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 12/23/78

UNITED STATES GENERAL ACCOUNTING OFFICE  
 REGIONAL OFFICE  
 ROOM 1903 JOHN F. KENNEDY FEDERAL BUILDING  
 GOVERNMENT CENTER  
 BOSTON, MASSACHUSETTS 02203

096878

Lieutenant General Wilbur L. Creech, USAF  
 Commander, Electronic Systems Division  
 Laurence G. Hanscom Air Force Base  
 Bedford, Massachusetts 01730



Dear General Creech:

We have completed a review of energy use at Hanscom Air Force Base (AFB). The purpose of this review was to find out how effectively Government field installations were implementing the energy reduction program. The review included the:

- results of the energy conservation program,
- methods used to gather and report data on energy use,
- management of the energy conservation program,
- measures taken to reduce energy use in buildings,
- measures taken to reduce energy use by vehicles, and
- impact of energy conservation on mission and training operations.

RESULTS OF THE ENERGY  
CONSERVATION PROGRAM

The Electronic Systems Division (ESD) of the Air Force Systems Command (AFSC) is responsible for the energy used in operating Hanscom AFB. Electricity, natural gas and various types of heating oil are the main types of energy used by Hanscom AFB. Electricity is used for lighting and to power equipment. Natural and propane gas and various types of oil are used for heating or cooling. Vehicles are powered by gasoline and diesel fuel.

In June 1973, the President directed all Federal agencies to use 7 percent less energy in fiscal year 1974 than in fiscal year 1973. In October 1974, the President directed the agencies to use 15 percent less energy in fiscal year 1975 than in fiscal year 1973.

Our review showed that during fiscal year 1974 and the first three quarters of fiscal year 1975, Hanscom AFB used less energy than in fiscal year 1973.

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<u>Type of Energy</u>	<u>Fiscal Year</u>		<u>Reduction</u>	
	<u>1973</u>	<u>1974</u>	<u>Amount</u>	<u>Percent</u>
Electricity (000 of kilowatt hours)	54,204	48,103	6,101	11
Natural Gas (000 of cubic feet)	436,976	421,622	15,354	4
Propane Gas (000 of gallons)	32	30	2	7
Number 6 Fuel (000 of gallons)	3,407	2,651	756	22
Number 2 Fuel (000 of gallons)	325	262	63	19
Gasoline (000 of gallons)	251	191	59	24
Diesel Fuel (000 of gallons)	19	18	1	5

<u>Type of Energy</u>	<u>1973</u>	<u>1974</u>	<u>Reduction</u>	
	<u>(3 qtrs)</u>	<u>(3 qtrs)</u>	<u>Amount</u>	<u>Percent</u>
Electricity (000 of kilowatt hours)	40,208	35,293	4,915	12
Natural Gas (000 of cubic feet)	278,155	248,745	29,410	11
Propane Gas (000 of gallons)	24	21	3	13
Number 6 Fuel (000 of gallons)	3,102	2,795	307	10
Number 2 Fuel (000 of gallons)	269	216	52	19
Gasoline (000 of gallons)	193	124	69	36
Diesel Fuel (000 of gallons)	16	7	9	57

METHODS USED TO GATHER AND  
REPORT ENERGY USE DATA

The system used by Hanscom AFB to gather and report data on energy use needs to be improved. As required by the Defense Energy Information System (DEIS), Hanscom AFB submits two reports to AFSC.

--The DEIS I report submitted weekly shows the fuel oil, automotive gasoline and diesel fuel used during the week,

--The DEIS II report submitted monthly, shows the fuel oil, electricity, natural gas and propane gas used during the month.

The data for these reports is obtained from:

--the Base Civil Engineers, who provide information on the amount of electricity, natural and propane gas used,

--the Base Logistics Division which provides information on heating oils, diesel fuel and gasoline used.

Our review showed that the energy use statistics submitted for natural gas, propane gas, automotive gasoline and diesel fuel agreed with the periodic bills for these energy forms at Hanscom AFB. The energy use statistics submitted under DEIS II for electricity, however, did not agree with the periodic bills, and for Number 2 and 6 fuel oil, did not agree with the delivery receipts.

Hanscom AFB gathers data on the electricity used by the base trailer parks but does not report it in the DEIS II monthly reports. In fiscal year 1973 the trailer park used 407,000 kilowatt hours (KWH) of electricity and in fiscal year 1974, 284,000 KWH, a reduction of 123,000 or 30 percent.

Hanscom AFB also did not include under the DEIS I and II report 20,800 gallons of number 6 fuel oil used in the base steam plant during the first quarter of 1973, and 27,000 gallons of number 6 fuel oil used in the first quarter of fiscal year 1974. We were advised by a base civil engineer that this was overlooked because the power plant has historically operated on natural gas during the first quarter of each fiscal year.

Under the DEIS I and II systems, Hanscom AFB reported the consumption of 87,100 gallons more of number 2 fuel oil than it had received during fiscal year 1973. We were advised by a base civil engineer that this was because the wrong source document was used to gather the usage data. About 2,600 gallons were not included in the fiscal year 1974 DEIS reports, and, through the third quarter of fiscal year 1975, about 14,500 more gallons were reported in the DEIS systems which were not received by Hanscom AFB. We were advised that this occurred because Hanscom AFB now includes number 2 fuel in tank storage and off-base deliveries in their DEIS reports, which they did not do in fiscal year 1973.

We believe that these errors affect the energy savings reported by Hanscom AFB.

#### MANAGEMENT OF THE CONSERVATION PROGRAM

Air Force Manual (AFM) 91-12 dated August 19, 1971, outlined a Base utilities management and conservation program. Supplementing the Manual were Air Force and AFSC regulations and directives establishing conservation measures and energy reduction goals directed by the President. Hanscom AFB program management has consisted of implementing Air Force regulations, directives and energy reduction goals in accordance with instructions from headquarters.

The Deputy Base Commander is the Conservation Officer and periodically holds conservation program meetings with tenant organization officials. Two officials were appointed on a part-time basis to provide the Conservation Officer with administrative and technical assistance. In June 1974, a survey of base heating systems was completed and became the basis of an on-going energy conservation maintenance program. In April 1974, the base issued their energy curtailment program to provide for future contingencies.

Some specific actions taken by Hanscom AFB to make employees aware of the need for energy conservation have included:

- issuing directives to building custodians concerning duties and responsibilities to reduce energy,
- issuing utilities conservation letters to all base personnel emphasizing the need for their efforts to reduce energy,
- publicizing and placing posters, announcements and bulletins concerning energy conservation in base publications and buildings,
- encouraging employees to use car pools.

MEASURES TAKEN TO REDUCE  
ENERGY USED IN BUILDINGS

Electricity, natural gas and heating fuels are the main types of energy used in Hanscom AFB buildings. As discussed earlier, Hanscom AFB has reduced its use of these energy forms. Among the measures taken to do this were:

- setting thermostats at 68 degrees during the heating season and at 78 degrees during the cooling season,
- controlling use of existing and procurement of new air cooling equipment,
- intensifying periodic preventive maintenance inspections of all heating equipment and electrical systems to correct problem areas in a timely manner,
- repairing steam leaks in central steam line,
- installing automatic heating setback controls,

- closing unoccupied facilities,
- reducing lighting requirements to energy conservation levels,
- revising equipment operation procedures.

MEASURES TAKEN TO REDUCE  
ENERGY USED BY VEHICLES

Measures taken to reduce vehicle fuel consumption included:

- combining vehicle trips where possible and taking the shortest routes where possible,
- requiring drivers to turn off ignitions when vehicle is not in use,
- limiting speeds of vehicles to 50 miles per hour off base,
- reducing vehicle inventory to a minimum,
- promoting more aggressive maintenance procedures,
- informing personnel of the need to conserve fuel, and
- using equipment suitable to the task to be performed.

Employees have been encouraged to use car pools through advertisements in the base bulletin which publishes information on car pool schedules and destinations.

The Federal Energy Administration (FEA) and the General Service Administration (GSA) have directed an overall 15 percent reduction in motor vehicle mileage from that driven in fiscal year 1973. The reduction applies to owned vehicles, GSA motor pool vehicles, commercially leased vehicles, and privately owned vehicles authorized for official travel. The requirements for mileage reductions are set forth in Federal Management Circular 74-1 and FPMR Temporary Regulation G-17.

Hanscom AFB has motor pool vehicles and reimburses for privately owned automobiles (POA) authorized for official travel. A schedule below shows the mileage in thousands of miles during fiscal year 1973 and 1974 and the first three quarters of 1975 for agency motor pool vehicles.

<u>Fiscal Year</u>		<u>(Increase)</u>	
<u>1973</u>	<u>1974</u>	<u>Amount</u>	<u>Percent</u>
1,371	1,496	(125)	(9)
 (3 Qtrs.) (3 Qtrs.)		 <u>(Increase)</u>	
<u>1973</u>	<u>1975</u>	<u>Amount</u>	<u>Percent</u>
1,027	1,172	(145)	(14)

We were advised by a transportation official that figures do not come from the vehicle odometers but from computer projections of mileage and that the computer program is still being corrected.

Based on these figures, Hanscom AFB did not achieve the 15 percent mileage reduction. Mileage increased 9 percent in fiscal year 1974 and 14 percent through three quarters of fiscal year 1975. Despite the increased mileage, the use of gasoline has decreased.

Information on the mileage of POA vehicles at Hanscom AFB from fiscal year 1973 through the third quarter of fiscal year 1975 was not readily available. We believe that this information should be compiled.

We also believe that Hanscom AFB should strive to achieve the 15 percent reduction in mileage of both motor pool vehicles and POA's used for official travel.

IMPACT OF ENERGY CONSERVATION  
ON HANSCOM'S MISSION

Hanscom AFB officials told us that their energy conservation measures have had no measurable impact upon the base's ability to perform its mission.

CONCLUSIONS AND RECOMMENDATIONS

Hanscom AFB has reduced energy use by implementing the Air Force's energy reduction program. Hanscom AFB generally exceeded the Presidential energy reduction goal for fiscal year 1974 and its operations

were not adversely affected. For the first three quarters of 1975, the 15 percent energy use reduction has not been met and base officials doubted that it would be met by June 30, 1975. Hanscom AFB operations were not adversely affected by the reductions which were achieved.

Hanscom AFB energy use information reporting system does need improvement. In order to insure comparable and statistical reliability, Hanscom AFB should determine what facilities should be included in its energy consumption report and insure that adjustments made in one year's data will be included in the baseline year data.

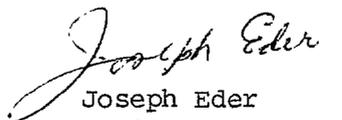
Hanscom AFB does not have data available for the reductions made in the use of personal and rental vehicles. The dollar expenditures for travel have been reduced, but no determination can be made if reduction occurred for per diem, use of vehicles or travel by commercial modes.

We recommend that Hanscom AFB:

- correct utility use statistics to reflect all on base use of energy and develop comparable data for accurately determining the percentage of energy use reductions,
- make changes to the energy use reported in the baseline year to reflect adjustments made to energy use reported in subsequent fiscal years,
- include in the energy reporting program, measures undertaken to reduce business travel and vehicle use and report the energy reductions achieved,
- consider policies for assigning parking spaces to encourage carpooling, and
- initiate a conservation award program,
- develop a plan and a monitoring system to achieve a 15 percent reduction in vehicle mileage.

I would like to express my appreciation for the cooperation given my staff during the review. We would appreciate receiving your comments on these matters within 30 days.

Sincerely yours,

  
Joseph Eder  
Regional Manager