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UNITED STATES GENERAL ACCOUNTING OFFICE

WASHINGTON, D.C. 20548

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LOGISTICS AND COMMUNICATIONS
DIVISION

B-132396

MAY 28 1974

The Honorable Arthur F. Sampson
Administrator, General Services Administration



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Dear Mr. Sampson:

During fiscal year 1973, GAO reviewed the energy efficiency ratios of window air-conditioners available for purchase by Federal agencies under fiscal year 1973 GSA contracts.

In December 1972 and June 1973, we discussed with representatives of the Federal Supply Service (FSS) the potential benefits of raising the minimum energy efficiency ratings in Federal specifications for window air-conditioners.

On September 24, 1973, FSS issued invitations for bids in which it increased the minimum efficiency standards by 10 to 40 percent over those for the 1973 contracts. We believe the increased fiscal year 1974 standards will result in large savings to the Government over the units' useful life. The principles involved in evaluating various performance standards of air-conditioners may apply to other products. With this in mind, we have summarized below our review work leading to the changed FSS standards.

Window air-conditioning models available from manufacturers must meet GSA-specified minimum energy efficiency ratios. These ratios measure the ability of the air-conditioners to convert electric power to cooling capacity. Models using the least energy to attain given temperature reductions are rated highest in efficiency.

Several window air-conditioners chosen for GSA's 1973 FSS contracts on the basis of low bids had efficiency ratings lower than higher priced models meeting the same specifications. Because Federal agencies purchase a larger number of window air-conditioners under GSA contracts--about 18,000 in 1972-- and because the only models available under the contracts are the lowest price models, we wanted to know whether increasing the GSA-specified minimum efficiency ratings would be warranted in view of the energy shortage and rising energy costs.

PURCHASE PRICE VERSUS OPERATING COST

Usually manufacturers have not submitted bids on their more efficient models because the components that increase efficiency

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(larger cooling and condenser coils and more copper and iron in the motors) also increase costs. Consequently, the models accepted for 1973 FSS contracts on the basis of meeting specifications at the lowest bid price require more electricity than do the more efficient, but more expensive, models having the same cooling capacities.

The electricity used by window air-conditioners having the same cooling capacities can vary as much as 50 percent, and the cost of the additional electricity that low-efficiency models require over their operating life can exceed the savings in the purchase prices. This comparison is illustrated by the characteristics of two models that met GSA specifications in 1973.

	<u>Bid price</u>	<u>Btu per hour</u>	<u>Watts</u>	<u>Energy efficiency ratio (note a)</u>
Less efficient model	\$180.86	24,000/23,500	3,800	6.3/6.2
More efficient model	218.00	23,500/23,000	3,100	7.6/7.4

a/ Btu per hour of output divided by watts of power used.

Assuming an average use of 1,000 hours a year over a 12-year life, the less efficient model would use 45,600 kilowatt-hours of electricity compared with 37,200 kilowatt-hours used by the more efficient model. At \$0.015 a kilowatt hour, ^{1/} the additional 8,400 kilowatt-hours would increase the operating cost of the less efficient model by \$126 compared with savings of \$37.14 in the purchase price. Government agencies bought about 2,660 units a year of this model over the past few years. Had the agencies bought the more efficient models at the additional cost of \$99,000 (2,660 units X \$37.14), the electricity cost over the life of the units could be \$335,000 less, or a net savings of \$236,000 (\$335,000-\$99,000) when both the purchase price and the electricity costs over the 12-year life of the units are considered. In terms of present value, the savings in electricity costs would be \$222,000, resulting in a net savings of \$123,000 (\$222,000-\$99,000).

1/ We believe this is a conservative estimate since a 1972 Federal Power Commission publication, "Typical Electric Bills," showed that, nationwide, the charge for commercial and industrial service ranged from \$0.0207 to \$0.0405 a kilowatt-hour.

We calculated the present value of the savings in electricity costs by discounting the annual electricity savings that will be realized over the 12-year life of the units by 7 percent--the rate which is comparable to the current market yield on long-term Government obligations. In that computation we did not consider the differences in repair costs, which might reasonably be expected to be lower for the more efficient models, or the probable increase in electricity rates over the units' life, which would increase the cost advantage of the more costly models.

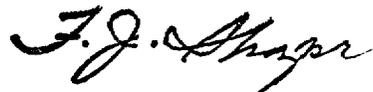
The responses to the revised FSS standards appear to have been very satisfactory. The efficiency ratings for models available under the 1974 contract are 3 to 28 percent higher than for those available under the 1973 contract. (The six sizes listed in the 1973-74 Federal supply schedules for use in the United States are compared in the enclosure.) The prices of the 1974 contract models range from about 4 percent less to about 25 percent more than the prices of the 1973 contract models.

The commendable action FSS took should conserve energy and reduce Government costs. We recommend that the Commissioner, FSS, consider whether minimum standards should be raised for other major energy-using products that are being purchased by and used within the Federal Government.

We want to direct your attention to the fact that this report contains a recommendation to you. As you know, section 236 of the Legislative Reorganization Act of 1970 requires the head of a Federal agency to submit a written statement on actions he has taken on our recommendations to the House and Senate Committees on Government Operations not later than 60 days after the date of the report and the House and Senate Committees on Appropriations with the agency's first request for appropriations made more than 60 days after the date of the report.

We are sending copies of this report today to the Chairman of the House and Senate Committees on Appropriations, Public Works, and Government Operations; the Director, Office of Management and Budget; the Administrator, Federal Energy Administration; and the Director, National Bureau of Standards.

Sincerely yours,



Director

Enclosure

COMPARISON OF ENERGY EFFICIENCY RATIOS AND COSTS

Size and Btu ratings	Energy efficiency ratios						Average cost		
	Specification			Models listed in Federal supply schedule			1973	1974	Percent increase or decrease (-)
	Minimum 1973	1974	Percent increase	1973	1974	Percent increase			
115 volt 8,000 to 10,499	5.0	7.0	40	5.8	7.4	28	\$110	\$138	25
230/208 volt 8,000 to 10,499	5.0	6.5	30	6.4	6.6	3	126	154	22
230/208 volt (note a) 10,500 to 13,999	5.2	6.2	20	5.8 6.0	7.2	24 20	133 138	132	- -4
230/208 volt (note a) 14,000 to 17,999	5.4	6.5	20	5.6 6.0	6.5	16 8	146 151	147	- -3
230/208 volt (note b) 18,000 to 22,999	5.6	6.7	20	6.4 6.6	6.7 7.0	5 6	166 170	181 176	9 3
230/208 volt (note b) 23,000 to --	6.0	6.6	10	6.3 6.7	6.7	6 -	187 195	195	4 -

^aTwo models offered on the Federal supply schedule during 1973, one offered during 1974.

^bTwo models offered on the Federal supply schedule during both 1973 and 1974.