inability to distinguish between energy savings resulting from conservation efforts and workload reductions must be tackled. Either everyone should make the necessary adjustments or they should not be made at all. In the first case, adjustments should be kept to an absolute minimum and fully explained. In the latter case, the agencies could just report actual consumption data and perhaps provide footnotes or narrative comments on increases or decreases it felt warranted special mention. The action by FEA to change the base period from 1973 to the more recent 1975 may be helpful in resolving these problems.

CHAPTER 4

VEHICLE OPERATIONS

Efforts are being made to reduce energy used in vehicle operations but much remains to be done. Motor vehicle mileage reductions, smaller car acquisitions, and increased carpooling all offer opportunities for greater energy savings.

Government regulations direct Federal agencies to reduce motor vehicle mileage by 15 percent from that driven in fiscal year 1973. The regulations also direct the agencies to acquire subcompact and compact sedans and station wagons unless larger vehicles are certified as being essential to the agencies' mission.

The General Services Administration (GSA) has reported that the agencies reduced their mileage by 25 percent in the second half of fiscal year 1974. In fiscal year 1975 the overall mileage reduction percentage was considerably less than the 15 percent goal.

With regard to motor vehicle acquisitions, in fiscal year 1974 GSA purchased 15,506 sedans and station wagons for the Federal Government of which 9,559, or 62 percent, were compacts and subcompacts. In fiscal year 1975 GSA purchased 7,214 sedans and station wagons of which 3,690, or 51 percent, were compacts and subcompacts.

Our visits to the field installations uncovered numerous problems. Many installations did not achieve the mileage reduction goal, and several installations had increased rather than decreased mileage. For example, three GSA interagency motor pools, which serve many agencies, had either mileage increases or very small decreases.

The attitude at one GSA motor pool seemed to be that the 15-percent mileage reduction goal was being sought only on a nationwide basis and was not being sought for individual motor pools or for agencies on a local level. The fallacy of this attitude is that the nationwide goal can be met only if the limited efforts of the local activities not meeting the goal are offset by the more intense efforts of other local activities exceeding the goal.

We subsequently compared fiscal year 1975 and fiscal year 1973 mileage for all of the approximately 100 interagency motor pools to find out if mileage increases of individual motor pools were offset elsewhere. This was not the

case. Overall, there was an 8-percent increase in mileage driven. Nearly three-fourths of the motor pools had increased mileage while only four motor pools achieved the 15-percent mileage reduction goal.

A large number of installations did not have complete and accurate information on mileage reductions. Some installations did not prepare mileage reports at all. Others accumulated mileage data for agency-owned or GSA motor pool vehicles but not for commercially leased vehicles and privately owned vehicles authorized for official travel.

The intent of the requirement for maintaining mileage information on all vehicles was to avoid situations where agencies might reduce mileage in one category but have compensating increases in another category. For example, one installation showed an increase in agency-owned vehicle mileage because a policy change reduced the use of privately owned vehicles for official business. Unfortunately, the installation did not gather mileage statistics on privately owned vehicles and, therefore, did not know whether the reductions in the latter category more than offset the increases in agency-owned vehicle mileage.

In another case, an installation reduced the number of vehicles assigned to a subordinate office which, in turn, substituted privately owned vehicles. Again, the installation did not know whether reductions in Government vehicle mileage were offset by increases in privately owned vehicle mileage.

Several of the installations, particularly in the Department of Defense (DOD), were unaware of the requirement to report commercially leased and privately owned vehicle mileage. We were told that DOD headquarters had not passed on such a requirement to the installations.

Many of the installations did not have compact or subcompact vehicles in their fleets. Some indicated, however, that compacts or subcompacts would be requested in the future or their potential use would be studied.

The lack of carpooling to conserve energy was observed. The availability of ample parking at several installations prevented the successful promotion of carpooling by reserving parking spaces for carpools.

The value of reserving parking spaces for carpools was illustrated at a Federal center containing several agencies and parking lots. Our tests showed that 66 percent of the

cars leaving the lot of an agency that reserved parking spaces for carpools had more than one occupant whereas only 7 percent of the cars leaving the lot of an agency that did not reserve parking spaces had more than one occupant.

A test at another installation showed that only 10 percent of the vehicles had more than one occupant. Another installation participated in an interagency carpool program but only 20 percent of the employees became involved.

We have pointed out in prior reports that continuing attention needed to be given to decreasing miles driven and to purchasing smaller motor vehicles. This was borne out in our current visits to Government field installations wherein we noted that some actions had been taken but further actions were possible. Decreasing mileage, acquiring compacts, improving recordkeeping, and increasing carpooling are all areas for improvement.

CHAPTER 5

BUILDING OPERATIONS

Efforts are being made to reduce energy used in building operations. Much remains to be done, however, ranging from adjusting thermostats to modifying buildings.

Federal regulations give specific criteria for lighting, heating, and cooling levels. They state that lighting levels shall be 50-foot candles at work stations, 30-foot candles in work areas, and 10-foot candles in nonwork areas; heating season temperatures shall be 65 to 68 degrees during working hours and 55 degrees during nonworking hours; and cooling season temperatures shall be 78 to 80 degrees for general office space.

Most installations revised their lighting, heating, and cooling levels. Our tests showed, however, that over half of the installations still did not attain the standards set forth in the regulations. At several installations we observed a pattern of excessive lighting, heating, and cooling.

Thermostat settings and/or actual temperature readings were high. Actual temperature readings often ranged from the mid 70s to low 80s in the heating season and thermostat settings were as low as 65 degrees in the cooling season.

Light levels sometimes were twice as high as they should have been. In addition, lights were on in unoccupied buildings, rooms, or work areas.

At several installations there was evidence that employees had been tampering with thermostats. Even thermostats sealed to prevent individual adjustments by unauthorized personnel were broken. We also noted instances of unauthorized equipment, such as space heaters, fans, and refrigerators.

Family housing provided to installation personnel was an area where greater energy conservation was possible. Although installations promoted employee awareness of the need for conservation, means to assure this conservation frequently were not available. Individual meters for dwelling units or even master utility meters for all family quarters were not installed, thus conservation violations could not be identified and controlled.

Energy conservation in connection with tenant activities often presented difficulties.

GSA attempted to reduce lighting and adjust temperatures in Federal buildings it managed, but some tenants tampered with thermostats and seemed unreceptive to some of the energy saving actions. Greater promotion of tenants' employees' awareness of the need to conserve energy was desirable.

There also was difficulty in adopting energy conservation measures in commercially leased buildings. Our comparisons indicated that energy savings were less in privately leased buildings than they were in Government-owned buildings. In addition, lessors were reluctant to make capital improvements to achieve energy savings. GSA compounded the situation by taking the position that it had neither the means nor the funding to implement energy-saving capital investments in leased buildings. However, GSA has made minor alterations in isolated instances.

At some locations where we noted that further energy reductions were possible we pointed out the desirability of engineering surveys. Electric and gas companies make free engineering surveys. In-house organizations and consulting firms also can make surveys. These studies could focus on actions to reduce peak demands, make more efficient use of energy, and develop new ideas for energy conservation.

The age and condition of the buildings hampered energy conservation at several installations. Heating, cooling, and lighting was inefficient and insulation was inadequate.

Action to rectify these deficiencies has been initiated. For example, the Department of Defense has established a 6-year, \$1.3 billion energy conservation investment program to reduce energy consumption in existing facilities through self-amortizing, retrofit projects. The fiscal year 1976 program, costing \$130 million, covers about 300 Army, Navy, and Air Force projects for such items as floor, wall, and ceiling insulation; storm windows and doors; weather stripping; rotary heat exchangers; heating and air-conditioning controls; steam condensate return systems; heat recovery equipment; and air curtains at building entrances. We are currently looking further into this program.

Similar projects had been undertaken at some of the installations we reviewed. A number of installations, however, had identified improvement projects, but they had not been funded and plans for doing so were indefinite.

We also noted a case where energy conservation actions were not being taken in the construction of a new facility. The facility was being lighted at levels considerably higher than the prescribed standards. Apparently the higher lighting requirements in the contract specifications were not revised downward when the lower Government lighting levels were mandated.

The reductions achieved in buildings' energy use are commendable. However, further reductions would result from more stringent enforcement of the Government's lighting, heating, and air-conditioning standards. We reached a similar conclusion in an earlier report on utility conservation (LCD-76-311, Dec. 30, 1975). Increased employee awareness and more frequent inspections would facilitate this enforcement. Aggressive efforts to achieve energy conservation in hard-to-control areas, such as family housing and commercially leased space, also should be pursued.

Adjusting lighting and temperature levels is merely a start in the battle to save energy. Agencies must go beyond this start and explore ways to change operations and modify facilities. In-house and external engineering surveys could be focused on means to reduce consumption. Projects to modify facilities to increase energy efficiency should be identified, funded, and undertaken. This is particularly true in cases where the capital investment will more than repay itself in energy savings over the investment's lifetime. We found many instances where the projects had been identified but had not been funded or started.

CHAPTER 6

MISSION AND TRAINING OPERATIONS

More attention needs to be given to modifying mission and training operations to conserve energy. Installations should be looking at ways to change these operations from an energy conservation standpoint. For example, curtailed aircraft flying-hour programs offer opportunities for greater energy savings. Major changes in operation would be lucrative areas for energy savings, but a determination has to be made at the highest level that potential energy shortages are important enough to warrant such modifications.

We asked installation officials what impact the energy reduction program had on mission and training operations, and whether these operations had been modified to conserve energy.

Generally, we were told that mission or program operations had not been modified to conserve energy. Some installations cut back training operations, but the cut backs were primarily a result of fund limitations rather than energy conservation.

The consensus was that the conservation goals had not adversely affected mission operations. In fact, some installations were told by their headquarters that energy conservation measures should not impair mission requirements.

We found a paucity of studies to determine if mission and training operations could be modified to conserve energy and still not have a major impact on the ability to carry out these operations.

Installations involved in air and ship operations were in a particularly good position to explore alternative means of accomplishing mission and training operations so that further cutbacks in consumption could be achieved. This area offers a splendid opportunity to go beyond the window-dressing savings and cut more deeply into energy consumption.

Aviation fuels alone make up 40 percent of the Government's energy consumption. During the 1973 Arab oil embargo significant energy savings were achieved through the drastic reduction or complete elimination of some flight requirements. Since then consumption has increased but not to preembargo levels.

Attitudes about reducing flying hours varied. Some installations did not curtail flying because they felt that it would reduce the proficiency of flight crews and, therefore, degrade mission capability and safety. Other installations did reduce flying hours. One of the means used to reduce flying hours was by making greater use of simulators and visulators.

In earlier reports we have pointed out ways to achieve substantial fuel savings through operation changes. For example, we stated that as much as 48 million gallons of jet fuel could be saved annually by diverting Department of Defense passengers from certain chartered flights operated by U.S. international air carriers to unoccupied seats on the regularly scheduled commercial flights of the same carriers (LCD-75-231, Jan. 28, 1976). The savings would result from eliminating the corresponding charter flights.

Similarly, we reported that about 1 million gallons of jet fuel could have been saved if cargo shipped on 42 chartered flights had been shipped on regularly scheduled commercial flights (LCD-76-214, Jan. 19, 1976). Enough unused space was available on the commercial flights to eliminate the need for the charter flights.

In another report we showed the effect changes in homeports have on the time required and the costs incurred to make trips to various mission areas. Changes in number of steaming hours have a tremendous impact on fuel consumption. We looked at 9 types of ships and found that the gallons of fuel burned in an hour ranged from 6,166 gallons for an attack aircraft carrier to 491 gallons for an escort ship.

Decisions to significantly change or cut back mission operations to conserve energy probably are outside the realm of individual installations and, therefore, must be made at the agency headquarters and perhaps even at the Presidential level. These decisions have not been forthcoming.

However, installations are in a position to study ways to carry out their mission and still decrease energy consumption. In fact, a few installations we visited did make changes to save energy.

For example, an installation involved in industrial-type work cut back production schedules for the second and third workshifts, in part, to conserve energy. The installation also compressed the first shift's staggered

start times thereby decreasing the equipment operating period by 1 hour a day.

A second installation provided for the one-time transportation of training equipment to a distant training site. The joint use of the equipment by units being trained eliminated the need for each unit to transport its own equipment to and from the site. The installation also reduced the number of armored vehicles used in a special training exercise. A third installation saved electrical energy by modifying wind tunnel testing operations.

CHAPTER 7

CONCLUSIONS, RECOMMENDATIONS, AGENCY COMMENTS, AND OUR EVALUATIONS

CONCLUSIONS

Over the last 3 years there has been a much greater energy consciousness. Although the acute events which precipitated this awareness have passed, it is obvious that the finite nature of our current energy resources and the increasing cost of all forms of energy makes energy conservation a necessity for many generations to come.

Installations generally have been active in their efforts to save energy. However, the energy conservation measures most commonly taken have been the easy ones, such as removing light bulbs and adjusting thermostats. This is just the tip of the iceberg and raises a question as to the adequacy of the established energy conservation goals in view of the apparent ease the Government as a whole has had in meeting these goals. The Government should look for new and far reaching ways to conserve energy. Some of the additional measures will necessitate capital investments and/or mission modifications. Therefore, agencies will have to decide whether the potential energy savings warrant these actions which otherwise would not be required.

The prior chapters enumerate a number of the positive actions that have been taken to conserve energy. Unfortunately they also spell out many areas needing improvement. Therefore, we have several recommendations to strengthen the Federal Government's energy conservation program.

RECOMMENDATIONS

We recommend that the Administrator, Federal Energy Administration, in conjunction with the Administrator of General Services and the heads of other departments and agencies, take the following actions.

Program management

1. Promote good energy program management procedures and practices at Government installations, including developing energy conservation plans; assigning individuals or groups to manage the program; and, once assigned, devoting the time needed for management.

2. Reassess the adequacy of energy conservation goals.
3. Make reviews and inspections of energy conservation activities. The depth will vary but groups at the installation, headquarters, GSA, and FEA level all should be involved.
4. Stimulate employee awareness of the need for energy conservation and attempt to negate employee apathy and antagonism.

Energy consumption data

1. Carry out our prior recommendation that FEA issue guidelines for use by Federal agencies in developing complete and accurate energy-use information systems and monitor closely the agencies' progress in developing their systems.

2. Eliminate the inconsistencies between agencies in the treatment of program changes when making comparisons with the baseline period. Either have all agencies make the adjustments or do not make them at all. Also, in presenting consumption data, distinguish between energy savings resulting from the energy conservation program and those resulting from major workload reductions.

Vehicles

1. Enforce more strictly the Government regulations on mileage reductions and smaller car acquisitions.

2. Enforce the requirement for mileage reports on GSA and agency-owned vehicles and commercially leased and privately owned vehicles authorized for official travel.

3. Attain greater carpooling participation.

Facilities

1. Enforce more stringently the Government's lighting, heating, and air-conditioning standards.

2. Make in-house and external engineering surveys of ways to reduce consumption.

3. Identify, fund, and undertake facility modification projects that will increase energy efficiency.

Mission and training

1. Delve more deeply into alternative ways to conserve energy in aircraft and ship operations.
2. Require installations to change mission and training operations to conserve energy except in those cases where the effective carrying out of objectives will be adversely affected.
3. Determine whether potential energy shortages are of enough significance to warrant cut backs in mission and training operations. If so, decide on the operations to be cut back.

Implementation of provisions of the Energy Policy and Conservation Act (42 U.S.C. 6201) will further strengthen the conservation program. This act, which was approved on December 22, 1975, requires the Federal Government to use fuel efficient passenger vehicles, develop a 10-year plan for energy conservation in owned or leased buildings, and consider energy efficiency in procurement policies and decisions.

AGENCY COMMENTS AND OUR EVALUATIONS

We furnished a draft of this report to FEA, GSA, and the Department of Defense for review. Their comments were received in June 1976 and are included as appendixes I, II, and III of this report.

FEA agreed with our findings and general conclusions and stated that similar findings were noted by joint FEA-GSA-Federal Executive Board teams during visits to 287 Federal installations in 1975.

FEA emphasized that the tempo of energy conservation activity at any installation was directly related to the interest and commitment of the parent organization and the installation head to the more efficient use of energy. FEA stated that, in general, successful energy management programs have all or most of the following characteristics-- top management commitment, line management accountability, formal planning, monitoring, technical expertise, employee awareness, contingency planning, and funding and manpower resource support.

We agree. Dedication to energy conservation must start with FEA, GSA, and the head of the operating agency and be directed downward to installation heads and employees. It must be a continuing program and not a periodic exercise.

FEA also mentioned that the Federal energy management program was being transformed from an agglomeration of simple curtailment measures to a more structured effort to increase energy efficiency. FEA stated that most of these efforts require capital investment, and that one of the major hurdles in the near term is convincing people at all levels of the budget review process that it is necessary and desirable to spend money to save money and energy.

We agree that the Government must make capital investments to save energy. However, curtailment measures, such as turning off lights and adjusting thermostats, also must continue so that energy savings will be maximized.

DOD noted its progress in conserving energy and stated that it would continue to emphasize the need for energy conservation. DOD also stated that it recognizes that improvements can be made.

GSA did not make any overall comments.

The agencies also commented on the 15 specific recommendations in our report. They agreed with most of our recommendations and enumerated the actions taken or planned. They took exception, however, to all or parts of certain recommendations.

FEA and DOD did not believe that in presenting energy consumption data it was always possible to distinguish between energy savings resulting from the energy conservation program and those resulting from workload reductions. FEA stated that definitions would be difficult; obtaining common adherence to them almost impossible; and the result would be a complex expensive system, the product of which would not be worth the cost. DOD took a similar approach. We recognize that the distinction would not be practicable in all cases. However, installations should at least be in a position to comment on major operational cutbacks so that a more accurate picture of the results of the energy conservation program can be presented.

FEA and DOD questioned our recommendations on reporting vehicle mileage and achieving mileage reductions. They felt that setting up a mileage reporting system would be complex, costly, not practicable, and of questionable value. They stated that a goal of reducing vehicle fuel consumption was better than a goal of reducing vehicle mileage. GSA, on the other hand, thought that mileage reduction was a valid technique in accomplishing energy reduction.

We agree that the ultimate goal is to reduce vehicle fuel consumption and that there are ways to reduce consumption in addition to reducing miles driven. These include using more energy efficient vehicles, reducing speeds, improving maintenance, and adopting alternative modes of transportation. Therefore, if an agency is in a position to report fuel consumption this will be ideal. We believe, however, that for most agencies miles driven would be easier to accumulate than fuel consumed, and we feel this is a sufficient indication of vehicle fuel consumption that it can be used to measure agencies conservation efforts.

Furthermore, we do not believe any agency has a system to obtain fuel consumption information on commercially leased vehicles and privately owned vehicles used for Government travel. Some system for measuring the use of these vehicles must be devised. Otherwise agencies and installations would be in a position to report fuel consumption reductions merely by substituting use of these vehicles for Government-owned vehicles. In these cases, mileage would seem to be the only practical measure.

With regard to our suggestions on mission and training operations, DOD stated that significant reductions had occurred in the flying-hour and ship-steaming programs. It stated also that the larger scale introduction of simulators would likewise be a step in changing operations. DOD cautioned, however, that in using simulators and training devices, military judgment must be applied in the analysis of the trade-off between mission readiness, safety, and energy conservation.

CHAPTER 8

SCOPE OF REVIEW

We visited 77 military and civil field installations around the country to determine the effectiveness of conservation actions. Among the areas covered were the installations' management of the conservation program; the adequacy of the data used to measure the success of the conservation actions; the type of energy-use information system used for collecting this data; and the changes made in vehicle, building, and mission and training operations to reduce energy consumed. We also looked for potential areas for effective long-term energy conservation.

Discussions were held with officials of the agencies visited as well as with officials of the Federal Energy Administration. We also issued letter reports to local officials on the results of our reviews at most of the installations visited.

We visited the following locations.

Department of the Army: 20

- ✓ Fort Benjamin Harrison, Indiana
- ✓ Fort Devens, Massachusetts
- ✓ Fort McPherson, Georgia
- ✓ Fort Riley, Kansas
- ✓ Military Academy, West Point, New York
- ✓ Oakland Army Base, California
- ✓ Picatinny Arsenal, Dover, New Jersey
- ✓ Red River Army Depot, Texarkana, Texas
- ✓ Tank-Automotive Command, Warren, Michigan

Department of the Navy: 1

- Aviation Supply Office Compound, Philadelphia, Pennsylvania
- ✓ Mare Island Naval Shipyard, Vallejo, California
- ✓ Naval Air Systems Command, Arlington, Virginia
- ✓ Naval Air Development Center, Warminster, Pennsylvania
- ✓ Naval Air Rework Facility, San Diego, California
- ✓ Naval Air Station, South Weymouth, Massachusetts
- ✓ Naval Support Activity, Seattle, Washington
- ✓ Naval Weapons Station, Yorktown, Virginia
- ✓ Norfolk Naval Shipyard, Portsmouth, Virginia
- ✓ Ships Parts Control Center, Mechanicsburg, Pennsylvania

4 Department of the Air Force: 35

- ✓ Hanscom Air Force Base, Massachusetts
- ✓ 928th Tactical Airlift Group, Chicago--O'Hare International Airport
- ✓ Ogden Air Logistics Center, Utah
- ✓ Richards-Gebaur Air Force Base, Missouri
- ✓ San Antonio Air Logistics Center, Texas
- ✓ Norton Air Force Base, California
- ✓ Space and Missile Systems Organization, El Segundo, California
- ✓ Travis Air Force Base, California
- ✓ Wright-Patterson Air Force Base, Ohio

6 Marine Corps: 98

- ✓ Camp Pendleton, California

7 Defense Supply Agency: 107

- ✓ Defense Electronics Supply Center, Dayton, Ohio
- ✓ Defense Personnel Support Center, Philadelphia, Pennsylvania

8 General Services Administration: 17

- ✓ Anthony J. Celebreeze Federal Building, Cleveland, Ohio
- ✓ Building and Vehicle Operations, Norfolk, Virginia
- ✓ Central Office Building, Washington, D.C.
- ✓ Customs Court and Federal Office Building, New York City, N.Y.
- ✓ Regional Office, Denver, Colorado
- ✓ Federal Office Building and U.S. Post Office and Courthouse Building, Cincinnati, Ohio
- ✓ Federal Building and U.S. Courthouse, Detroit, Michigan
- ✓ Federal Building and U.S. Courthouse, Los Angeles, California
- ✓ Federal Buildings, Kansas City, Missouri
- ✓ Interagency Motor Pool, Los Angeles, California
- ✓ John F. Kennedy Federal Building, Boston, Massachusetts

9 Postal Service: 52

- ✓ General Post Office, Detroit, Michigan
- ✓ General Post Office, New York City, N.Y.
- ✓ Post Office, Arlington Heights, Illinois
- ✓ Postal Service, Kansas City, Kansas
- ✓ Postal Service, Kansas City, Missouri
- ✓ Postal Service, Seattle, Washington

10 Department of Transportation: 99

- ✓ Air Route Traffic Control Center, Federal Aviation Administration, Nashua, New Hampshire
- ✓ Central Region, Federal Aviation Administration, Kansas City, Missouri
- ✓ National Aviation Facilities Experimental Center, Federal Aviation Administration, Atlantic City, New Jersey
- ✓ 13th Coast Guard District, Seattle, Washington
- ✓ Transportation Systems Center, Cambridge, Massachusetts

11 Department of Agriculture: 48

- ✓ Headquarters Complex, Washington, D.C.
- ✓ Regional Office, Forest Service, Lakewood, Colorado
- ✓ Soil Conservation Service, Temple, Texas
- ✓ Western Region Research Center, Agriculture Research Service, Albany, California

12 Veterans Administration: 16

- ✓ V.A. Center, Philadelphia, Pennsylvania
- ✓ V.A. Hospital, Decatur, Georgia
- ✓ V.A. Hospital, Downey, Illinois
- ✓ V.A. Hospital, Martinez, California

13 Department of the Interior: 38

- ✓ Albuquerque Area, Bureau of Indian Affairs, New Mexico
- ✓ Denver Service Center, Bureau of Land Management, Denver, Colorado

14 Department of Justice: 57

- ✓ Federal Youth Center, Bureau of Prisons, Englewood, Colorado
- ✓ Headquarters Building, Law Enforcement Assistance Administration, Washington, D.C.

15 Department of the Treasury: 38

- ✓ Cincinnati Service Center, Internal Revenue Service, Covington, Kentucky
- ✓ Data Center, Internal Revenue Service, Detroit, Michigan

Environmental Protection Agency:

- ✓ National Environmental Research Center, Cincinnati, Ohio
- ✓ Regional Office, Seattle, Washington

National Aeronautics and Space Administration:

- ✓ Langley Research Center, Hampton, Virginia
- ✓ Marshall Space Flight Center, Huntsville, Alabama

Department of Commerce:

Regional Office, National Marine Fisheries Service,
National Oceanic and Atmospheric Administration,
Seattle, Washington

✓ Department of Health, Education, and Welfare:

Center for Disease Control, Public Health Service,
Atlanta, Georgia

✓ Energy Research and Development Administration:

Nevada Operations Office, Las Vegas, Nevada

✓ Railroad Retirement Board:

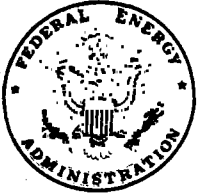
Headquarters, Chicago, Illinois

✓ Selective Service System:

State Headquarters, Seattle, Washington

✓ Small Business Administration:

Headquarters Building, Washington, D.C.



FEDERAL ENERGY ADMINISTRATION

WASHINGTON, D.C. 20461

JUN 22 1976

OFFICE OF THE ADMINISTRATOR

Mr. Monte Canfield, Jr.
Director, Office of Special Programs
U. S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Canfield:

Thank you for the opportunity to review and comment on the April 2, 1976, draft report of your survey of "Energy Conservation at Government Field Installations."

Your findings on conservation programs at the installation level are almost identical to those reported in the "Energy Conservation Site Visit Report" published by the Federal Energy Administration (FEA) in April 1976. (See enclosed copy "Conservation Paper Number 38.")

Our findings revealed that the tempo of energy conservation activity at any installation was directly related to the interest and commitment of the parent organization and the installation manager to the more efficient use of energy. In general, the successful energy management programs had all or most of the following characteristics:

- o Top management commitment
- o Line management accountability
- o Formal planning
- o Monitoring
- o Using technical expertise
- o Employee awareness
- o Contingency planning
- o Resource support (funds and manpower)

We agree with your general conclusions: (1) that installations generally have been active in their efforts to save energy, (2) the Government should look for new and far

reaching ways to conserve energy, and (3) these additional measures will necessitate decisions on energy, economic, and mission trade-offs.

In reference to item two, FEA and the General Services Administration took positive action in April 1975 to develop a multi-year energy management plan for the Federal Government that would (1) provide more energy-efficient facilities and operations in both the general administrative and program areas, (2) lessen the impact on the Federal Government's operations in the event of erratic pricing or curtailment of energy sources, (3) establish energy management as a permanent technique in all Federal operations, and (4) provide demonstrable results and proven techniques for transfer to the private sector.

Since that time, the Congress has passed and the President has signed into law the Energy Policy and Conservation Act (EPCA). Among its other provisions, EPCA requires the Federal Government to consider energy in its procurement policy and actions, to develop a ten-year plan to make Federal buildings more energy-efficient, and to promote vehicle energy efficiency. In consequence of both the Administration's actions and the legislative mandate, the Federal Energy Management Program is being transformed from an agglomeration of simple curtailment measures to a more structured effort to increase energy efficiency. Most of the measures identified to do this are of a capital investment nature. Accordingly, one of the major hurdles we see in the near term is convincing people at all levels of the budget review process that it is necessary and desirable to spend money to save money and energy.

Your report will be most helpful to FEA and the Government agencies as we strive to reduce the Government's energy requirements in the future. Comments on each of your recommendations are enclosed.

Sincerely,


Frank G. Zarb
Administrator

2 Enclosures

BEST DOCUMENT AVAILABLE

Specific Comments on Recommendations

Program Management Recommendation 1:

Promote good energy program management procedures and practices at Government installations, including development of energy conservation plans; assignment of individuals or groups to manage the program; and, once assigned, devotion of the time needed for management.

Comments: FEA concurs with this recommendation.

In fact, our observations show that there is a common series of activities found wherever there are successful energy conservation programs. To the extent these measures have yet to be employed, some additional savings may be possible using today's simple conservation measures. But even more important, use of measures to increase energy efficiency can be impaired in their absence. The elements of a successful program include:

- Top Management Commitment

Management must have a personal and sustained commitment to the program, provide active direction and motivation, and require regular review of energy usage at top-level meetings.

- Line-Management Accountability

Line managers must be accountable for the performance of their units with respect to conservation.

- Formal Planning

An overall plan has to be developed and formalized which sets forth performance-oriented conservation goals, including the specific reductions in energy consumption that the program is expected to realize, supplemented by prescriptive guidelines enumerating specific conservation practices that will be followed.

- Monitoring

Progress must be reviewed periodically at both the headquarters and installation levels to identify weaknesses or additional areas for conservation action. Goals should be adjusted commensurate with changes in mission or operational procedures.

Explanations should be required for unusual variations in energy use. Internal reviews, audits, and inspections are to be used as additional means of obtaining feedback on program operation and performance.

- Using Technical Expertise

Personnel who have technical or management training, such as engineers, architects, or budget personnel, should actively participate in the development and execution of programs tailored to the activity and its mission.

- Employee Awareness

Employees should be educated for conservation through seminars and written communication, invited to assist in developing an energy conservation plan, and invited to submit suggestions for conservation.

- Contingency Planning

Contingency programs for dealing with a fuel shortage or change in mission are essential.

- Budgetary and Fiscal Support

Resources necessary for the energy conservation program have to be made available (justified, of course, on the same basis as other budget items). In addition, much information for program management is contained in the fiscal system.

Program Management Recommendation 2:

Reassesses the adequacy of energy conservation goals.

Comments: FEA has recognized difficulties with the energy conservation goals. There was no collection and compilation of energy use data, for instance, prior to FY 73. As is nearly always the case in doing something for the first time, many problems and inaccuracies occurred in developing the baseline. Further, agencies were allowed to adjust this baseline for "program changes," and some did while others did not.

These considerations led to a decision to change our base period from FY 73 to FY 75. The goal for FY 77 which has been recommended to the President is to use no more energy in FY 77 than was actually used in FY 75 for the Federal Government as a whole. In addition, we plan to work with the Federal agencies to establish individual FY 77 targets in support of the overall Federal objective.

Program Management Recommendation 3:

Make reviews and inspections of energy conservation activities.

Comments: FEA concurs with this recommendation.

Management reviews and inspections of energy conservation activities are an integral part of the Federal Energy Management Program. In 1975 FEA Regional Offices, supported by GSA, and the Federal Executive Boards visited 287 Federal installations for the purpose of (1) confirming implementation of energy conservation guidelines (FMC 74-1), (2) identifying problem areas, (3) discovering techniques for saving energy that could be shared, (4) providing assistance to installations in developing and managing their energy conservation efforts, and (5) re-emphasizing the importance of energy conservation. Visits have been scheduled to approximately 300 Federal installations in 1976.

In addition, agencies themselves use their own internal staff to perform reviews and inspections. We are aware, for instance, that the Department of Defense plans a fairly major audit going into all three services in the energy area. The Department of Health, Education and Welfare and others include energy conservation in routine facilities engineering reviews. We are in the process of asking all agencies to plan using of such internal review groups to ensure accurate management information and data on energy usage.

Program Management Recommendation 4:

Stimulate employee awareness of the need for energy conservation and attempt to negate employee apathy and antagonism.

Comments: FEA concurs with this recommendation.

We are currently reviewing training and motivational programs of the major agencies with the objective of developing materials related to energy conservation which can be incorporated into current training courses or used independently. These materials will be used not only to stimulate employee awareness but will also target on attitudinal changes which are essential to the long-term energy conservation effort and will, in selected instances, provide the "tool" with which employees can conserve energy in their work environment.

However, our experience shows that top management must be convinced of the importance of energy conservation and, in turn, convey this sense of importance to their subordinates. Only then will maximum efforts be made to conserve energy. Accordingly, as a part of the process of announcing the energy conservation goal for FY 77, department and agency heads will be asked to reaffirm their personal commitment to the objectives of the Federal Energy Management Program.

Statistics Recommendation 1:

Carry out our prior recommendation that FEA issue guidelines for use by Federal agencies in the development of complete and accurate energy-use information systems and monitor closely the agencies' progress in the development of their systems.

Comments: The Federal Energy Management Program Office has given guidance to the agencies on energy information systems stressing the importance of submitting accurate data.

The adequacy of an agency's energy information system is a direct reflection of the importance that administrators attach to the management of their energy. Agencies whose energy budget is a small fraction of the operating budget have a tendency to place energy management at a low level of the organization without the authority or resources to implement or manage a progressive energy program. Agencies such as ERDA, NASA, GSA and DOD, where energy is a very visible part of their budgets, have established good energy management reporting systems.

The FEMP Office is in the process of reviewing the current energy information system to upgrade it and incorporate the additional information requirements to support the Energy Policy and Conservation Act. It is intended that formal guidelines be published upon completion of this project. As noted in response to Program Management Recommendation 3, we will also be asking agencies to use their internal review groups to ensure the accuracy of such information and data.

Statistics Recommendation 2:

Eliminate the inconsistencies between agencies in the treatment of program changes when making comparisons with the baseline period. Either have all agencies make the adjustments or do not make them at all. Also, in presenting energy consumption data, distinguish between energy savings resulting from the energy reduction program and those resulting from workload reductions.

Comments: FEA concurs in this recommendation

FEA recognized this problem and stopped using an adjusted baseline at the end of FY 75. The FY 76 energy use is being compared with the actual energy used in the corresponding quarters of FY 75.

FEA non-concurs with your recommendation to distinguish between energy savings resulting from the energy reduction program and those resulting from workload reductions.

There are numerous problems in attempting to segregate savings from workload reductions from those associated with energy management improvements. Definitions would be difficult, obtaining common adherence to them almost impossible, and the result would be a complex expensive system, the product of which would not be worth the cost. On the other hand, some of the refinements resulting from the review we are undertaking in one sequence of the Energy Policy and Conservation Act are likely to allow us to track energy use changes more closely in some areas. For example, we may be able to identify energy use in facilities in terms of Btu per square foot per year by building type and climate. Through comparison of actual use year to year, we should then be able to identify major mission changes affecting energy use.

Vehicle Recommendation 1:

Enforce more strictly the Government regulations on mileage reductions and smaller car acquisitions.

Comments:

A. Mileage Reduction

The original intent of the Government-wide mileage reduction program was to demonstrate that the Federal Government was taking positive action to reduce its gasoline consumption during the fuel crisis in FY 74. In FY 74, reported (to FEA) gasoline reduction was 16 percent; however, 8 out of 16 reporting agencies had savings of less than 15 percent. In FY 75, the number of agencies reporting gasoline use to FEA was increased to 26 and the reported savings were 12.2 percent with 12 agencies reporting savings of less than 15 percent.

Experience over the past two years indicates that a flat mileage percentage reduction cannot be applied to all Government agencies because of their individual missions and the ability to "trade-off" mileage reduction in their fleets by increased use of privately owned vehicles for official business.

FEA is interested in promoting the efficient use of automotive fuel. A mileage limitation does not appear to be the best means to this end. A limit on fuel use, one alternate being considered, would encourage:

- (1) The increased use of fuel economy vehicles
- (2) The development and implementation of driver training programs that emphasize energy conservation driving techniques and procedures
- (3) Reduced speeds
- (4) Improved maintenance

If found feasible, individual goals for each agency can be established based on past use and projected mission requirements.

B. Small Car Acquisition

Comments:

GSA buys all commercial and some special type vehicles for the Federal Government and has control over the type of vehicle procured for each agency. They have been assigned responsibility under the Energy Policy and Conservation Act to ensure cars bought for the Federal fleet are at least as efficient in terms of miles per gallon as the average level in the industry.

Vehicle Recommendation 2:

Enforce the requirement for mileage reports on GSA and agency-owned vehicles and commercially leased and privately-owned vehicles authorized for official travel.

Comments: FEA non-concurs.

Setting up a complex and costly reporting system that would capture each agency's vehicle mileage for (1) GSA assigned and dispatched vehicles, (2) agency owned vehicles, (3) commercially leased vehicles, and (4) privately owned (used for official business) is of questionable value. Among other considerations, fuel use would have to be a factored number because of the variety of types and sizes of vehicle used.

Vehicle Recommendation 3:

Attain greater carpooling participation.

Comments: FEA agrees with this recommendation.

The agency is looking for new ways to motivate Government employees to participate in carpools. The problem is particularly vexing when some field installations have carpooling participation rates of over 40 percent while others only obtain a 10 percent participation.

Vehicle Recommendation 4:

Delve more deeply into alternative ways to conserve energy in aircraft and ship operations.

Comments: FEA concurs with this recommendation.

Increased use of simulators and other training devices as a means of reducing fuel requirements for training and maintaining proficiency in aircraft, ship, and vehicle and equipment operations is one option being explored that appears to offer significant savings in these areas without adversely affecting mission capabilities.

Facilities Recommendation 1: Enforce more stringently the Government's lighting, heating, and air conditioning standards.

FEA concurs with this recommendation and is in the process of developing realistic standards as required by the Energy Policy and Conservation Act.

Facilities Recommendation 2:

Make in-house and external engineering surveys of ways to reduce consumption.

Comment: FEA concurs with this recommendation and is funding A&E surveys in varying types of buildings at several Government installations as demonstration projects in FY 76. We expect the results of these projects, when given broad dissemination in the Federal Government, will strongly encourage greater use of this tool.

Facilities Recommendation 3:

Identify, fund, and undertake facility modification projects that will increase energy efficiency.

Comments: FEA concurs with this recommendation.

The Energy Policy and Conservation Act requires FEA to develop a ten-year plan for energy conservation with respect to buildings owned or leased by an agency of the United States. The Federal Energy Management Program Office is developing survey guidelines for use by Government agencies in (1) determining the general condition of their buildings, (2) developing and prioritizing projects that will increase energy efficiency.

FEA is also working with OMB to establish specific FY 1978 budget guidance for funding activities and projects proposed by agencies in furtherance of the Federal Energy Management Program objectives.

Mission and Training Recommendation 1:

Require installations to change mission and training operations to conserve energy except in those cases where the effective carrying out of objectives will be adversely affected.

Comments: FEA agrees that agencies should periodically analyze their operations and training requirements and identify functions that can be modified or eliminated and thus reduce energy consumption. Many of the agencies have analyzed or are analyzing their operations and are making changes that will save significant amounts of energy, such as (1) reducing wind tunnel operating time by combining several tests on one run, (2) scheduling operations that require large amounts of electricity to off-peak periods, and (3) increased use of simulators in pilot training and proficiency evaluation. In some cases, capital investments will be required to implement the changes. Also, as mentioned previously (in connection with Program Management Recommendation 3), consideration is being given to "energy management audits" which, among other objectives, would attempt to identify conservation opportunities in the mission and training area.

Mission and Training Recommendation 2:

Determine whether potential energy shortages are of enough significance to warrant cutbacks in mission and training operations. If so, decide on the operations to be cut back.

Comments: FEA agrees that agencies and subordinate units should develop energy conservation contingency plans for implementation during periods of an energy shortage. Agencies should also consider measures to systematically convert their operations from the scarce fuels to the more abundant fuels.

UNITED STATES OF AMERICA
GENERAL SERVICES ADMINISTRATION
WASHINGTON, DC 20405



June 18, 1976

Honorable Elmer B. Staats
Comptroller General of the United States
General Accounting Office
Washington, D.C. 20548

Dear Mr. Staats:

Thank you for the opportunity to comment on your draft report on the review of energy conservation measures at Government field installations.

The General Services Administration's comments on the recommendations contained in your draft report are fully discussed in the attached Fact Sheet.

We will be glad to submit any further information you may require concerning the attached comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Terry Chambers". The signature is fluid and cursive, with a long horizontal stroke at the end.

TERRY CHAMBERS
Deputy Administrator

Enclosure

GSA FACT SHEET
Public Buildings Service
May 18, 1976

COMMENTS ON

DRAFT REPORT- "ENERGY CONSERVATION AT GOVERNMENT FIELD INSTALLATIONS
PROGRESS AND PROBLEMS"

Conclusions and Recommendations

Program Management - We agree with the recommendations stated under this heading on page 26 of the report and believe that GSA has established implementing procedures. During April and May of 1975, the General Services Administration (GSA), Federal Energy Administration (FEA) and the Federal Executive Boards (FEBs) jointly conducted a site visit program to 287 Federal installations throughout the Nation. The goals of the site visits were:

1. To confirm implementation of energy conservation guidelines.
2. To identify problems.
3. To discover techniques for saving energy that could be shared.
4. To provide assistance to installations in developing and managing their energy conservation efforts.
5. To re-emphasize the importance of energy conservation.

The findings of the site visit program demonstrated that energy conservation guidelines, as outlined in Federal Management Circular 74-1 (and supplements), had been implemented at most facilities and that substantial reductions in energy use had been achieved nationwide.

Agency-wide responsibility for direction and coordination of GSA's energy program is in the Office of Special Studies and Programs in the Public Buildings Service (PBS). Energy coordination offices are established in GSA's Federal Supply Service (FSS) and in its Public Buildings Service, and we will be shortly establishing an energy coordination office in GSA's Automated Data and Telecommunications Service (ADTS). Specific energy program responsibilities for FSS are assigned to the appropriate program offices within this service. Within the Public Buildings Service, the Office of Buildings Management and the Office of Construction Management have major program responsibility for energy conservation in building operations and for energy conservation design guidelines and specifications

in building construction, respectively. Further, each of our ten regional offices has a designated energy coordinator and several regions have established energy committees to meet on a regular basis to review and plan for regional energy conservation activities.

Statistics - Both internal GSA auditors and General Accounting Office (GAO) auditors have reviewed our data collection and reporting procedures and found them to be reliable and credible. Our current report data includes both GSA-owned and major leased space which is operated by the Government. Our data collection has been based on accurate readings from approximately 75 percent of our total operated space, which reflects approximately 80 percent of our total energy consumption. This data is then projected to include the 25 percent of space, which represents a large number of small facilities, for which timely and accurate data cannot be accumulated.

The problems of adjusting baselines for motor pool operations were probably confused because 1975 was a transitional period for the energy conservation program. It should be pointed out that two reports on energy reduction accomplishments were required: (a) one from GSA on mileage reduction and (b) one from FEA on total energy consumption and percent of reduction (including gasoline) expressed in BTU's. These two reports were further complicated by the informal zero growth concept FEA announced during 1975. This concept placed FEA's report in conflict with GSA's mileage reduction report which was based on adjusted 1973 baselines for each corresponding quarter. One of the reasons that FEA has informally adopted the "zero growth" concept from FY 75 to FY 76 is the inaccuracy and unreliability of FY 73 data which in most cases was not recorded at the time, but rather, researched after the fact or was developed by sampling FY 74 data and extrapolating it for the previous year.

Mileage reduction is a valid technique in accomplishing energy reduction. It should, however, only be used internally by each agency as a management tool to reduce total energy consumption. The energy conserved should be reported to FEA in energy units as part of the agency's overall report on energy conservation.

Vehicles - Our records show that the civilian agencies reporting under the provisions of Federal Property Management Regulation (FPMR) Temporary Regulation G-17 for FY 75 achieved a 14.6 percent mileage reduction. The Department of Defense did not report.

The statement made to GAO by one motor pool that the 15 percent mileage reduction goal was being sought on a nationwide basis was a correct statement. At the onset of the energy crisis, GSA motor pools curtailed the use of Interagency Motor Pool (IMP) vehicles to achieve a 20 percent mileage reduction, and subsequently a 15 percent reduction. Agencies

complained bitterly that restricting the use of IMP vehicles hampered the fulfillment of their missions. The agencies requested that the mileage reduction be more flexible and recommended that it be on a nationwide basis rather than by locale. Consequently, GSA initiated FPMR G-17 to reflect this request and all agencies (including GSA) were made responsible to meet the mileage reduction goal on a nationwide basis.

Additionally, the intent of G-17 is to permit, and even to encourage the use of IMP vehicles to reduce costs by decreasing the use of commercially leased and rented and privately owned vehicles. To this end, agencies reported approximately 2,000 fewer vehicle years of operation for commercially leased vehicles from FY 74 to FY 75 on the Standard Form 82, Agency Report of Motor Vehicle Data, submitted annually to the Office of Transportation and Public Utilities, Federal Supply Service.

Since January 1974, 100 percent of GSA's procurements for the IMP have been compacts and subcompacts--approximately 18,000 vehicles. This will continue to be our vehicle procurement policy.

In addition, Title III of the Energy Policy and Conservation Act of 1975 (P.L. 94-163) modifies Section 510, Title V, Improving Automotive Efficiency of the Motor Vehicle Information and Cost Savings Act, 15 U.S.C. 1901 et. seq., making it mandatory for all passenger automobiles acquired by executive agencies for FY 77 to achieve a fleet average fuel economy of not less than 18 miles per gallon. By 1985, the fleet average must be not less than 27.5 miles per gallon.

Section 1.(a) of Executive Order 11912 "Delegation of Authorities Relating to Energy Policy and Conservation" empowers the Administrator of General Services to establish policy and procedures governing acquisition of these passenger automobiles. A temporary Federal Property Management Regulation will be issued by GSA in the near future.

Increased carpool participation has been achieved through the issuance of Federal Management Circular (FMC) 74-1 and Supplement 1 to FMC 74-1 which established a uniform policy for the assignment of parking spaces to Federal employees. Under this policy not more than 10 percent of the parking spaces available for employee parking at Federal agencies may be assigned to executive personnel and persons who are assigned unusual hours. Assignment of the remaining parking spaces for employee parking will be based on the number of persons in a carpool. The Federal Property Management Regulations were revised February 10, 1976, by the addition of Section 101-20.117 which contains the carpool policy and guidelines for its implementation by Federal agencies.

Facilities - The area where our greatest energy savings has been realized is in our buildings management program. Nonuniform lighting has allowed the removal of nearly 3.4 million fluorescent tubes nationwide. Standard now in all GSA space is lower temperatures in winter and higher temperatures in summer. Rescheduling of cleaning operations to daytime continues to contribute a substantial reduction in operating hours of lighting and mechanical electrical equipment in buildings. Thus far, we have exceeded our energy conservation goals by reducing consumption in FY 75 over base year FY 73 by 27.20 percent. Energy savings for the first three quarters of FY 76 as compared to the same period of FY 73 show a 28.4 percent reduction.

GSA has a program of continuous monitoring to identify areas which need more stringent enforcement. In-house and external surveys are being accomplished to further identify areas to reduce energy consumption.

The retrofit of existing buildings has provided additional opportunity for energy savings. GSA has programmed approximately \$18 million for energy conservation retrofit projects in 1975 and 1976. Facility retrofit projects are a continuing program item. However, a more aggressive program is limited because of budgetary restraints.

GSA has initiated the Energy Management Utility Control Systems Demonstration Projects in three existing GSA buildings. An additional two projects will be installed later this year.

GSA:PBS(PW)



ASSISTANT SECRETARY OF DEFENSE
WASHINGTON, D.C. 20301

INSTALLATIONS AND LOGISTICS

4 JUN 1976

Mr. F. J. Shafer
Director
Logistics and Communications
Division
General Accounting Office
Washington, D. C. 20548

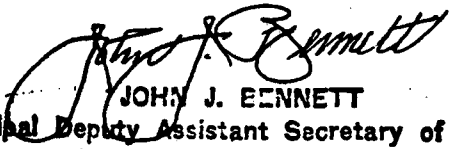
Dear Mr. Shafer:

This is in response to your letter of April 2, 1976, to the Secretary of Defense forwarding your draft report, "Energy Conservation at Government Field Installations--Progress and Problems," (GAO Code 943421). The draft report has been reviewed by this office, the Military Departments, and the Defense Supply Agency (DSA) and our specific comments are included at the enclosure. Inasmuch as this draft report is a continuation of both your September 1974 and February 1976 evaluations, the comments provided you concerning those reports will not be repeated for purposes of brevity. (OSD Case 4329)

The Department of Defense believes that the observations made in the draft report make a constructive contribution to improving energy conservation. Specifically, the statement that the military field installations surveyed had been active in their efforts to conserve energy is appreciated. DoD is continuing its efforts to emphasize the need for energy conservation and our progress to date attests to the success of this program. This has resulted in a 25 percent reduction in energy consumption in FY 74 compared to FY 73, a 26 percent reduction in FY 75 compared to FY 73, and an average seven percent reduction in the first three quarters of FY 76 compared to FY 75. These FY 76 results are

noteworthy in that they have been achieved without adjustment of readiness standards or by virtue of significant workload decreases or base closures. The DoD recognizes that improvements in energy conservation can be made and will continue to emphasize its importance.

Sincerely,



JOHN J. BENNETT
Principal Deputy Assistant Secretary of Defense
(Installations and Logistics)

Enclosure

SPECIFIC COMMENTS

Program Management Recommendation 1: Promote good energy program management procedures and practices at Government installations, including development of energy conservation plans; assignment of individuals or groups to manage the program; and, once assigned, devotion of the time needed for management.

Comment: All Services and DSA have actively promoted energy management programs at the installation level. Each installation has an activity to oversee and manage the energy conservation program. The Air Force has directed installation commanders to establish energy reduction contingency plans to identify, in advance, the incremental phase down of base facilities in the event of reductions in the available energy.

Awareness of the need for energy conservation has been promoted through use of formal regulations, messages, and seminars. In May 1976 the Navy completed a one week seminar for installation-level personnel regarding energy management. The Air Force has held Energy Conservation Weeks at various installations which have enjoyed great success. The assignment of more personnel to this program is subject to resource constraints. All Services are operating under funding, manpower, and travel limitations. These tend to restrict energy conservation efforts to some degree. However, overall, energy conservation remains an area of specific command interest.

Program Management Recommendation 2: Reassess the adequacy of energy conservation goals.

Comment: The establishment of overall national goals is the primary function of the Federal Energy Administration in coordination with other agencies. DoD has participated in the establishment of national goals

in the past and is presently working with FEA in this regard. As an example, DoD is now using FY 75 as a base line for analysis rather than FY 73 in order to eliminate the consumption of energy by operational forces in SEAsia in FY 73. The present goal within DoD is to maintain total nonrenewable energy use within DoD at the rate of consumption experienced in FY 1975. Any increase in consumption required for maintaining readiness and for required increases in the temp of operations are not included in this goal. This goal is very austere, requiring intensive energy - use management.

Program Management Recommendation 3: Make reviews and inspections of energy conservation activities.

Comment: The effectiveness of energy conservation programs is assessed continually at the intermediate and major Military Department level through analysis of the Defense Energy Information System and results of on-site surveys and inspections. The lack of funding precludes the formation of dedicated survey teams. However, conservation practices and programs are reviewed by teams such as the Air Force's Civil Engineering and Services Management Evaluation teams, the Army's Inspector General inspections, and the Navy's Naval Facilities Engineering Command surveys. In addition, independent visits to 76 DoD installations were conducted in FY 75 by teams composed of personnel from the Federal Energy Administration, the General Services Administration, and other agencies with the assistance of the Federal Executive Boards. This program is continuing in FY 76.

Program Management Recommendation 4: Stimulate employee awareness of the need for energy conservation and attempt to negate employee apathy and antagonism.

Comment: DoD continues to expend effort to foster energy conservation and stimulate employee support and involvement. All Services conduct active information programs to inform uniformed members, civilian employees, and their dependents of the need for energy conservation. It must be recognized that Service members reflect the prevalent views held at any point in time by the general citizenry concerning the relative seriousness of the energy shortage. It is difficult to invoke measures significantly more stringent than

those experienced by other citizens without an effective education program. DoD is strongly emphasizing the conservation ethic through its education programs.

Statistics Recommendation 1: Carry out our prior recommendation that FEA issue guidelines for use by Federal agencies in the development of complete and accurate energy-use information systems and monitor closely the agencies progress in the development of their systems.

Comments: The Department of Defense has developed an energy consumption reporting system, the Defense Energy Information System (DEIS), which provides complete and accurate worldwide energy consumption data. The development of this system has been coordinated with FEA.

Statistics Recommendation 2: Eliminate the inconsistencies between agencies in the treatment of program changes when making comparisons with the baseline period. Either have all agencies make the adjustments or do not make them at all. Also, in presenting energy consumption data, distinguish between energy savings resulting from the energy reduction program and those resulting from workload reductions.

Comment: Concur in principle with the recommendation that all agencies make the same adjustments; however, attempting to distinguish the difference between savings resulting from energy reduction program and those resulting from workload reductions would not be practicable in all cases. In this period of constrained budgets and rapidly escalating fuel costs, many fiscal decisions are prompted by the need to reduce operating costs which have been driven by rising fuel costs, so that in effect, the need to conserve fuel; i.e., save money, results in a workload reduction. A simple example of this concept would be the elimination of a selected bus line; would the fuel saved be attributable to a workload reduction or to energy conservation? These are analyses which are costly in terms of data collection and management time and provide no compensating benefit.

Vehicle Recommendation 1: Enforce more strictly the Government regulations on mileage reductions and smaller car acquisitions.

Comment: DoD has supported the reduction of the use of fuels used in motor vehicles. Reporting of vehicle mileage has been based on an agreed formula which equates mileage to fuel consumption. The use of mileage exclusively as a criterion can be counterproductive since use of a larger fuel consuming vehicle for a fixed distance could in fact consume more fuel than two smaller more economical vehicles. In addition, while on tactical exercises many combat land vehicles do not traverse large distances, but nevertheless consume fuel while on alert. These are two examples where mileage does not reflect consumption. DoD is continuing to work with FEA and GSA in formulating realistic usage statistics. All Services and DSA are presently aware of Federal Property management Regulations concerning the acquisition of compact or subcompact sedans.

Vehicle Recommendation 2: Enforce the requirement for mileage reports on GSA and agency-owned vehicles and commercially leased and privately-owned vehicles authorized for official travel.

Comment: As discussed in Vehicle Recommendation 1 above, the DoD supports the goal of reducing vehicle fuel consumption. The aggregation of statistics as noted in this recommendation is not practicable. Fuel consumption in sedans is considered to be less than 5 percent of DoD consumption. The requirement to collect, aggregate, and analyze sedan data as envisaged in this recommendation would not be beneficial.

Vehicle Recommendation 3: Attain greater carpooling participation.

Comment: This is an area where more can be done. All Services emphasize carpooling on a voluntary basis by offering preferential parking. The ultimate choice, however, remains with the employee. He is influenced by many outside stimuli including cost, convenience, and his individual work habits. Unfortunately, low gasoline prices and the ready availability of gasoline have blunted much of the effort to increase carpool participation. DoD is continuing to emphasize carpooling and will institute vanpooling when this concept becomes feasible.

Vehicle Recommendation 4: Delve more deeply into alternative ways to conserve energy in aircraft and ship operations.

Comment: The Air Force, Navy, and on smaller scale the Army have made continuing efforts to reduce vehicle fuel consumption. This has been accomplished by reductions in flying hour and steaming time programs. It is not possible to continue reductions without eventually affecting mission readiness and crew safety. The Services have all undertaken extensive simulator projects to substitute for actual flying. However, these simulators are costly and must compete with other requirements for funding. In addition, the Navy is looking into ways to increase ship efficiency through a program to retard the fouling of ship hulls.

Facilities Recommendation 1: Enforce more stringently the Government's lighting, heating, and air conditioning standards.

Comment: The Services continue to emphasize the enforcement of these federal standards. It is recognized that more can be done. As more controls become automated the inclination to individually adjust controls will be lessened. All installations have been provided the appropriate Federal standards for implementation.

Facilities Recommendation 2: Make in-house and external engineering surveys of ways to reduce consumption.

Comment: The Services have conducted in-house surveys to the extent possible. These surveys, if done properly, require significant expenditure of resources. These surveys must compete with other operational requirements. Many useful publications have been published by GSA, FEA, and ERDA and have been made available to the Services. Identification of energy-conserving modifications to facilities is a continuing requirement of installation engineers. FEA has selected a DoD proposed energy survey of Ft. Know as a prototype survey to be emulated at other installations. This proposed survey is presently under consideration by FEA.

Facilities Recommendation 3: Identify, fund, and undertake facility modification projects that will increase energy efficiency.

Comment: The DoD has identified high-payoff energy conservation projects in facilities and has incorporated them in the DoD Energy Conservation Investment Program. This program extends through

FY 81 and is programmed at over \$1 billion. Congress appropriated funds for 380 projects in FY 76 at a cost of approximately \$130 million. DoD has been in the forefront of Federal agency efforts to incorporate energy conservation efforts in the planning, programming, and budget cycle. Hearings have been held on the FY 77 portion of the program and it is awaiting final Congressional action.

Mission and Training Recommendation 1: Require installations to change mission and training operations to conserve energy except in those cases where the effective carrying out of objectives will be adversely affected.

Comment: As mentioned previously, significant reductions have occurred in the flying hour and ship steaming programs. These are tantamount to changes in mission operations. The larger scale introduction of simulators will likewise be a step in this direction. However, caution must be exercised in this area due to mission readiness requirements. Major commands must consider energy as a constrained resource in the planning and execution of tasks. In the final analysis, these commanders must make the judgments as to where their available resources must be utilized.

Mission and Training Recommendation 2: Determine whether potential energy shortages are of enough significance to warrant cut-backs in mission and training operations. If so, decide on the operations to be cut back.

Comment: All activities of DoD are constantly scrutinizing energy availability by commodity to determine whether potential shortages are significant enough to warrant a reduction in mission and training operations. For example, during the oil embargo, Air Force flying operations were reduced by amounts of up to 40 percent to preserve war reserve stocks. Drastic reductions of this nature would not normally be warranted except under crisis circumstances. Conservation of energy through use of simulators and training devices is recognized as a cost-effective means of training. In the final analysis military judgment must be applied in the analysis of the trade-off between mission readiness, safety and energy conservation.

We appreciate the opportunity to review and comment on your draft report. We plan to continue to maintain our emphasis on energy conservation in conjunction with meeting our readiness goals. We are proud of our record which we believe establishes our leadership within the Federal Government. Your comments will be helpful in furthering our efforts.

PRINCIPAL OFFICIALS RESPONSIBLEFOR ADMINISTERING ACTIVITIESDISCUSSED IN THIS REPORTTenure of officeFrom ToFEDERAL ENERGY ADMINISTRATION

ADMINISTRATOR:

Frank G. Zarb	Dec. 1974	Present
John C. Sawhill	May 1974	Dec. 1974
William E. Simon	Dec. 1973	May 1974

GENERAL SERVICES ADMINISTRATION

ADMINISTRATOR OF GENERAL SERVICES:

Jack Eckerd	Nov. 1975	Present
Arthur F. Sampson	June 1972	Oct. 1975

DEPARTMENT OF DEFENSE

SECRETARY OF DEFENSE:

Donald Rumsfeld	Nov. 1975	Present
James R. Schlesinger	July 1973	Nov. 1975