

MULTI-YR. PROGRAM

10. Reduce Federal reliance on natural gas by 50%.

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## FEDERAL ENERGY MANAGEMENT PROGRAM

### MULTI-YEAR ACTION PLAN

#### The Need for Energy Conservation

The United States is dependent on oil imports and vulnerable to actions of other governments, as was so clearly seen during the embargo of 1973. Thirty-eight percent of the petroleum needs are being met from foreign sources in 1975, and this proportion is expected to grow to 53 percent by 1985. The cost of oil imports has grown from \$3 billion in 1970 to \$24 billion in 1974 and is projected to increase to \$32 billion in 1977 with attendant adverse impact on the nation's balance of payments. In addition, the nation faces natural gas shortages in the fall and winter of 1975-1976, which could be quite severe and lead to serious economic disruptions if businesses dependent on natural gas are forced to close or curtail operations.

The costs of all forms of energy have escalated sharply in the last two years. Since 1973 natural gas, which is closely regulated, is up 47%, electricity, with adjustment changes, has risen 114%, coal costs 171% more, and #6 heating oil is 178% higher in price.

It is obvious that our society can no longer afford to use energy at ever-increasing rates--particularly oil and natural gas. New energy sources, such as solar, must be developed and greater use made of more plentiful resources such as coal, so as to ensure our national security and maintain our standard of living. But it is also necessary to conserve energy through wise use. That is, we must make every effort to eliminate waste and to obtain the most output or benefit from those energy resources used. In view of the price increases, sound fiscal management demands strong energy management.

The Federal Government, perhaps more than any other sector of the economy, must develop and implement an aggressive energy conservation effort to limit the growth of energy demand.

#### Importance of Federal Conservation Activities

The energy conservation efforts initiated in response to the crisis situation can and will be continued. However, it must be recognized that there is a limit to how much further these kinds of measures - which are basically curtailment

activities - can be pursued without adversely affecting the Federal Government's capability to perform its varied missions. Specific programs and plans have to be developed, together with capital investment in many instances.

It is important that the Federal Government develop and maintain such a plan because:

- The Federal share of total annual energy expenditures represents 2.2 percent of total energy consumption, is the largest single purchaser of energy in the Nation and represents a huge opportunity for energy conservation. Moreover, its actions can influence energy use, through its purchasing and other activities, far beyond its relative size.
- Secondly, the Federal Government has an obligation to responsibly implement those policies which it is formulating and encouraging other sectors of the economy to adopt, such as buildings modification and new construction criteria, life cycle costing, load management control systems and vanpooling.
- Thirdly, the Federal establishment contains representative elements of almost every energy consuming process and use extant in our society and thus presents an opportunity to demonstrate effective and efficient innovations and improvements to our current ways of doing business; conversely, continued use of energy at historical rates would have a tremendously adverse impact on the multiple constituencies served by the Federal Government.

#### Federal Energy Management Program - 1973 to 1975

In a June 29, 1973 Energy Statement, the President directed Federal Departments and Agencies to achieve a 7 percent reduction in anticipated energy consumption during FY 1974. The Federal Energy Management Program was established to implement this directive and monitor those agencies accounting for over 99 percent of the government's usage.

A number of specific measures were adopted to achieve this goal. Among these were:

- Reduction in auto mileage through elimination and/or consolidation of trips;

- substituting compacts for standard autos in the government fleet;
- emphasizing maintenance as a means of getting the most out of each gallon of fuel;
- imposing speed limits on vehicles, and establishing optimum speed for aircraft and ship operations;
- reducing flying and steaming hours of planes and ships;
- encourage employee carpools for commuting;
- delamping in government owned or leased buildings;
- lowering thermostat settings during the winter season and raising them during the cooling season; and
- increasing attention to heating, ventilating and air conditioning operations

Federal departments and agencies reported these actions resulted in a 24 percent reduction in energy use in FY 1974, compared to FY 1973 levels of use. Not all of the savings were oil, of course, but as a convenient way of measuring impact, it could be said that the energy saved was equivalent to 250,000 barrels of oil per day, worth about \$724 million at then current prices.

These efforts were continued during FY 1975 with reported savings during the first nine months of the year of approximately 25 percent below 1973 levels of use, a saving equivalent to 270,000 barrels of oil per day, valued at \$675 million.

Additionally, the Administrators of FEA and GSA were directed by President Ford to develop a multi-year program to increase energy efficiency.

#### Conduct and Conclusions of Study

The major Federal agencies were invited to participate with FEA and GSA in developing this plan to attain greater energy efficiency, both to ensure comprehensiveness of the review process

and to give agencies an opportunity to make their viewpoints known. Oversight was provided through a Steering Group composed of personnel at the Assistant Secretary level representing twenty-two agencies. Ten working committees were formed with representatives from agencies having expertise or interest in the functional areas, which were:

- Buildings and Facilities
- Motor Vehicle Management
- Real Property and Land Use
- Resource Recovery
- Telecommunications and ADP
- Education and Motivation
- Procurement Policy
- Major Energy Consumption Programs (Defense and industrial operations)
- Law Enforcement
- Funding, Legislative and General Administrative Policy

These working committees considered options and strategies ranging from macro changes in the conduct of government business such as relocating major facilities and total turnover of Federal fleet of vehicles down to ideas such as disconnecting electric wall clocks. In addition to specific action possibilities, it was generally concluded there was a large potential for greater efficiency, a need for sustained management support, a need for an overall long-range goal for energy conservation, and Presidential initiative.

#### Realizing The Potential

The long-term action plan is the outgrowth of these efforts. It provides for:

- establishment of a long-term goal for the Federal portion of our economy's total energy consumption against which actions and achievements can be measured;
- an institutional framework for executive direction, management, budget, and monitoring activities;

- major initiatives for immediate action;
- other initiatives for productive savings;
- direction for further study and analysis of potential initiatives, and;
- continuation and strengthening of present energy conservation activities.

## Federal Energy Management Program Goal

The President has clearly enunciated the energy goal for the country--to make ourselves independent of foreign energy sources. The Federal Government must act to contribute its share and more to the achievement of this goal.

The Project Independence Report, in its assessment of energy consumption of a "business as usual basis", projected total use in 1985 would amount to 103 quadrillion Btu's\* (with oil at \$11 a barrel). This projection assumes private sector consumption increasing because of such factors as GNP growth of 3.5% per year and a population increase of 1%. Since the Federal sector uses directly about 2.2% of this amount, a straight line projection would forecast an increase from about 1.7 quads used in Fiscal Year 1975 to 2.3 quads (35% increase) in Fiscal Year 1985, an increase of .6 quad or 103.4 million barrels of oil equivalent per year. This projection is high even if no new conservation measures were adopted since it is estimated that the number of Federal employees will remain relatively constant (consistent with historical trends in that the number of employees today is about the same as in 1965). It also assumes that energy intensity will increase at the same rate as the private sector, but because the Government has few manufacturing operations, that will probably not be the case. Taking these factors into account, a more realistic baseline growth figure for the Federal Government without conservation is .37 quad or about a 22% increase by 1985.

On the other hand, the implementation of the proposed major conservation initiatives will produce energy savings estimated at .37 quad, or more than 150,000 barrels of oil equivalent per day. Additional savings can be expected to accrue through the other initiatives and continuation and strengthening of current activities. Further, the action plan provides for development of current ideas to be included as additional initiatives as it is updated, with attendant savings. These actions, then, could more than offset new demands, and it is therefore appropriate to establish a goal of zero growth through 1985. This means we intend to carry out operations so as to use no more energy in future years than was consumed in 1975, which already represented significant reductions from 1973 consumption levels.

For Fiscal Year 1976, the target for each department and agency is to use no more energy in Fiscal Year 1976 than was used in Fiscal Year 1975, or would have been used had the 15% reduction target been met, whichever is less. Further, each department, agency and

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\*  $1 \times 10^{15}$  Btu = 1 "quad"



instrumentality will (1) report their total energy consumption in Fiscal Year 1975 to FEA by source and type; (2) ensure its systems and procedures are adequate to provide energy consumption data in sufficient detail for management control; (3) provide auditable records of data compiled and reported; and (4) conduct an audit during Fiscal Year 1976 of usage reported and the reporting system.

## Aircraft and Ship Operations

Aviation, jet and ship fuels account for over 51 percent of total energy consumed in the Federal Government. This amounts to over 145 million barrels of oil equivalent per year.

A significant portion of this usage is associated with training and maintaining readiness capability. The U.S. Air Force has initiated a program of utilizing simulators to reduce energy consumption in certain types of training. These efforts are projected to save 335 million gallons or nine percent of jet fuel consumption (equivalent to 8 million barrels of oil) and 150,000 flying hours during FY 1975 without affecting their mission capability. By the mid-1980's the Air Force anticipates saving 460 million additional gallons of jet fuel annually (equivalent to 11 million barrels of oil) and 360,000 flying hours.

This and other efforts have the potential of large energy savings without affecting overall mission capabilities and could be extended to other Federal aircraft and ship operations.

### Initiative

Make optimum use of simulators and other modifications to capital equipment to minimize energy consumption.

### Savings

Not currently quantifiable; it is assumed the savings will be adequate to offset increased requirements, or approximately 25,000,000 barrels of oil equivalent per year.

### Costs

The Department of Defense has funds in the current budget request; other agencies may request funds in the future after reviewing applicability to their operations.

### Implementation

Appropriate agencies will, by December 31, 1975, determine specific operations and training functions offering cost beneficial application of simulators. DOD will assist as necessary in making these determinations.

## New Building Standards

There is a significant opportunity to conserve energy and reduce the related operational costs in new buildings to be constructed or leased by the Federal Government through building design standards.

Existing Federal buildings were almost wholly built in a manner that minimized first cost during a period of plentiful and cheap energy. These buildings are very energy-intensive. An average fuel consumption estimate of federally controlled buildings in 1973 was approximately 300,000 Btu's per square foot annually. (This has since been reduced significantly as a result of implementing conservation measures.)

The General Services Administration (GSA) recently published their new building design guidelines (July 1975) which are aimed at a target goal of 100,000 Btu's per square foot annually\* under normal operating conditions. The application of similar design guidelines, criteria and standards to all new Federal buildings construction and leasing would result in a 50% improvement in energy efficiency for these buildings.

The same principle obviously applies to other types of buildings built by the United States such as health facilities, housing, laboratories and so on. Full application to all Federal buildings and facilities will save an estimated 3.6 million barrels of oil equivalent per year in 1985.

New building construction will result in an estimated net increase of 1% per year over the next 10 years. Since there is a 5 year lead time in the construction of these buildings and facilities, only half of the new construction can be effected with new design standards. Full application of the new design standards will save an estimated 1 million barrels of oil equivalent per year in 1985. The additional costs of these design changes should not exceed 1% of the initial costs with an estimated rate of return of 15% annually.

## Initiative

Adopt new building performance standards that require use of energy conservation design criteria and energy budgets with the goal of achieving a minimum 50% reduction in energy consumed in new buildings built for or leased by the Federal Government compared to energy used in comparable existing buildings.

## Implementation

DOD and GSA, with the assistance of HUD, ERDA, DOC (NBS), FEA and USPS will prepare the directives necessary to require the use of energy

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\*Reference raw source energy goal: GSA Energy Conservation Design Guidelines for New Office Buildings - 2nd Edition, July 1975.



SAMPSON

FEDERAL ENERGY ADMINISTRATION  
WASHINGTON, D.C. 20461

September 5, 1975

OFFICE OF THE ADMINISTRATOR

MEMORANDUM TO EXECUTIVE COMMITTEE, ENERGY RESOURCES COUNCIL  
FROM : FRANK ZARB, EXECUTIVE DIRECTOR (3)  
SUBJECT: EXECUTIVE COMMITTEE MEETING

This will confirm the Executive Committee meeting scheduled for Wednesday, September 10 at 3:00 p.m. in the Roosevelt Room. Scheduled for discussion are:

1. Federal Energy Management Multi-Year Action Plan (Attached is a cover memorandum and materials dealing with the plan) Sant
2. Decontrol Situation Zarb

Attachment

conservation design criteria in all new buildings built or leased by the Federal Government. These directives will specify energy performance goals and budgets for various types of buildings, size, climate or other factors. Publication of the first increment covering office buildings is to be accomplished by March 1, 1976, and extended to cover other types of buildings as rapidly as resources permit. The application of solar energy will be considered for all new buildings constructed by the Federal Government. The application of solar energy to domestic hot water and space heat will be justified on a life cycle cost basis. The initial utilization of solar energy for space cooling will be justified on a demonstration basis.

#### Budget

Supplemental funds for guideline criteria development may be requested if upon further examination these actions can be accomplished within agencies' existing resources. It may result in slightly higher first costs for new buildings and facilities. The normal budget process will provide for a detailed review of proposed buildings, including a life cycle cost analysis.

#### Legislative or Other Considerations

The action can be initiated within existing authorities.

## Buildings Retrofit

Because most existing Federal buildings were built to minimize first cost, retrofit with insulation, systems controls, storm windows, solar water heating, building load management systems, and other energy-saving equipment or techniques can reduce our energy consumption.

It is estimated that 95% of the 2.80 billion square footage currently owned or leased by the Federal Government will still be in use for Government operations in 1985. Thus, the use of energy in present buildings has to be a matter of great concern. Much has, in fact, already been done through thermostatic and lighting adjustments, together with other changes in operating procedures. These have brought about savings on the order of 20-30% in those buildings where fully implemented.

Further significant and cost effective savings are possible, as attested by the fact that some agencies are justifying energy related retrofit programs in their current budget submissions. To insure these savings are realized, several actions will be pursued concurrently. First, improved efficiencies through operation and maintenance procedural changes and present plans for repair, alterations and rehabilitation will be evaluated and retrofit projects implemented, using currently available funds to the extent possible.

Second, retrofit projects with early amortization potentials and for each building only the most cost-effective options will be chosen. Typical retrofit options with early amortization potentials are:

- a. Temperature controls (limited range, zonal, timers, etc.)
- b. Ambient temperature controls
- c. Lighting conversions
- d. Boiler plants controls
- e. Power factor corrections
- f. Ventilation system alterations
- g. Smaller heating/cooling units

Finally, longer term amortization project options will be evaluated. Examples of these potential options are:

- a. Heat regenerative systems
- b. Insulation of buildings
- c. Solar screens



d. Heating plant interconnections

e. Double glazing/weatherproofing

The actual amortization period of the above options depends upon the facility or building, geographical location and climatic conditions and ranges from about 1 to 9 years.

The three phase approach assures that the earliest possible reduction of energy consumption and operating costs occur and that the retrofit projects selected yield the highest return on investment possible.

In Fiscal Year 1975 average energy use in Federal buildings amounted to 250,000 Btu's per square foot per year. There are a range of cost beneficial conservation techniques which could cumulatively increase energy efficiency to 188,000 Btu's per year per square foot. A reduction of 62,000 Btu's per square foot per year in Federal buildings will result in potential savings of more than 25 million barrels per year oil equivalent. It is important to note that these techniques, when effectively demonstrated throughout the Federal Government, can be extended to office buildings in the private sector and have the potential of saving more than 200 million equivalent barrels of oil per year.

All retrofit projects submitted in response to this initiative will provide a minimum 10% return on investment except for the application of solar energy which will be considered on a case-by-case basis for existing buildings owned and operated by the Federal Government. The application of solar energy to domestic hot water and to space heating and cooling will be evaluated and justified on a life cycle cost basis.

Initiative

Develop and implement a comprehensive buildings retrofit program having a goal of reducing energy consumption by about 25% through projects which will pay for themselves in reduced dollar expenditures for energy.

Implementation

The major elements of the buildings retrofit program are the initial planning phase followed by three retrofit project design and implementation phases to be implemented by all civil agencies of the Federal Government and the Department of Defense. The program is structured to realize the most cost-effective retrofit projects as early as possible. The Department of Defense (DOD) has already initiated their Energy Conservation and Investment Program.

In the planning phase, the General Services Administration (GSA) with the Department of Defense (DOD) and the Federal Energy Administration (FEA), will develop the buildings retrofit survey and design guidelines and be promulgated by March 1, 1976. GSA will further study and determine the applicability of these or similar guidelines to leased space and promulgate leased space retrofit criteria by July 1, 1976.

All Government agencies will utilize the planning guidelines and criteria to initiate surveys and study activities assessing the potential of adding energy conservation projects to presently planned buildings repair and alteration programs.

In late Fiscal Year 1976, all agencies will initiate surveys and design studies of energy conservation retrofit projects which are self-amortized in zero to 4 years. Each agency will develop and recommend to GSA and FEA the most cost-effective projects in this category.

In mid Fiscal Year 1977, all agencies will begin the development of the retrofit projects having longer self-amortization characteristics in a similar manner.

Each agency should begin submitting its projects in the Fiscal Year 1978 budgetary submission/approval cycles and should plan to have all projects identified for submission in the Fiscal Year 1981 budget.

GSA will provide continuous technical assistance support to all Federal agencies throughout the retrofit program to assure consistency, uniformity and effective technical data dissemination. During Fiscal Years 1976 and 1977, GSA will manage the funds made available through the supplemental request for architectural and engineering studies of civil agencies' buildings.



## Budget

The total budget for planning, analysis, surveys and implementation of the buildings retrofit program are shown in the following table. Results of surveys and design studies will allow more precision in these estimates. Estimates shown in the table are for planning purposes only.

	(\$Millions)					
	<u>FY-76</u>	<u>FY-77</u>	<u>FY-78</u>	<u>FY-79</u>	<u>FY-80</u>	<u>TOTALS</u>
<u>Surveys and Analysis</u>						
Department of Defense	2.6*	2.5*	2.4			
Civil Agencies	2.0	2.7	2.6	2.0		
<u>Project Planning</u>						
Department of Defense	8.2*	12.8*	23.1	15.7	13.2	
Civil Agencies	0.4	7.4	8.9	13.2	26.2	
<u>Project Implementation</u>						
Department of Defense	137.1*	213.9*	336.2	262.0	220.0	
Civil Agencies	-	86.2	139.8	221.6	342.0	
TOTALS	150.3	325.5	513.0	514.5	601.4	2104.7

\*The above estimates includes the funding requirements for the Department of Defense Energy Conservation and Investment Program which are currently in their FY 76 and FY 77 budgets.

## Legislative or Other Considerations

Most of the actions necessary to implement the buildings and retrofit program can be executed within existing authorities and mechanisms. Leased space facilities may require legislation before implementation which could delay that portion of the retrofit program.

## Buildings Load Management

Many building operations are amenable to energy conservation through increased control. Brownouts and peak load costs require the ability to monitor and control usage much more closely. An automated control system tied to timers, thermostats, and other automatic sensory/control devices has proven to be a cost effective means of achieving both energy savings and control in some situations.

The need to conserve energy has resulted in development or intensification of many building management operations. Some examples are:

- o increased switching of lights to eliminate unnecessary use;
- o lesser intake of outside air when it must be heated or cooled to maintain the desired temperature; greater intake when outside air is nearer the temperature objective than the return air;
- o shutdown of selected operations after duty hours;
- o timed operation of selected equipment such as pumps, fans, water heaters, and elevators.

In some situations, manual monitoring or simple automatic controls such as timers or thermostats are cost effective, but in many other instances, the cost exceeds the energy saving. Also, there are circumstances where such controls would have to be dynamic, i.e., more responsive to changing conditions than monitoring or simple automatic controls can be. Beyond these conditions, electrical brownouts and peakload costs are making it necessary to give greater attention to increasing controls so as to be able to selectively shed selected equipment loads and shift consumption away from peak periods.

There are in operation some automated load management control systems which are designed to meet these needs for larger buildings or facilities. One example is in use in a Federal building complex of approximately 750,000 square feet, which requires more precise temperature and humidity controls than the average building. Manual conservation practices had previously been implemented and the energy consumption reduction between 1973 and 1974 was about 20%. An automated control system was installed in January 1975 and an additional 20% reduction was achieved in the first four months of operation compared to the same four months in 1974. Total purchase cost of this system was about \$54,000 and the net savings appear to be on the order of \$6,000 per month in direct energy savings, not counting the salary costs of an employee released to other duties.

Assuming the technique can be used in 5% of the present building stock and effect a 20% savings in energy consumption in those buildings, annual savings should amount to 1 million barrels of oil per year and \$10 million. It is estimated the return on investment will average about 5 to 1.

The 5% estimated impact on buildings is based on the Building Load Management System available at the present time. The systems cost ranges between \$25,000 to \$250,000 and reasonable self-amortization occurs only with larger buildings or complexes similar to the cited example. Lower cost systems are becoming feasible with the recent development of microprocessors and their associated logic elements. Smaller buildings should soon be amenable to the application of systems using microcircuit technology that is currently available. The rapid reduction of costs of microcircuit elements indicates that smaller scale systems costs would range from \$2,000 to \$3,000. Study of the microcircuit applications to building load management systems will be conducted to increase the 5% estimate on Federal buildings affected. A 20 - 30% increase in buildings potentially suitable for this technology may result.

#### Initiative

Install supervisory utility control systems as determined feasible and cost effective in new and existing Federal buildings and facilities.

#### Implementation

##### a. Existing Buildings

GSA and DOD will, with the assistance of FEA, identify the criteria to determine when a supervisory utility system should be installed by January 1, 1976. Based upon these criteria, all agencies operating buildings and facilities will survey existing buildings to identify those meeting the criteria by April 1, 1976 and develop project proposals for installation of such systems as rapidly as possible thereafter. A listing of such buildings and facilities is to be submitted to FEA upon completion of the survey and copies of project proposals will be forwarded as they are developed. FEA, with the assistance of GSA, DOD, and OMB, will then develop a specific timetable and budget for retrofit installation of supervisory utility control systems. Further, GSA will undertake a study of the feasibility of control systems suitable for smaller buildings, to be completed by July 1, 1976.

b. New Buildings

Those buildings for which design work will not be completed in Fiscal Year 1976, which meet the criteria, will include such a system in the plan.

Budget

Funds for application of this initiative in new construction will be a part of total request and require no special consideration. Study activity related to lower cost systems will cost approximately \$90,000. Total magnitude of the retrofit initiative will be determined on completion of the surveys and project proposals. However, a supplemental request will be submitted for initial installation costs of any which appear to be critical after the survey work has been completed. For subsequent fiscal years, these projects can be included in the energy portion of the agencies' budget submissions.

Legislative and Other Considerations

This initiative can be accomplished within existing authorities and mechanisms.

### New Vehicle Efficiency

As of June 30, 1974, the Federal fleet, excluding military operational vehicles, totaled 422,253 vehicles, worldwide. Of these, 99,802 were sedans and station wagons, 262,988 were trucks under 12,500 pounds Gross Vehicle Weight Rating (GVWR), 44,864 were trucks over 12,500 pounds GVWR, and the remainder were buses and ambulances. The passenger carrying vehicles traveled 928 million miles during Fiscal Year 1974, while buses, ambulances, and trucks traveled 2,041 million miles during the same period. These vehicles consumed approximately 70.5 and 241 million gallons of motor vehicle fuel, respectively. Federal agencies also leased approximately 7,100 vehicles from commercial sources. In addition to the mileage operated by Government-owned and commercially leased vehicles, it is estimated that more than 750 million miles are traveled by privately owned vehicles used for official business.

The overall vehicle efficiency goal is to achieve a 90% improvement in miles per gallon for sedans and station wagons and an 18% improvement in trucks. Major emphasis will be placed upon improving sedan and station wagon mileage from 13.0 to 20 miles per gallon by 1980 (with further improvements by 1985), and improving truck mileage from 8.5 to 10 miles per gallon by 1985, resulting in an average 50% improvement in the total fleet. Similar efforts will be taken to insure that commercially leased and rented vehicles will meet the criteria established for fuel efficiency for vehicles in the Federal fleet.

Among the actions which can be taken to improve the efficiency of this fleet as new vehicles are bought and leased are:

- Buy smaller cars (Type I, compact or subcompact) with optimized power plants;
- Use EPA test data on MPG as a selection criteria;
- Review vehicle replacement criteria to determine most energy efficient replacement cycle;
- Test and evaluate alternative power plants and optimal devices which extend fuel economy;
- Limit acquisition of energy consuming accessories;
- Ensure lease and rental regulations are consistent with policies for owned vehicles;
- Publish guidelines to assist agencies to effect energy conservation through better vehicle management.

Achieving the stated objective of a 50 percent increase in sedan and station wagon fuel efficiency by 1980 will result in an estimated savings of 23 million gallons of gasoline annually. Meeting the goal for trucks and making additional increases in sedan efficiency by 1985 would result in an annual fuel savings of 94 million gallons. Based on a pump price of 50 cents per gallon, this represents an annual savings of \$12,500,000 for sedans by 1980 and \$47,000,000 by 1985.

### Initiative

Management vehicle procurement to achieve an average of 20 MPG in the sedan/station wagon fleet by 1980 with further improvements by 1985, and improvements in truck efficiency to 10+ MPG by 1985 with the overall objective of obtaining a combined average MPG improvement of 50%.

### Implementation

1. General Services Administration (GSA) and Department of Defense (DOD) will issue procurement policy and implementing regulations requiring the purchase of Type I sedans. Requests for exceptions to this requirement shall be submitted by the head of the department or agency to the Federal Energy Administration (FEA) for final determination.
2. GSA in conjunction with Environmental Protection Agency (EPA), FEA, and the Energy Research and Development Administration (ERDA), will prepare and implement, by April 1, 1976, a vehicle procurement procedure using fuel efficiency as a selection factor for compact sedans. Following a determination that such a procedure is effective in the procurement of sedans, it will be extended to other classes of vehicles including light trucks. This procedure will be implemented and completed by October 1, 1976.
3. Current vehicle replacement standards will be reviewed by GSA to determine the optional replacement cycle from both cost and energy viewpoints. From this review, a schedule will be prepared by March 1, 1976, for the replacement of the current inventory of less energy efficient sedans and light trucks.
4. Department of Transportation, (DOT), as lead agency, will develop and implement by July 1, 1976, a centralized and coordinated operational and demonstration testing program which will be instituted for products, devices and systems which are available in the current state of the art for government procurement. GSA, EPA, ERDA, DOD and U. S. Postal Service will provide assistance and facilities for the testing program to the extent practicable, consistent with ongoing mission responsibilities and, where necessary, on a reimbursable basis.



# FEDERAL ENERGY ADMINISTRATION

WASHINGTON, D. C. 20461

September 5, 1975

OFFICE OF THE ADMINISTRATOR

MEMORANDUM TO EXECUTIVE COMMITTEE, ENERGY RESOURCES COUNCIL

FROM : FRANK ZARB, EXECUTIVE DIRECTOR

SUBJECT: FEDERAL ENERGY MANAGEMENT MULTI-YEAR ACTION PLAN

Attached is the Federal Energy Management Multi-Year Action Plan prepared by the Federal Energy Administration and the General Services Administration in response to a Presidential directive. The plan and the proposed actions will be discussed at the Executive Committee meeting on Wednesday, September 10.

The proposed plan represents a significant new conservation initiative for the Federal Government and would eventually require substantial amounts of capital to implement. An earlier draft of the plan was coordinated with other agencies through the Federal Energy Management Steering Group. There is general agreement with the concept and most of the initiatives, although there is considerable controversy over full cost parking for Federal employees and to some extent the vanpool program.

Discussion should focus on action to:

- 1) Recommend adoption of Multi-Year Action Plan to the President
- 2) Recommend adoption of major initiatives to the President, including necessary supplemental funds request.
- 3) Endorse legislative proposal.
- 4) Endorse management and funding concepts.
- 5) Initiate review action on Executive Order, OMB Circulars.
- 6) Suggest time and mode of public announcement to maximize benefit.

Attachment

5. GSA will issue regulations, by May 1, 1976, requiring the use of energy-efficient commercially leased and rented vehicles consistent with policies for owned vehicles, and will also update all lease and rental contractual agreements to ensure that only the most suitable vehicles are used for government travel.
6. GSA and FEA, in coordination with the Interagency Motor Equipment Management Committee, will establish and issue guidelines by June 1, 1976, on operational fleet management practices which all Federal agencies will use to maximize fuel economy through such methods as permitted accessories, dispatching techniques, regulations of lease or rental, and privately owned vehicle reimbursement.

#### Budget

This action can be initiated within existing resources and budgetary planning assumptions. However, if the study of current replacement standards indicates that an accelerated replacement program would be advantageous, supplemental budget requests will be prepared for the necessary funding to replace current vehicle inventory for sedans and light trucks.

#### Legislative and Other Considerations

A concurrent review of existing legislation in the area of statutory price limitation and 25 percent vehicle replacement limit will be made to determine if these restrictions pose a barrier to effective implementation of the vehicle efficiency program. If this is the case, GSA, in conjunction with the Office of Management and Budget, will prepare legislative changes to overcome the limitations.



## Encouragement of Energy-Efficient Modes of Commuting

The private automobile, driven to and from work with an average load factor of 1.4 persons, consumes 10% of the total petroleum used in the Nation annually. It is vital that the Federal Government take positive action to increase the efficiency of commuter travel. Two actions, one an incentive and the other a disincentive, are proposed.

### A. Vanpools

Vanpools are an economical, convenient form of commuting in which employees share in the costs of a 12-15 passenger van which one of them drives to and from the place of employment.

While only limited experience is available, vanpools have been successfully instituted in several locations. Employees participating find several advantages. Being somewhat more structured than carpools, and operated under management auspices and control, vanpools offer their patrons superb door-to-door time tailored service. Yet, because of their flexibility, they offer greater convenience than public transit, and are in fact most attractive in terms of providing service in areas where there is a dearth of public transit service. Vanpooling can save the rider \$200 to \$1,200 per year compared to the cost of driving alone in a car.

The basic concepts of vanpooling include:

1. Financially, a successful vanpool is self-sustaining in that fares employees pay provide for the capital, operating, and in some cases administrative costs incurred by the employer.
2. The employee who drives and coordinates each van accepts certain responsibilities, such as keeping on a regular schedule, meeting license requirements, seeing to servicing of the van, keeping it clean, securing riders, providing one or more backup drivers, protecting the van, and meeting administrative requirements such as an operating log and expense record. In return, he gets free transportation to and from work, personal use of the van (under certain restrictions) during off hours and weekends for out-of-pocket expenses, and retention of fares above the established minimum ridership (usually eight or nine).
3. Employer provides van, gas, oil, washing, maintenance, and insurance (the fares paid by employees cover these costs). Employer also assists in formation of pools through employee awareness programs and matching services. Finally, employers monitor vanpool operations to insure operating standards are kept.

Based on experience of a successful program, vanpools with fares at about half the cost of gasoline to a solo commuter are viable with an average load of 11 persons. Even assuming only 10 riders, fuel consumption amounts to only 30% of the six cars replaced (using an average occupancy factor of 1.7). Typical commuting distance for vanpools is 20 miles at 10 miles per gallon of gasoline (they serve outlying areas not well served by public transit). Using these factors, it is estimated each vanpool will save 3,740 gallons of gasoline per year. Federal employees situated where vanpools are a feasible and attractive alternative are estimated to total about 1/2 million. (Generally, we are speaking of those employees working in major centers of Federal employment with more than 500 employees commuting by auto, and who do not have access to adequate public transit.) Assuming 20% of these can be placed in vanpools with an average occupancy of eight people these would replace over 70,000 cars currently used for commuting. Traffic congestion during rush hours would be reduced, and energy savings equivalent to 3,000 barrels of oil per day would be achieved.

Since a viable vanpool program pays all costs associated with its operation, the only requirement for funding is to provide for start-up costs, which are then amortized. These include first purchase costs of the vans and some small amounts for promotional and administrative activities. The vanpool fleet could potentially reach 12,000 vehicles, with a total investment of almost \$80 million for that number of vans.

There are many barriers to initiation of vanpooling programs for Federal employees. Among those which require legislative or administrative resolution are:

- Use of Federal monies to purchase or lease vans for private use (even though once purchased or leased and in operation, the vanpool is self-sustaining).
- Definition of circumstances where vanpools are used such that they do not compete with public transit.
- Federal, state or local legal, administrative, or insurance regulations which impinge on pooling where fares are involved.

#### Initiative

Implement a vanpool program for Federal employees.

## Implementation

Federal Energy Administration (FEA) will propose by October 1, 1975, legislative amendments to Congress to allow the Federal Government to sponsor vanpools for its employees, including background detailing operating concepts and requirements. FEA, with assistance of Civil Service Commission (CSC) and others, will identify Federal installations having more than 500 employees commuting by auto, and having inadequate or non-existent public transit service. FEA, with assistance of General Services Administration (GSA), will develop criteria or evaluation factors to determine when an agency/installation/employment center should be allowed to inaugurate a vanpool program (e.g., number of employees, public transit, etc). Procedures will be established for agency requests for the necessary "front" money to be submitted during the budget process.

## Budget

Implementation costs are dependent on the total number of vans bought, the pace of purchasing them, and the extent to which income generated from revenues are applied to expansion of the program. As an order of magnitude indication, the attached schedule displays an approximate income and expense distribution:

## Legislative and Other Considerations

Vanpools require legislative authority for use of government-owned vehicles for commuting purposes.

FEDERAL EMPLOYEE VANPOOL PROGRAM (\$000)

EXPENSES	76	77	78	79	80	81	TOTAL
CAPITAL COSTS	19,500	19,500	-0-	-0-	-0-	-0-	39,000
LOCAL START-UP	4,500	2,500	-0-	-0-	-0-	-0-	7,000
OPERATING COSTS	1,500	4,500	6,000	6,000	6,000	6,000	30,000
ADMINISTRATIVE COST	122	1,580	2,450	2,450	2,450	2,450	11,502
TOTAL EXPENSES	25,622	28,080	8,450	8,450	8,450	8,450	87,502
REVENUE	4,860	14,580	19,440	19,440	19,440	19,440	97,200
NET REVENUE (COST)	(20,762)	(13,500)	10,990	10,990	10,990	10,900	9,698*

\* Program not intended to produce revenue, but these amounts will offset the opportunity cost of capital invested.

## B. Full Cost Parking

The Federal Government is providing vehicle parking space for its employees at subsidized rates. This practice acts as an incentive to encourage persons to drive to work in direct contradiction to the Federal Government's stated policy of encouraging the use of carpools and mass transit. The objective of this initiative is to encourage utilization of more energy efficient transportation modes by the Federal employee commuter (e.g., mass transit and carpools).

Previous efforts to encourage carpooling by instructing agencies to reserve the major portion of available spaces for carpool vehicles have been unsuccessful in many instances. The measures have proven unenforceable, or ineffective because of the abundance of convenient parking spaces in some instance, and the lack of positive action in other instances.

Suspension of parking subsidies would remove the advantage now enjoyed by those few who drive alone to work, encourage persons to use other, more efficient modes of transportation and bring the Government's actions into conformity with its energy and transportation policies.

Many benefits would occur by implementing full cost parking:

1. 169 thousand barrels per year savings.
2. Improved air quality.
3. Improved noise environment.
4. Encourage the private sector to follow the Federal Government's lead.
5. Reduced traffic congestion.
6. Increased use of public/mass transit (\$5.3 million/year).

Strenuous objections have been voiced by the Civil Service Commission, Department of Transportation and the Treasury Department that the policy is inequitable in that it in effect removes a fringe benefit that Federal employees have heretofore enjoyed. Also, it was pointed out that such a policy applied to handicapped workers who could not use public transit would work an undue hardship on them. However, present practice has resulted

in inequities to those employees who do not have access to free or subsidized parking. This initiative will in fact have an equalizing effect on a majority of Federal personnel by removing a subsidy enjoyed by relatively few employees.

In response to these objections, two additional steps have been added to the implementation plan specifically to provide for handicapped workers and to provide a compensatory pay raise for Federal employees to offset the "fringe benefit" affected by this initiative.

#### Initiative

Recover the full cost for parking spaces provided to Federal employees and eliminate parking subsidies.

#### Implementation

OMB will reactivate its policy circular related to full cost parking by January 1, 1976.

GSA, with CSC and OMB, will determine policy and procedures for eliminating or ameliorating the impact of this initiative on handicapped workers.

GSA, with FEA and OMB, will develop by April 1, 1976 directives and procedures for recovering the full costs of providing employee parking on government property. The departments and agencies of the Executive Branch will develop department or agency regulations supporting the policy circular and the GSA directives.

FEA and OMB will determine the costs of a compensatory pay raise for Federal employees to mitigate the impact of the policy change and initiate a request to Congress to authorize the adjustment together with necessary appropriations.

#### Budget

A maximum of \$50,000 will be required to determine the optimum method of implementing and alleviating serious impacts on handicapped workers. Other administrative and implementation actions required can be accomplished under existing budgetary constraints. The compensatory pay increase (amounting to about \$10 per employee) would require between \$50 to 60 million per year.

#### Legislative and Other Considerations

These directives and policies will be implemented upon Congressional authorization.

## Life Cycle Costing

Traditionally the major emphasis in government procurement has been on initial acquisition costs or the low bid concept and little or no attention has been paid to the full cost of operating and supporting acquired products. The application of life cycle cost (LCC) techniques, the sum of acquisition, support and disposal costs over the life of a product, has proven an effective means to significantly increase the return on the Federal dollar investment.

Over the past few years there have been some instances of procurements which have used this technique such as general purpose test equipment and aircraft tires and batteries. Most recently procurement using life cycle costing as a primary selection criteria has been developed for purchases of water heaters, air conditioners, ranges and refrigerators. The dollar and energy savings associated with these items using life cycle cost techniques, stressing energy efficiency, are indicative of the total potential of wide Federal application.

	<u>\$ Savings</u>	<u>% Energy Reduction</u>
Window Air Conditioners	400,000	21
Hot Water Heaters	326,000	11
Gas Ranges	619,000	7
TOTAL	<u>1,345,000</u>	

While these specific examples indicate that significant benefits are achievable through life-cycle costing, it is a methodology rather than a direct energy conserving activity. Further, test and evaluation forms the foundation of LCC analysis and conclusions. Considering the range of articles bought by the government, it is obvious that just the process of researching the best candidates, then testing and evaluating the products of different suppliers, is a massive effort which will require several years to complete.

While it is impossible to predict a return on investment from application of LCC to any given product, past experience indicates in the large majority of instances where it has been used, the 10% minimum has been met or exceeded.

## Initiative

Implement application of life cycle costing techniques in Federal procurement activities with the objective of acquiring those products which are most energy efficient and thus less costly to operate.

### Implementation

GSA, DOD and DOC will prepare and promulgate by January 1, 1976, guidelines and instructions to Federal agencies for an identification and review of energy consuming items which have the potential for life cycle cost application. Based upon the results obtained from this process, GSA, DOD and NBS will establish priorities for replacements by testing and placing them in rank order items and classes of equipment by their projected energy consumption and currently attainable energy efficiencies. GSA and OMB will prepare appropriate changes to accommodate life cycle cost techniques in existing Federal Procurement and similar regulations and procedures. DOD and GSA will develop life cycle costing manuals and guides which will be made available to all Federal procurement activities. CSC in conjunction with all Federal agencies shall develop appropriate training materials in life cycle cost techniques for individual agency use.

### Budget

The use of life cycle costing will increase the initial cost of a product, therefore routine budget requests will include incremental funding requirements determined after the identification of and application of LCC to those classes and types of products which lend themselves to the technique by Federal agencies. An initial increment of \$5 million should be provided in the FY 1978 Federal budget submission for testing and evaluation of products, and for training of personnel in the use of LCC. For subsequent fiscal years, incremental funds for testing and training in connection with life cycle purchasing will be included in the individual agency budget submission.

### Legislative and Other Considerations

This initiative can be accomplished within existing authorities and mechanisms.



## Education and Motivation

Significant fuel savings can be realized over time by developing specific energy conservation training for supervising and management personnel; general employees and personnel who directly operate Federal motor vehicles and other energy intensive equipment. Education and motivation efforts can be expected to affect Federal energy use and impact on the private sector as well. A pronounced supportive effect should also accrue to other conservation strategies.

This area is one in which we will have to take continuing action to develop specific training programs or add energy conservation to existing training efforts. The following are substantial actions which have been identified at this time.

### A. Energy Users Training

Many of the techniques of energy conservation are under-used because they are not widely known, or run counter to that one might expect. (For example, at 55 mph, it costs less gas to run a car's air conditioning than to overcome the wind drag caused by open windows.) Some of these techniques are widely applicable (turn off lights, thermostats, etc.), while others are more narrowly useful (running a boiler at peak efficiency).

#### Initiative

Develop and implement energy conservation training and motivational materials specific to energy-intensive processes used by the government; deliver these through existing Federal training programs.

#### Implementation

1. FEA, in conjunction with GSA, DOD, and CSC, will by December 31, 1975, identify target audiences by agency, expertise, and level of sophistication; broadly determine appropriate measures to reach these audiences; and develop instructional objectives.
2. Concurrently, agencies will survey existing training programs and determine the suitability and cost of adding or extending the energy conservation content of the curricula.



# FEDERAL ENERGY ADMINISTRATION

WASHINGTON, D.C. 20461

September 5, 1975

OFFICE OF THE ADMINISTRATOR

Honorable Rogers C. B. Morton  
Chairman, Energy Resources Council  
Executive Office Building  
Washington, DC 20500

Dear Mr. Chairman:

President Ford directed the Administrators of the Federal Energy Administration and General Services Administration to develop a multi-year program to improve energy efficiency in all Federal facilities and operations. We are pleased to submit the attached report to you as Chairman of the Energy Resources Council. The report contains major energy conservation initiatives that reflect the thoughts and ideas of twenty-two major departments and agencies.

For the past two years the Federal Government has demonstrated its energy conservation leadership role to the Nation by reducing consumption by more than 24 percent. The initiatives contained in this report will allow the Federal Government to achieve even greater energy efficiency without adversely affecting the missions of Federal departments and agencies. Further, each of these initiatives clearly represents significant opportunity to move the Nation toward the goal of energy independence, and provide continued visible Federal leadership in effective energy management.

We urge you to recommend this program to the Energy Resources Council and the President for implementation.

Sincerely,

Frank G. Zarb  
Administrator  
Federal Energy Administration

Arthur F. Sampson  
Administrator  
General Services Administration

3. Agencies will identify those employees at the supervisory or management level for whom energy conservation training would be most cost-beneficial, either because they choose energy-intensive equipment or supervise employees who operate it. Special materials will be developed for these groups by May 1, 1976.

4. By May 1, 1976, agencies will implement the initial set of training programs aimed at specific processes such as heating and air conditioning workers, machinery operators, etc.

5. By January 1, 1976, FEA will have installed a permanent mechanism for ensuring that all Federal employees are regularly exposed to everyday-use energy conservation material.

6. Agencies will continually evaluate these programs and measure results in terms of attitudinal changes and quantifiable energy savings.

#### Budget

Additional appropriations of \$50,000 will be required for system design phases, plus \$165,000 projected yearly for operating costs.

#### Legislative and Other Considerations

Actions can be accomplished within existing authority.

#### B. Employee Awareness

The Federal Government currently employs 2,862,468 civilian and 2,136,805 military personnel. Each year, approximately 601,000 new employees are hired by the Federal Government.

#### Initiative

A continuing employee energy conservation awareness program will be conducted for all civilian and military Federal employees, with special emphasis on the orientation program of new employees.

#### Implementation

1. FEA will design a package of material for new employees which will be included in the "orientation folder" for all new hires. Each agency will be responsible for assembling this material at their own cost, with the option of adding material of their own, and making sure it is given to each new employee during orientation. New employees will also be included in all ongoing awareness programs.

2. FEA will provide all Federal civilian employees with information such as mailer questionnaires from Project Conserve. \* They will be encouraged by their agency to participate in energy conservation programs for individuals and families. Agencies will provide appropriate printed material to each employee at least twice each year. This material will include such publications as "Tips for Energy Savers" and "Tips for the Motorist." Bumper stickers and light switch decals urging energy conservation will also be provided. Materials for pamphlets, bulletin boards, agency newsletters and publications, pay envelope stuffers and speeches shall be prepared by FEA and distributed to the agencies.

#### Budget

Preparation and first printing of the orientation material and new employee awareness materials will cost \$200,000. Additional printing costs and annual maintenance costs are estimated at \$200,000 per year.

#### Legislative and Other Considerations

Actions can be accomplished within existing authority.

#### C. Driver Education

Driving habits can result in as much as a 22% difference in fuel economy between an energy-conscious driver and one who is not, and there are practical driver training courses in energy-conserving techniques.

Federal employees drive more than 3 billion miles per year on official travel. Average fuel consumption is 9.5 miles per gallon for official travel, including trucks (break-down is 13.3 miles per gallon for cars; 8.5 for trucks). Over 300 million gallons of fuel are used by the Federal Government annually. It has been shown that an effective training course can improve fuel economy by an average of 15%.

Recognizing that there is a tendency to revert somewhat to old habits after training, and that it will not be possible to reach all drivers, a 5% improvement is a reasonable factor to use. This equates to 15 million gallons of fuel annually or \$7,500,000 at 50¢ per gallon. Level of investment needed to achieve this is estimated at \$.7 million to develop training methods applicable to the various categories of drivers and about \$.7 million to operate a vigorous program. This is a return of 5 to 1 in the development year and 10 to 1 subsequently.

\* a residential energy conservation program is currently being tested by FEA

Additional considerations favoring this initiative are: (1) energy efficient drivers have better safety records, (2) such driving habits reduce maintenance costs, and (3) Federal employees drive their own vehicles nearly 30 billion miles per year, and the benefit of energy-efficient driving habits will apply to many of those miles also.

#### Initiative

Establish driver training courses targeted specifically toward Federal employees whose duties include driving to achieve a 5% improvement in fuel economy.

#### Implementation

DOT, assisted by FEA, GSA and DOD will prepare driver training programs tailored to the requirements of agencies and various categories of operators.

GSA and DOD, with CSC, will develop and implement a training program to use the materials developed by DOT to train present and new employees, and to provide for periodic refresher sessions.

#### Budget

This initiative requires \$1.4 million in the first full year for development and implementation, and \$.7 million for annual operating expenses to achieve an estimated savings of 15 million gallons of gas annually at a cost savings of \$7.5 million.

#### Legislative and Other Considerations

Actions can be accomplished within existing authority.

## Solar Energy Government Buildings Project

The Project Independence Solar Energy Task Force Report projected the contribution by solar energy at 1.8 million barrels per day equivalency by 1985 under an accelerated scenario (i.e., contributing about 2-3% of total U.S. energy requirements). A more likely level given reasonable but not all-out Government support is on the order of one million barrels per day from all of solar energy by 1985. However, this level can be achieved only through policy actions and an accelerated commercialization program.

FEA in cooperation with other agencies is now developing the National Plan for Accelerated Commercialization of Solar Energy. The Plan will include options and requirements necessary to achieve on the order of one million barrels of oil per day equivalency from solar energy by 1985.

A significant part of the Plan covers the accelerated commercialization of solar heating (including water heaters) and cooling. A major near-term solar heating and cooling accelerated commercialization effort is the "Solar Energy Government Buildings Project." As the Implementation Plan for the Solar Energy Government Buildings Project is developed, it will continue to be coordinated with the Federal Energy Management Program Multi-Year Action Plan.

The Federal Government itself can provide an early market and thereby make a direct and significant contribution toward developing a solar heating and cooling industry capability. Currently, the Government owns or leases approximately 450,000 buildings containing 2.8 billion square feet of floor space, of which DOD owns over 80%. In addition, the United States Postal Service has 36,000 buildings. As a result, the Government market (new and existing buildings) alone is large enough to provide substantial stimulation to the industry.

### Initiative

FEA, in cooperation with other Federal agencies, is now developing the Solar Energy Government Buildings Implementation Plan.

### Implementation

The Solar Energy Government Buildings Project will require that:

- o All planning and designs for new Federal buildings or renovations would include an assessment of the feasibility of using solar heating and cooling;
- o Solar systems would be purchased for government buildings whenever they are competitive with conventional systems on a life-cycle cost basis (i.e., total costs of purchase and operation over the period of useful life, unless precluded by mission constraints).

In addition to the purchase of competitive systems, a certain quantity of systems which are not currently competitive on an economic basis may be purchased;

- o The quantity of solar heating and cooling systems purchased by the Federal Government should be substantial enough to initiate the use of automated production techniques and thus contribute to development of a solar industrial capability.

#### Budget

- o The cost of the assessments would be less than 0.1% of the building construction costs.
- o The total cost of the Solar Energy Government Buildings Project would be between \$150 million and \$250 million over a five-year period, which would be returned in fuel cost savings to the consumer (the Government).
- o Existing budget resources will be used to the extent practical. However, additional funds may be required, and if so they will be requested.

#### Legislative or Other Considerations

This project can probably be initiated within existing authorities; if additional legislative authority becomes desirable after further development, it will be sought from Congress.



## Reduce Federal Reliance on Natural Gas

Current estimates of natural gas production from proven reserves indicate that gas supplies will be substantially depleted by the late 1980's. Last year (1974), against a demand of 22.4 trillion cubic feet (TCF), supplies amounted to about 21.7 TCF. Formal estimates of supplies this year project a shortfall ranging from 15 to 30%, with informal estimates ranging even higher. All areas are expected to experience shortages, and in some areas the shortages are expected to be so severe as to result in curtailed service to private households in addition to interruptions to industrial and commercial services. There are no indications of any near-term improvement in gas supplies. Proven reserves are declining, and fewer wells drilled are productive. Coal gasification and other substitute supplies do not show any promise of being developed in time to offset projected near-term shortages.

The Federal Government uses significant quantities of natural gas. Fiscal Year 1974 consumption of natural gas was about 144 billion cubic feet. It is imperative that planning begin now for action to reduce reliance on natural gas over the next several years in order to avoid a crisis situation. Domestic supplies of oil are projected to last only about a decade beyond the supply of natural gas, and imported oil supplies are subject to disruption through embargo. Therefore, such fuel conversions should generally not be from natural gas to oil if coal is feasible.

Most of the natural gas used by the Government is used under boilers to provide space heating and hot water. The obvious course of action is to use other fuels in new boilers and convert existing boilers now using natural gas to alternative fuels where technically feasible.

### Initiative

Adopt a policy of reducing Federal reliance on natural gas as an energy source by 50% by 1985.

### Implementation

The General Services Administration (GSA) will issue a Federal Management Circular requiring that all new Federal facilities will use some fuel other than natural gas. Exceptions will require a request from the head of the department or agency and a determination by the Federal Energy Administration (FEA) that the exception is indeed justified.

DOD, GSA, and others having facilities which presently rely on natural gas, will develop programs to reduce present consumption (Fiscal Year 1975) of natural gas by 50% by 1985 (or earlier if required by legislation). Short-range actions should include conversion from



natural gas to oil in individual buildings and from natural gas to coal in central heating plants. In the longer term, new technology for use of coal in new and existing boilers (such as pulverized coal or coal/oil mixes) should be investigated.

For purposes of setting priorities and selecting facilities for conversion, natural gas should be assigned a "shadow" price equal to the current price of an equivalent amount of oil (e.g. \$1.90 MCF with oil costs of \$11 a barrel).

#### Budget

The costs of using alternative fuels in new and existing facilities cannot be fully quantified without details as to the exact situation. There are, however, significant costs involved, both in terms of initial expense and operating expenses. For example, a 50 Mega Btu per hour boiler using natural gas or oil would be a packaged boiler with an initial cost of \$35 per 1,000 Btu's per hour, or about \$1,400,000. A similar sized coal-fired boiler would be field erected on the site at an initial cost of \$100 per 1,000 Btu's per hour or about \$4,000,000. Conversion of an existing 50 Mega Btu per hour gas-fired boiler to coal-firing could be uneconomical. Unless the boiler were originally designed to burn coal, modification of the boiler to burn coal is not technically feasible. The cost for new coal-fired facilities includes fuel and ash handling facilities and electrostatic precipitators for particulate emission control to meet air quality criteria.

In addition to higher construction costs, operating costs for coal-fired facilities will be higher due to increased personnel for fuel and ash handling and increased maintenance costs for coal-fired boilers. Fuel costs, included with operating and maintenance in various (operating) costs, would increase from approximately \$.48 per million Btu for natural gas to \$.71 per million Btu for coal, or an increase of about 48%.

These costs will be identified in connection with specific construction or operating budgets requested in future fiscal years.

#### Legislative and Other Considerations

The initiative results in an indirect subsidy to private sector users of natural gas, and it may be desirable to debate the public policy aspects.

## Program Funding and Management

1. Funding is critical to the success of the Multi-Year Action Plan. Many of the initiatives will require funds and it is essential that these be visible during the budget review process. Funds authorized to carry out these activities must not be diverted to other uses. There is also a need for a mechanism to integrate activities and actions undertaken as a result of these initiatives with other Federal activities and national energy objectives.

Two funding methods were considered: (1) "fenced" funding analogous to EPA pollution abatement; and (2) single agency funding. The "fenced" funding concept provides reasonably effective management control, a high level of agency accountability, and there is a precedent for such an approach. However, it is difficult to define in some instances (e.g., buildings retrofit) exactly what should be included or excluded. Agency inputs are likely to be affected by a perception that funds used for energy conservation are obtained at the expense of mission funds, and the multiplicity of administrative and Congressional reviewers would result in very uneven treatment. Therefore, the single agency funding concept is recommended because it provides quite effective management control, avoids problems of definition, minimizes reporting, encourages agency requests, and streamlines the review process. The major penalty associated with this approach is that it requires about 30 more personnel in the agency responsible to manage it effectively than the "fenced" funding option. This is considered a reasonable price to pay in light of the benefits.

Accordingly, subject to approval by the Energy Resources Council (ERC), FEA will prepare a consolidated energy conservation budget request for the Executive Branch. The first request will be for about \$160 million supplemental Fiscal Year 1976 and Fiscal Year 1977 funds to "kick off" the Multi-Year Action Plan. Subsequent budgets will be prepared, beginning in time for the normal Fiscal Year 1978 submission, based on agencies' annual energy conservation plans and other inputs. For the ten year period, it is estimated the total budget requirement will be in excess of \$2 billion (see Appendix C). FEA will support and defend the energy conservation budget during the administrative and congressional reviews. After appropriation and allocation of funds, FEA will authorize and fund specific agency programs to maximize the return on investment or carry out other programs considered compelling in the national interest.

## 2. Management

- a. Executive Direction - The Energy Resources Council will provide oversight and policy direction in the execution of the approved action plan which will be annually reviewed and updated. Major initiatives will be approved by the President; the ERC will approve other initiatives.
- b. Agency Resources and Responsibility - Each Federal agency will establish a single focal point for all matters related to the Federal Energy Management Program who will report directly to the Under Secretary or equivalent level. These entities will be responsible for the development and implementation of those initiatives with which the organization is involved, for the agency's efforts to meet the conservation goal established by the President, and for the continued management of energy resources under its control. Systems for recording and reporting energy use will be established and internally audited to ensure accuracy and reliability of data.
- c. Program Management and Monitoring - The General Services Administration, having functional responsibility and authorities for general management changes through Federal Management Circulars and Federal Property Management Regulations, will implement the actions as specified in the approved initiatives. GSA will provide technical assistance and advice upon request to other involved agencies in meeting their responsibilities in connection with these initiatives. The Federal Energy Administration, as agent of the ERC, will provide policy, management, evaluation and monitoring of the program.

## 3. Note on Implementation Dates

The target dates for various aspects of the implementation actions are predicated on approval of the plan by September 15, 1975. If approval is delayed past this date, an equivalent extension of the action target dates would have to be made.

## The Multi-Year Program Plan

### Summary of Agency Concerns

The participating departments and agencies, in essence, endorse the Multi-Year Program Plan as presented in the draft. It is recognized, generally, as a workable concept which is directed toward a sound energy conserving management philosophy. There are minimal reservations about some of the individual initiatives but there are no major objectives to the overall plan, as such.

Major points made about each of the proposed initiatives follow:

Zero Growth:

Commendable. Supports adjusting for program changes (ERDA)

May not remain realistic after several years (DOC)

Ambitious (Postal)

Funding:

Needs order from President (DOA)  
Needs directive from Congress (DOI)  
Needs guidance from OMB (DOT)

Costs cannot be borne internally  
(HEW) (DOD) (ERDA)  
(Postal) (DJ) (VA)

Same: FEA should ask for all agencies' E/C money (Treasury)

Program Management and Monitoring:

Only one agency in charge (DOI)

Ship-Aircraft Operations at FY 75 Levels:

Extend to all capital equipment (DOD) (Commerce)

## FEDERAL ENERGY MANAGEMENT PROGRAM MULTI-YEAR ACTION PLAN

### Executive Summary

At the crux of our current energy problem is the continued reliance on foreign oil sources and rising energy costs with the consequent vulnerability to supply disruptions and adverse impact on our balance of payments which poses long term threats to our national economic viability.

The underlying condition is simply our national inability to produce enough petroleum to meet demand. Imports of petroleum are now 38% of total use; this is projected to increase to 53% in 1985. Balance of payments problems are aggravated by these imports. The cost of imported oil has risen from \$3 billion in 1970 to \$24 billion in 1974, and is expected to rise to \$32 billion by 1977. In addition, the Nation faces potentially severe shortages of natural gas in the coming years. Costs of all energy have risen dramatically in the last two years and this can be expected to continue in the future. It is obvious that our society can no longer afford to use energy at ever increasing rates. New energy sources must be developed. We must make every effort to eliminate waste and obtain the most output or benefit from those energy resources used. We must also decide to what extent we are willing to invest in using alternative energy sources such as coal or solar.

The Federal Government, perhaps more than any other sector of the economy, must develop and implement an aggressive conservation effort to limit its growth of energy demand. It is a large energy user, it has influence in many sectors of the economy, there is an obligation to responsibly implement policies being advocated for adoption by others, and the range of activities presents a valuable opportunity to show what can be done. Such actions as limiting the number of hours ships and planes are operated, adjusting thermostats, reducing levels of illumination, and restricting travel have resulted in savings of about 24% for today's operations compared to Fiscal Year 1973 rates of use. The accumulated savings over the past two years have averaged 250,000 barrels of oil equivalent per day and have been achieved through diligence and strong Federal action. Further saving are achievable, but only through increasing efficiency which, in most cases, will require substantial investments.

The FEA and GSA have been charged by the President to develop a program to increase the efficiency of Federal facilities and operations. Participation of 22 major departments and agencies was obtained in

New buildings twice  
as efficient:

OK if in Federal buildings only -  
No guaranteed housing (HUD) to be included

Btu's/sq. ft. to be major factor in  
leasing contract (DOD)

Don't allow use of gas (NASA)

60,000 Btu's in 1980 is goal, not a  
standard (DOT)

Twice as efficient is unrealistic (OMB)

Retrofit buildings  
cut energy use by  
25%:

Best in package (DOC)

\$2 million budget inadequate - where  
money from? (NASA) (ERDA)

Too short a time for survey (DOA) (HEW)

Need test techniques first (Treasury)

Goal unrealistic (OMB)

Load management systems:

Combine this with retrofit (DOA) (HEW).

Will cost a great deal (NASA)

Savings may be overestimated (ERDA)

Sedan-truck fuel  
efficiency up 50%  
- 1985:

Goal may be too steep for trucks (DOA) -  
(TVA) Cars - (DOC)

Defer this one (OMB)

Van Pools:

Remove from major initiatives (DOD)(OMB)(GSA)

Opposed (DOA) (DOI) (DOT)

Full Cost Parking:

Equity improbable (DOA) (DOC)

Defer to Congress (ERDA)

Ineffective (Civil Service) (DJ)

Opposed (CSC) (DOT) (Treasury)

Concur (OMB)

Defer for further study (GSA)

Education/Motivation  
for Federal employees:

Should not be lead agency (CSC)

Selective training only, not everyone  
(DOC) (DOI) (VA)

Benefits oversold (OMB)

Life Cycle Costing  
major appliances:

Extend to retrofit & new buildings (ERDA):  
- to heavy vehicles (DOI)

A good proposal (DOC)  
Concept OK (OMB)

EXECUTIVE ORDER NO. \_\_\_\_\_

FEDERAL ENERGY MANAGEMENT

By the virtue of the authority vested in me as President of the United States of America by the Constitution and Laws of the United States, particularly Section \_\_\_\_\_ of the Energy Reorganization Act of 1974, it is hereby ordered as follows:

Section 1. Policy

To assure continuing leadership by the Federal Government in the nationwide effort to conserve energy and achieve energy independence, energy conservation is established as a priority objective for all operations within the Executive Branch. The Federal Energy Management Program (FEMP) is hereby established as the central framework for coordination of the planning, execution, and monitoring of energy conservation actions undertaken by executive agencies in meeting this objective. The purpose of this order is to establish the authority and responsibilities of the agencies in supporting the Federal Energy Management Program.

Section 2. Definitions

- a. The term "agencies" means the departments, establishments and agencies of the Executive Branch of the Federal Government.
- b. The term "FEA" means Federal Energy Administration.
- c. The term "Administrator" means the Administrator of FEA.
- d. The term "ERC" means Energy Resources Council.
- e. The term "OMB" means Office of Management and Budget.
- f. The term "Federal Energy Management Program" refers to the policies and activities of the Executive Branch undertaken to manage all phases of energy use.
- g. The term "Multi-Year Action Plan" refers to the overall plan of the Executive Branch to achieve greater energy efficiencies in its facilities and operations. The plan provides for funding and management mechanisms, goals, and defined initiatives.
- h. The term "annual energy conservation plan" refers to an agency's plan defining both its responses to responsibilities assigned by the Multi-Year Action Plan and other activities to be undertaken to increase its energy efficiency.



### Section 3. Responsibilities

- a. The Energy Resources Council (ERC) will provide policy guidance and executive direction for the energy conservation efforts of the Executive Branch through the Federal Energy Management Program, to include:
  1. Review and approval of the Multi-Year Action Plan, including, among other aspects, immediate and long-term goals; and
  2. When in the judgment of the ERC a proposed energy conservation initiative submitted for inclusion in the Multi-Year Action Plan is of major significance because of its potential for reducing energy use in the Federal sector, because of significant policy or budgeting considerations, or because of its impact on a preponderance of agencies, the proposal will be submitted together with the ERC's recommendations to the President for decision.
- b. Agencies - The heads of agencies of the Executive Branch shall plan and implement actions to improve energy efficiency within their respective agencies consistent with the goals and guidelines promulgated under the Federal Energy Management Program to include:
  1. Each agency shall prepare an annual energy conservation plan. This plan will incorporate elements required to support the approved initiatives and directives contained in the Multi-Year Action Plan and such additional activities as are deemed desirable by the agency. This plan, together with estimated budget requirements and such other information as may be requested will be submitted to FEA.
  2. Agencies will ensure that data and reporting systems for energy use and savings are sufficiently detailed to permit audit examination. Audits will be conducted as necessary to assure information is accurate and realistically portrays the agency's situation.
  3. Each agency will make necessary manpower and resource commitments to the Federal Energy Management Program. An individual will be appointed responsible for the agency's energy conservation activities who will report directly to the Undersecretary or equivalent management level.
- c. Federal Energy Administration (FEA) - The Administrator will provide staff support to the ERC and will act as Program Manager (Agent) in behalf of ERC in implementing the Federal Energy Management Program. In this capacity, and with assistance from agencies, FEA will undertake a number of activities including:

1. Develop and update the Multi-Year Action Plan to include strategies, guidelines and standards for energy conservation action applying to all agencies of the Executive Branch.
2. Obtain approval from ERC on the Multi-Year Action Plan and promulgate the plan to the agencies.
3. Review agency annual plans for energy conservation actions and the associated budgets and submit a consolidated summary to ERC for approval.
4. Following ERC action, develop an energy conservation budget for the Executive Branch. FEA will have lead responsibility for supporting and defending this budget through the administrative and Congressional budget review process. Subject to the limitation of funds authorized, FEA will allocate funds to agencies consistent with the approved plan and relative energy conservation potential.

## Key Elements of MYAP Legislative Proposal

General legislative endorsement of concept and mechanism

Authorize funding to FEA for reallocation to Federal agencies for approved energy conservation initiatives

Supplemental funding for FY 1976 and FY 1977

Provide statutory authority for government implementation of van pooling/full cost parking

Reporting requirements

OMB CIRCULAR NO. A-

TO THE HEADS OF EXECUTIVE DEPARTMENTS AND ESTABLISHMENTS

SUBJECT: Responsibilities in Connection with the Federal Energy  
Management Program

Purpose: This circular establishes responsibilities and procedures to be followed by agencies in carrying out Section 3 of Executive Order No. \_\_\_\_\_ pertaining to energy conservation within the Executive Branch of the Federal Government.

Definitions:

Federal Energy Management Program - The term "Federal Energy Management Program" refers to the policies and activities of the Executive Branch undertaken to manage all phases of energy use.

Initiative - The term "initiative" refers to a specific project directed toward energy conservation or improved efficiency of energy utilization in a separable element of an agency's facilities or operations.

Agency Energy Conservation Action Plan - The term "annual energy conservation plan" refers to an agency's plan defining both its responses to responsibilities assigned by the Multi-Year Action Plan and other activities to be undertaken to increase its energy efficiency.

Administrator - The term "Administrator" refers to the Administrator of the Federal Energy Administration.

Director - The term "Director" means the Director of the Office of Management and Budget.

Agency - The term "Agency" means agencies, departments, installations or other instrumentalities of the Executive Branch of the Federal Government.

ECR - The term means Energy Resources Council

OMB - The term means Office of Management and Budget

FEA - The term means Federal Energy Administration

Responsibilities:

a. Federal Energy Administration: The Administrator will be responsible for:

1. Development and maintenance of the Multi-Year Action Plan, including:

- Definition of energy conservation measures and quantitative goals.
- Budgeting estimates, both consolidated and by agency.

2. Submittal of the Multi-Year Action Plan to OMB and ERC for review and approval.

b. Energy Resources Council - The ERC will provide executive direction, including review and approval, of the Multi-Year Action Plan.

c. Agencies - The head of each agency shall be responsible for the following:

1. Execution of specific agency tasks defined in the Multi-Year Action Plan as approved in accordance with this Circular.
2. Provide assistance to the Administrator, in the capacity of agent of the ERC, in updating the Multi-Year Action Plan. This will include participation in identification of initiatives, provision of comments on applicability of initiatives to specific agency operations.
3. Submit reports to the Administrator in accordance with guidelines established by the Administrator as specified in this Circular.
4. In compliance with guidelines established by the Administrator, establish monitoring and auditing systems necessary to determine energy consumption, utilization and conservation within the agency's area of responsibility as specified in the Multi-Year Action Plan.

MULTI-YEAR ACTION PLAN  
Supplementary Budget Estimate  
FY 76 - 77

A. <u>Initiatives</u>	<u>FY 76</u>	<u>FY 77</u>
1. Ship & Aircraft	*	*
2. New Buildings	-	-
3. Buildings Retrofit	2.4 *	96.3*
4. Buildings Load Mgt.	.25	.25
5. Vehicle Efficiency	-	-
6. Van Pools/Full Cost Parking	25.6	28.1
7. Education & Motivation	1.65	1.07
8. Life Cycle Costing	.5	.5
9. Solar Devices & Equipment	-	?
10. Natural Gas	-	?
	<u>30.4</u>	<u>126.22</u>
 B. Management	 .135 (5my)	 .625 (25my)
	<u>30.535</u>	<u>126.845</u>

157.380

\*Amounts already in DOD budget are excluded.



developing the program. A draft of the plan excluding the solar and natural gas initiatives was made available to them for comment. Except for a few concerns (noted in Appendix A), the responses generally indicate the plan is acceptable, useful, and has considerable potential for achieving energy savings.

In brief, the program can be outlined as an action plan which embodies:

- "Zero Energy Growth" as a long-term goal;
- Ten major initiatives;
- Other initiatives and studies;
- Continuation and strengthening of current energy conservation activities; and an
- Institutional framework for program implementation.

Cost effectiveness was one criterion for initiative development and, with the possible exception of the solar effort and the natural gas initiative, all are economically justifiable (a 10% return on investment was generally the minimum for any initiative). The implementation of the major initiatives has a collective impact of more than 150,000 barrels per day equivalent, offsetting anticipated demand growth. A summary of costs and benefits is contained in Appendix D. The major initiatives and their potential annual savings in barrels of oil equivalent are:

	<u>Savings (000 bbl/Yr)</u>
I. Maintain ship and aircraft consumption at present level	25,000
II. Make new buildings twice as efficient as comparable recent construction	3,600
III. Retrofit existing buildings to cut energy use 25%	25,000
IV. Install load management system in appropriate buildings	1,000
V. Set minimum fuel economy targets for both sedans and truck to increase fleet efficiency by 50% by 1985	2,000
VI. Implement vanpools and full cost parking	*
VII. Implement an education and motivation program for employees	300



FEDERAL ENERGY ADMINISTRATION  
MULTI-YEAR ACTION PLAN  
ESTIMATED BUDGET REQUIREMENTS  
(\$000)

INITIATIVE	1978	1979	1980	1981	1982	1983	1984	1985	TOTAL
I Ship and Aircraft		To Be Determined							
II New Building Standards <sup>1</sup>				13.4	13.4	13.4	13.4	13.4	67
III Building Retrofit	153.0	514.5	601.4						1,628.9
IV Building Load Management	1.93	1.93	1.93	1.93	1.93				9.65
V Vehicle Efficiency									
VI-A Vanpools	8.5	8.5	8.5						25.5
VI-B Full Cost Parking									
VII Education and Motivation	1.07	1.07	1.07	1.07	1.07	1.07	1.07	1.07	8.56
VIII Life Cycle Costing	.50	.50	.50						1.5
IX Solar		To Be Determined							
X Natural Gas		To Be Determined							
TOTAL	525	526.5	613.4	614	16.4	14.5	14.5	14.5	1741.2

<sup>1</sup> Estimated incremental costs of construction which are more than offset by savings in operating costs. Shown only for purposes of illustration as the amounts will be budgeted in conjunction with specific building projects.

- VIII. Apply life-cycle costing techniques to major purchases such as appliances 200
- IX. Implement a Solar Energy Government Building Project NA\*\*
- X. Reduce Federal reliance on natural gas NA\*\*

\* While there are anticipated savings associated with this initiative in the order of 500,000 barrels of oil equivalent per year, these savings accrue to the private sector and not to the government.

\*\*Benefit is reduced reliance on petroleum.

Other initiatives, subsequently developed initiatives, and strengthening and intensifying activities already underway will provide additional savings, not now quantifiable, which together with the major initiatives could result in an absolute decrease in 1985 from energy consumption levels in Fiscal Year 1975. These are presently being reviewed and will be submitted to the ERC upon completion.

The Multi-Year Action Plan is a means of starting identified initiatives which in general will result in specific projects proposed and reviewed through the budget process, a mechanism for developing additional initiatives, and a management tool for integrating the energy conservation efforts of the Federal Government.

RECOMMENDED ERC ACTIONS/DECISIONS

1. Recommend adoption of Multi-Year Action Plan to the President, including necessary Supplemental Fund Request.
2. Recommend adoption of Major Initiatives to the President.
3. Endorse Legislative Proposal.
4. Endorse Management and Funding Concepts.
5. Initiate Review Action on Executive Order, OMB Circulars.
6. Suggest Time and Mode of Public Announcement to Maximize Benefit.

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A. Introduction

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Federal Energy Management Program Goal

Initiatives

1. Use simulators and other techniques to maintain ship and aircraft fuel consumption at FY 1975 levels.
2. Construct new buildings twice as energy efficient as comparable recent construction.
3. Retrofit existing buildings to cut energy use by one-quarter.
4. Install load management systems in appropriate buildings.
5. Set fuel economy targets of 50% improvement for both sedans and trucks.
6. Implement vanpools initially for 60,000 Government workers and full cost parking.
7. Expand education and motivation program for Federal employees.
8. Apply life-cycle costing techniques to energy-intensive purchases such as major appliances.
9. Implement an integrated program for procurement and installation of solar devices and equipment.