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VA ENERGY CONSERVATION PROGRAM

A REPORT

PREPARED BY THE

VETERANS' ADMINISTRATION

SUBMITTED BY THE

COMMITTEE ON VETERANS' AFFAIRS
UNITED STATES SENATE
VANCE HARTKE, *Chairman*

NOVEMBER 19, 1976

Printed for the use of the Committee on Veterans' Affairs

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LETTER OF TRANSMITTAL

VETERANS ADMINISTRATION
OFFICE OF THE ADMINISTRATOR OF VETERANS AFFAIRS
WASHINGTON, D.C. 20420

NOVEMBER 17 1976

The Honorable
Vance Hartke
Chairman, Committee on Veterans' Affairs
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

In an intensive effort to conserve our nation's vital energy, the Veterans Administration has achieved its goal of zero growth in energy consumption in FY 1976 over that used in FY 1975. However, our energy costs from FY 1970 through those estimated for FY 1977 will increase 300 percent, or twice the rate of our total medical care costs for the same period. This represents a total of $37.9 million in FY 1977, which could fund, for example, the operation for one year of the VA Hospital in Washington, D.C.

These facts and our continuing concern for control of program costs have resulted in the development of a five year prospectus for energy conservation. I am forwarding a copy of this report, which consists of a narrative and a series of charts prepared for graphic presentation. The narrative is complete in itself since it includes reproduction of eight selected charts. The balance of the charts provide more detailed statistics and diagrams.

We are striving to combat energy waste through numerous energy saving projects which have been cooperatively designed, implemented and evaluated by our Department of Medicine and Surgery and Office of Construction. These include solar energy applications.

Of particular interest is an agencywide energy management system for analyzing and monitoring consumption through a computer program, which was developed by the Department of Medicine and Surgery. A typical product of this energy management system is enclosed for your review.

These programs were developed specifically for the VA and set a model for other health care facilities.

Also, enclosed are some of the highlights of projects now being developed in the Office of Construction with diagrams further describing some of these energy conservation devices.

The Honorable
Vance Hartke
United States Senate

The magnitude of our vast hospital system, variety of structures and expanding health care program presented not only a problem in reducing energy requirements, but also an opportunity for a Federal agency to provide positive leadership by example. Our methods for attaining success during this past year and establishing programs and controls for future energy conservation are being shared with other agencies as well as the private sector.

It is our desire to participate fully in all energy conservation endeavors in the future and hope that, through our interaction with other agencies, we will broaden our knowledge and strengthen our efforts to promote conservation of our nation's energy resources.

If you wish to have members of your staff pursue this matter in greater detail, we would be happy to discuss our programs with them.

Sincerely,

RICHARD L. ROUDEBUSH
Administrator

Enclosures

VETERANS ADMINISTRATION

DEPARTMENT OF MEDICINE AND SURGERY



ENERGY CONSERVATION PROGRAM

BACKGROUND

NO GROWTH IN ENERGY CONSUMPTION

CIRCULAR 00-76-10:

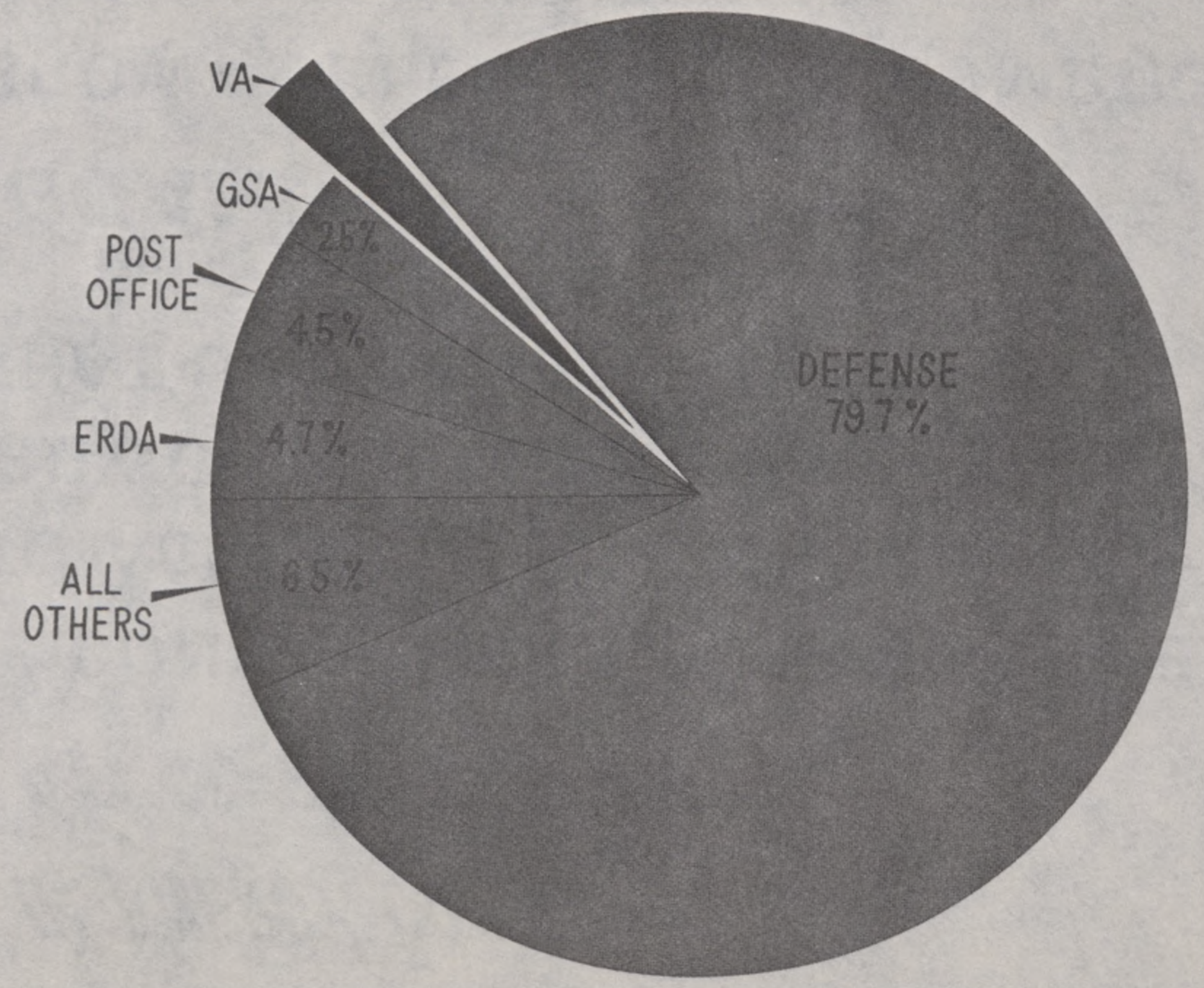
"ENERGY CONSERVATION POLICY OF THE VA IS TO ACHIEVE A ZERO GROWTH IN ENERGY CONSUMPTION IN FY 1976 OVER THAT USED IN FY 1975 . . ."

DM&S GOAL:

"ZERO GROWTH IN ENERGY CONSUMPTION DURING THE FIVE-YEAR PERIOD FY 1978-FY 1982"

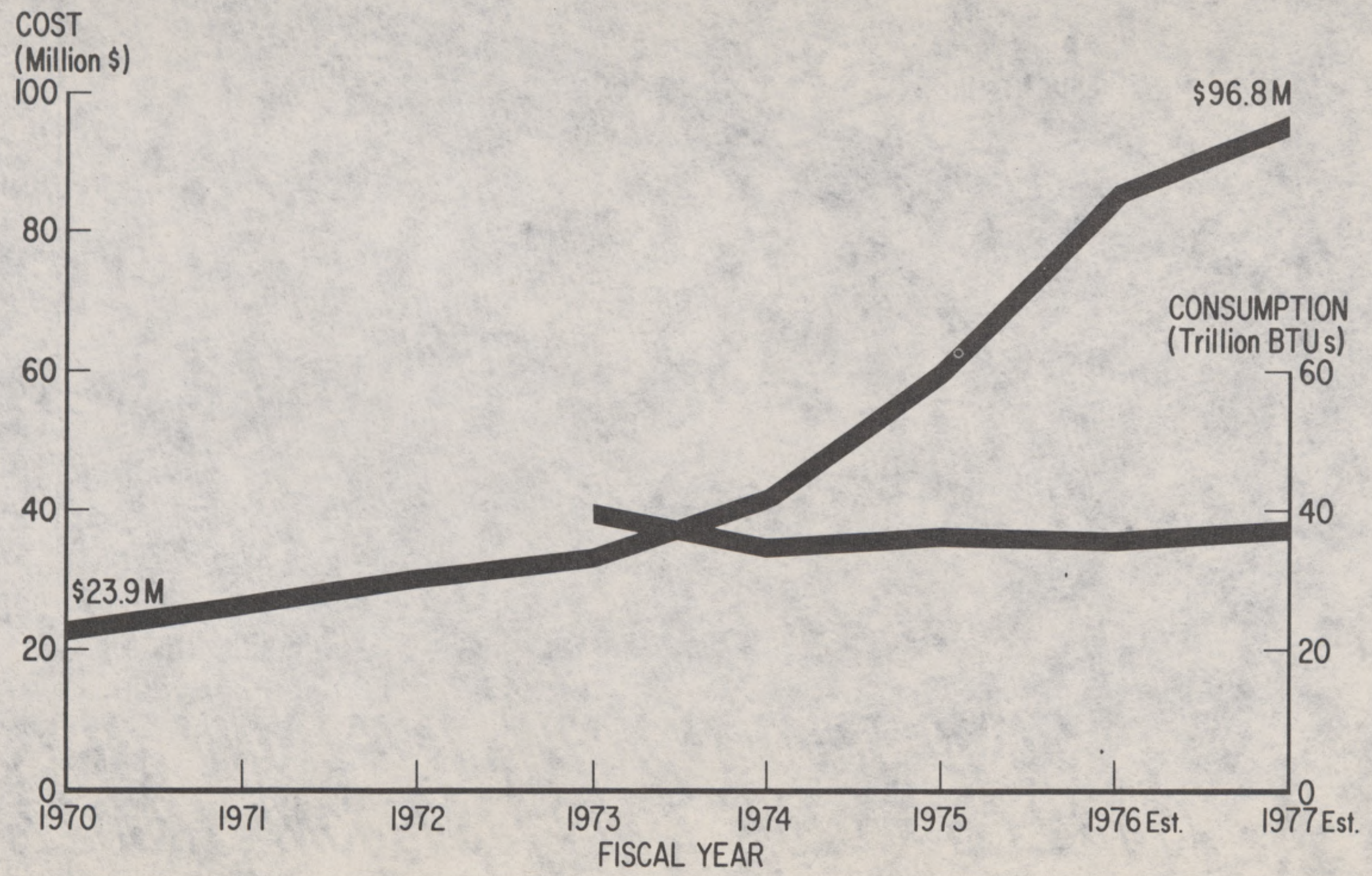
FEDERAL ENERGY CONSUMPTION

FY 1975: 1,752 TRILLION BTU's

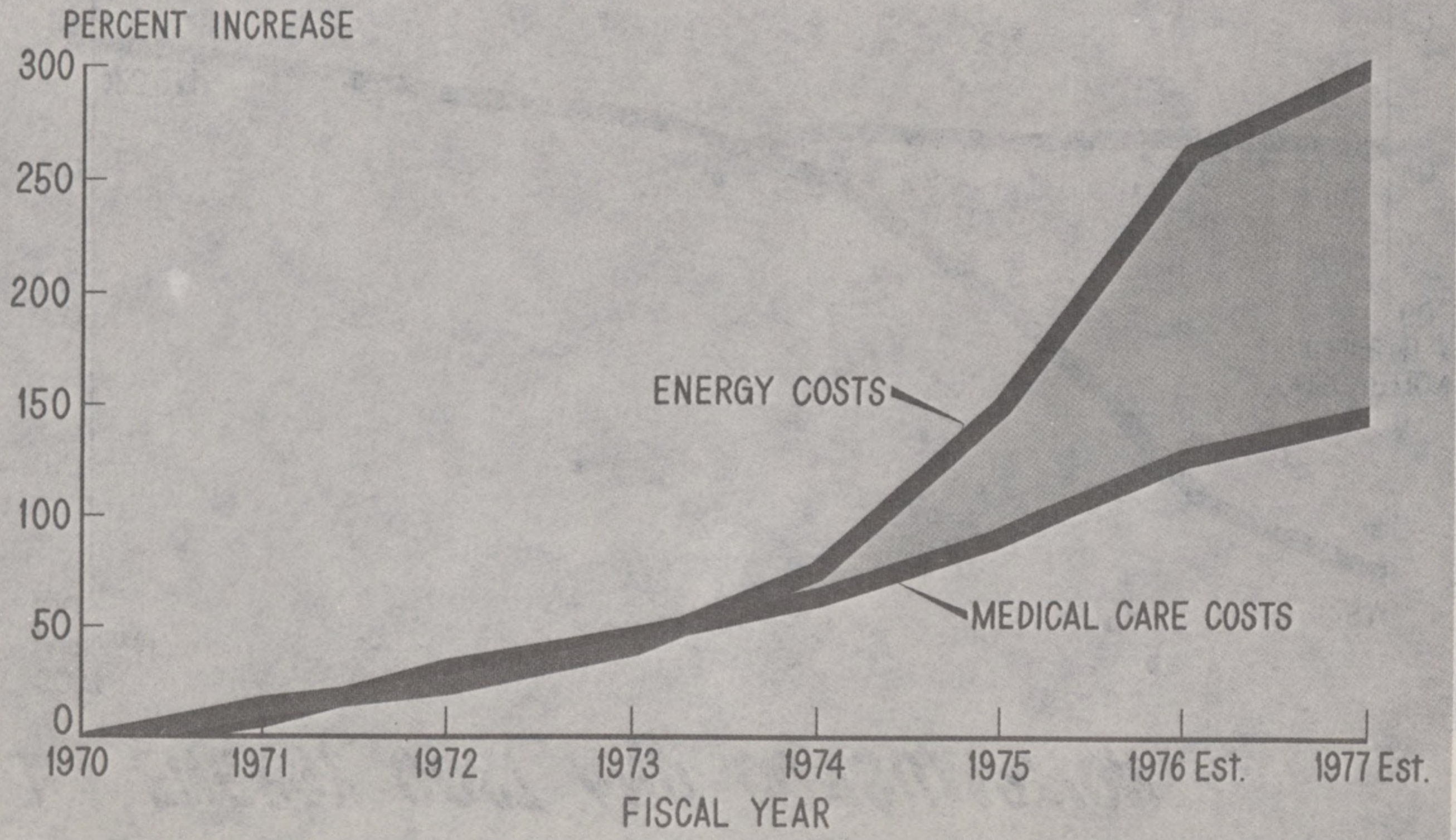


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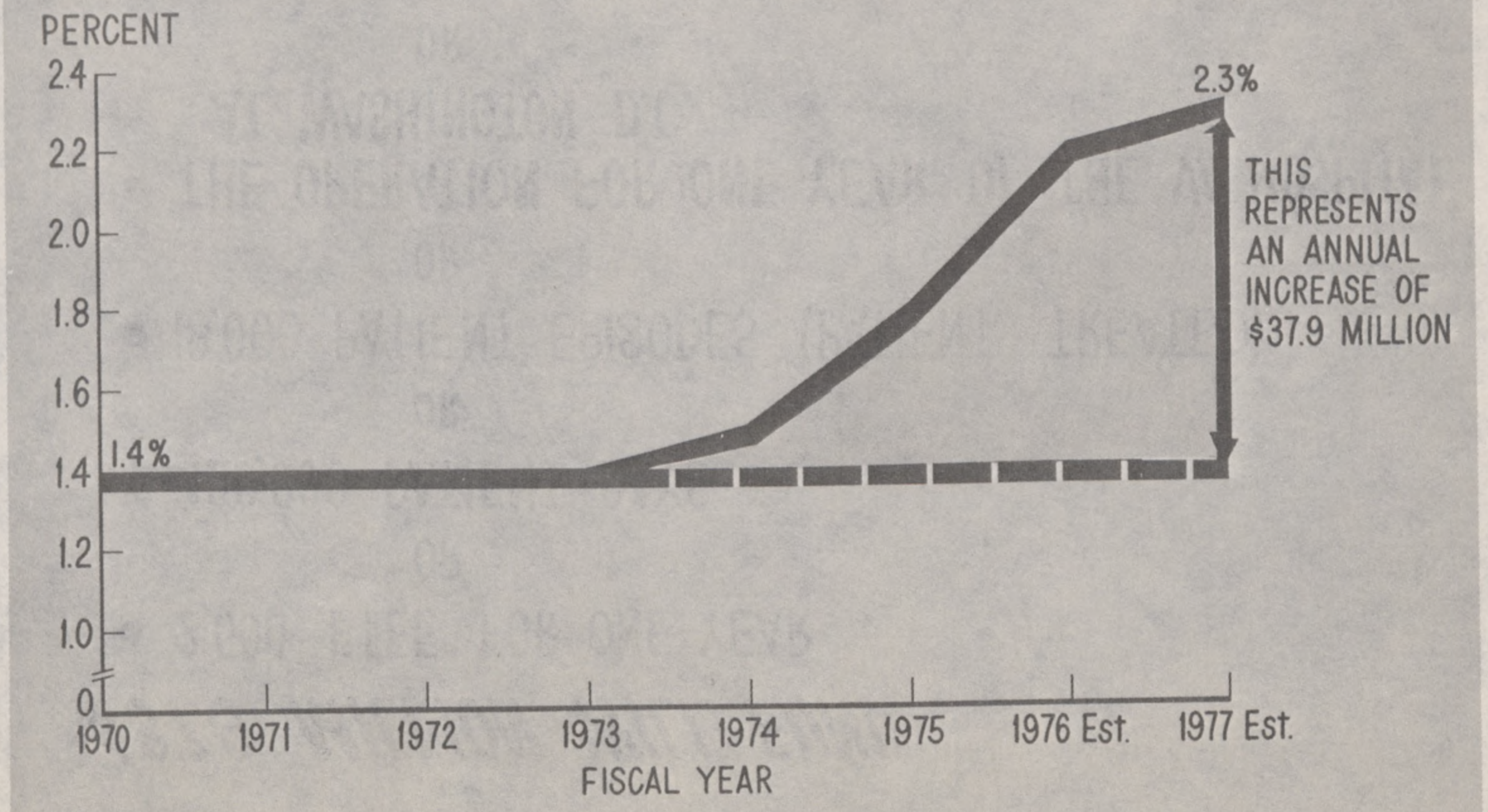
VA ENERGY COST AND CONSUMPTION



PERCENT INCREASE SINCE 1970 OF ENERGY COSTS AND TOTAL MEDICAL CARE COSTS



ENERGY COSTS AS A PERCENT OF GROSS MEDICAL CARE COSTS



$37.9 MILLION WILL FUND . . .

- 2,500 FTEE FOR ONE YEAR

OR

- 420,000 PATIENT DAYS

OR

- 18,000 PATIENT EPISODES (PATIENTS TREATED)

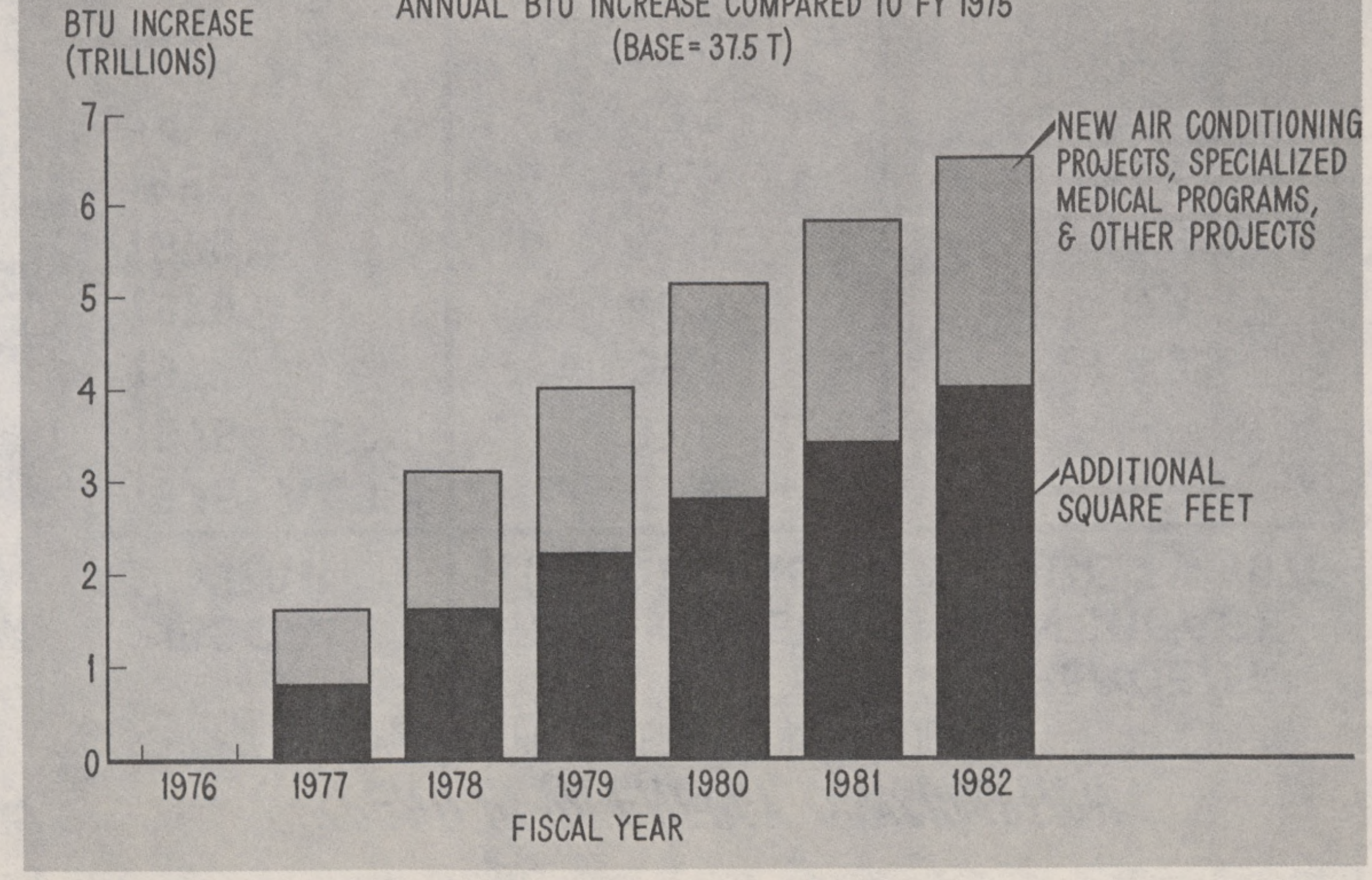
OR

- THE OPERATION FOR ONE YEAR OF THE VA HOSPITAL AT WASHINGTON, D.C.

OR

- THE VA HOSPITALS AT INDIANAPOLIS AND FT. WAYNE

PROJECTED INCREASE IN VA ENERGY CONSUMPTION



TREND IN VA ENERGY CONSUMPTION

(WITHOUT ENERGY CONSERVATION)

FISCAL YEAR	BTUs USED (TRILLIONS)	PERCENT INCREASE SINCE FY 1975
1975 ACT.*	37.5	-
1976 EST.	37.0	-
1977	39.1	+4.2%
1978	40.6	8.3
1979	41.5	10.6
1980	42.6	13.6
1981	43.3	15.5
1982	44.0	17.3

* ZERO GROWTH MANDATED

PRIORITIES FOR ENERGY MANAGEMENT

- ESTABLISH ENERGY CONSERVATION STEERING AND WORKING COMMITTEES
- DEVELOP 5-YEAR ENERGY CONSERVATION PLAN
- IMPLEMENT A VA-WIDE ENERGY REPORTING SYSTEM
- PROVIDE FUNDING FOR ENERGY CONSERVATION PROJECTS
- IMPLEMENT TECHNICAL GUIDANCE AND DEVELOPMENT MECHANISM
- DISSEMINATE INFORMATION ON NEW TECHNIQUES, APPROACHES, ETC.

ENERGY CONSERVATION

PROJECTS

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ENERGY CONSERVATION PROJECTS TO DATE

A. HOSPITAL ENERGY CONTROL SYSTEM (RSH)

B. NON-RECURRING MAINTENANCE PROGRAM

C. LOAD MANAGEMENT SYSTEMS

D. THERMAL SURVEYS

E. RETROFIT PROJECT SURVEYS

F. SOLAR ENERGY

G. PRODUCT TESTING

A. HOSPITAL ENERGY CONTROL SYSTEM

CONTRACTOR: REYNOLDS, SMITH AND HILLS, INC. (RSH)

OBJECTIVE:

IMPLEMENT A NATIONWIDE ENERGY CONTROL SYSTEM FOR MONITORING AND ANALYZING ENERGY CONSUMPTION

METHOD:

SUBMISSION MONTHLY BY EACH VA HEALTH CARE FACILITY OF ENERGY USAGE DATA TO RSH FOR PROCESSING AND ANALYSIS USING A COMPUTER PROGRAM DESIGNED SPECIFICALLY FOR THIS PURPOSE

ENERGY DATA INPUT ⟶ MANAGEMENT OF ENERGY USAGE (MEU)

$$\text{UNITS} = \frac{\text{BTUs / DEGREE DAY}}{\text{FT}^2 \times \text{DAYS / MONTH}}$$

FUNDING:

FY 1974. . . $ 46,000
FY 1975 . . . 69,750
FY 1976 . . . 338,700

STATUS:

ALL VA HCFs WILL BE ON LINE BY OCTOBER 1976

B. NON-RECURRING MAINTENANCE PROGRAM

FISCAL YEAR	COST (MILLION $)	ESTIMATED PAY BACK (IN YEARS)	ESTIMATED BTUs SAVED (IN BILLIONS)
FY 1976 - TOTAL	1.50	5-7	50-70
FY 1977 - TOTAL	5.00		200
INSULATION	0.66	5-7	
CONTROLS	1.48	3-5	
EQUIPMENT	1.20	6-8	
WINDOWS	1.66	10	
FY 1978 - TOTAL	7.00	5-7	300

ENERGY CONSERVATION RETROFIT PROJECTS
COST/PAYBACK

TYPE	AVERAGE COST (THOUSAND $)	AVERAGE PAYBACK (YEARS)	AVERAGE BTU SAVINGS PER YEAR (BILLIONS)
THERMOSTATIC RADIATOR VALVES	100	2-4	8.4
HEAT WHEELS	200	2-4	16.6
WASTE HEAT BOILERS	80	2-4	6.6
ECONOMIZER UNITS	5	2-4	.5
LOAD SHEDDING SYSTEMS	100	1-4	8.3
LOAD MGMT. SYSTEM	200	3-5	12.5
LAUNDRY WASTE WATER HEAT EXCHANGERS	30	3-5	1.8
INSULATION	35	3-7	1.7
SUN SCREENS	25	4-6	1.3
ZONE CONTROLS	200	4-6	5.0
BOILER CONTROLS	30	4-8	1.3
SEPARATE O.R. CHILLERS	40	4-7	3.0
WINDOW REPLACEMENT	100	8-10	2.5
REPAIR STEAM LINES	135	8-10	3.4
SOLAR STILL	50	8-10	1.2
SOLAR HOT WATER	250	16-20	3.2

C. LOAD MANAGEMENT SYSTEMS

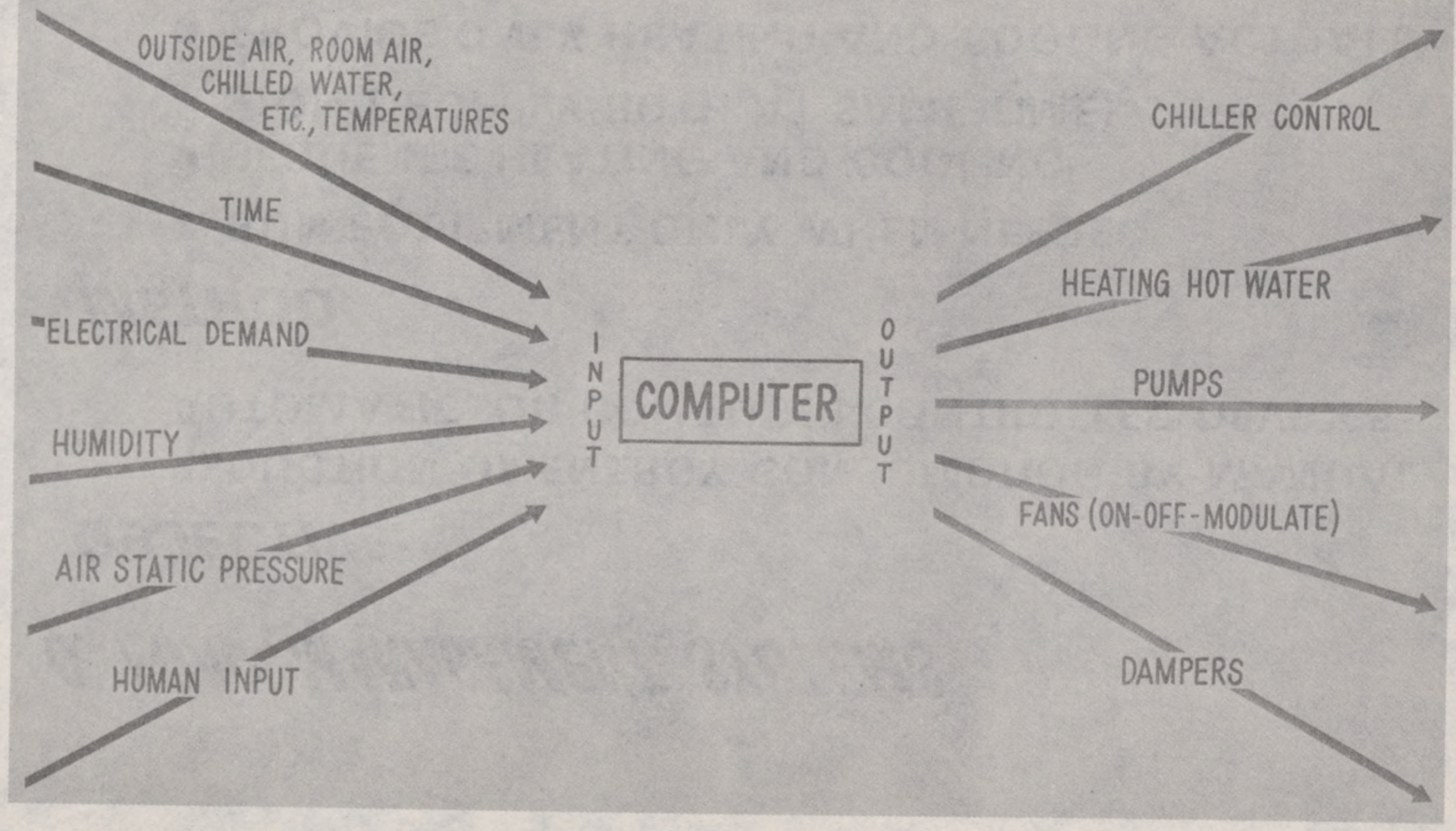
OBJECTIVE:

REDUCTION OF ENERGY CONSUMPTION BY MANUAL, AUTOMATIC, OR COMPUTER-CONTROLLED DEVICES

METHOD:

- RUN EQUIPMENT ONLY WHEN NEEDED
- SEQUENCE HEATING AND COOLING (DON'T SUPPLY BOTH AT SAME TIME)
- PROVIDE ONLY HEATING AND COOLING ACTUALLY NEEDED
- PROVIDE HEATING AND COOLING FROM THE MOST EFFICIENT SOURCE

LOAD MANAGEMENT SYSTEM
(EXAMPLE)



C. LOAD MANAGEMENT SYSTEMS (Cont'd)

THREE COMPUTER-CONTROLLED DEVICES IN USE

VA HEALTH CARE FACILITY	COMPUTER TYPE	COST (THOUSAND $)	ESTIMATED PAYBACK (IN YEARS)	ESTIMATED BTUs SAVED PER YEAR (IN BILLIONS)
SAN DIEGO, CAL.	NOVA	$211	3	23
SAN ANTONIO, TEX.	IBM	73	1	24
WASH., D.C.	HONEYWELL	330	*	*

* PROJECT NOT ORIGINALLY SET UP AS A FULL LOAD MANAGEMENT SYSTEM

THE SYSTEMS WILL BE EVALUATED FOR DESIGN AND EFFECTIVENESS AFTER THEY HAVE BEEN "ON LINE" FOR APPROXIMATELY ONE YEAR

D. THERMAL SURVEYS

OBJECTIVE:

DETECTION OF HIGH ENERGY LOSS AREAS
UTILIZING INFRARED PHOTOGRAPHIC TECHNIQUES

PROJECTS — VA HEALTH CARE FACILITIES:

PERRY POINT, MD.
FT. HOWARD, MD.
HAMPTON, VA.
NORTHPORT, N.Y.
BEDFORD, MASS.
BROCKTON, MASS.
TOGUS, ME.

RESULTS EXPECTED IN AUGUST 1976

COST OF SURVEYS : $32,500

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E. RETROFIT PROJECT SURVEYS

OBJECTIVE: DETERMINE WAYS ENERGY CONSUMPTION CAN BE REDUCED THROUGH RETROFIT PROJECTS BY

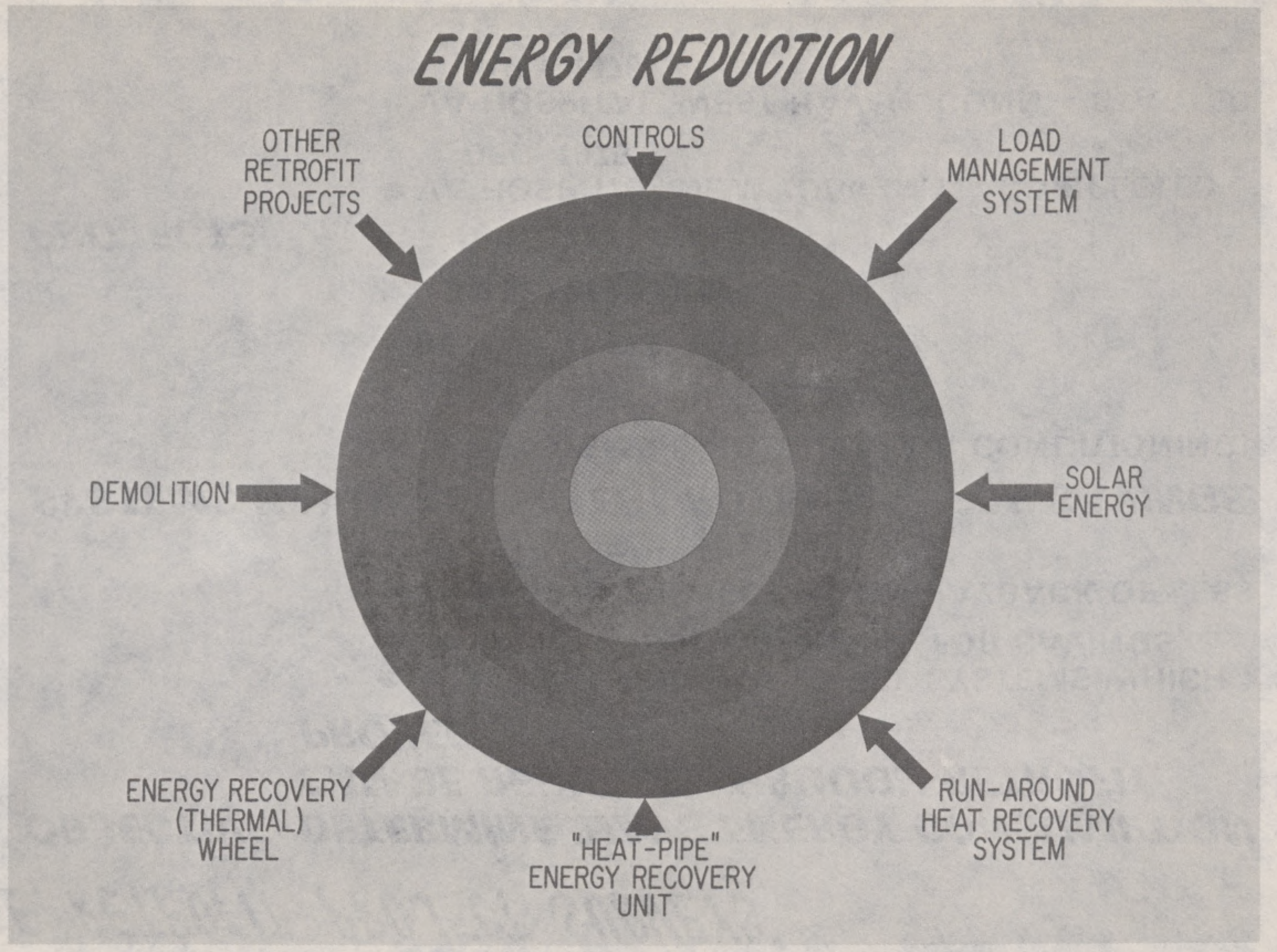
- CONCENTRATING OF THOSE SYSTEMS WHICH HAVE GREATEST POTENTIAL FOR SAVINGS, &
- SELECTING PROJECTS WITH PAYBACK OF LESS THAN 5 YEARS

SYSTEMS HAVING GREATEST POTENTIAL FOR SAVINGS:

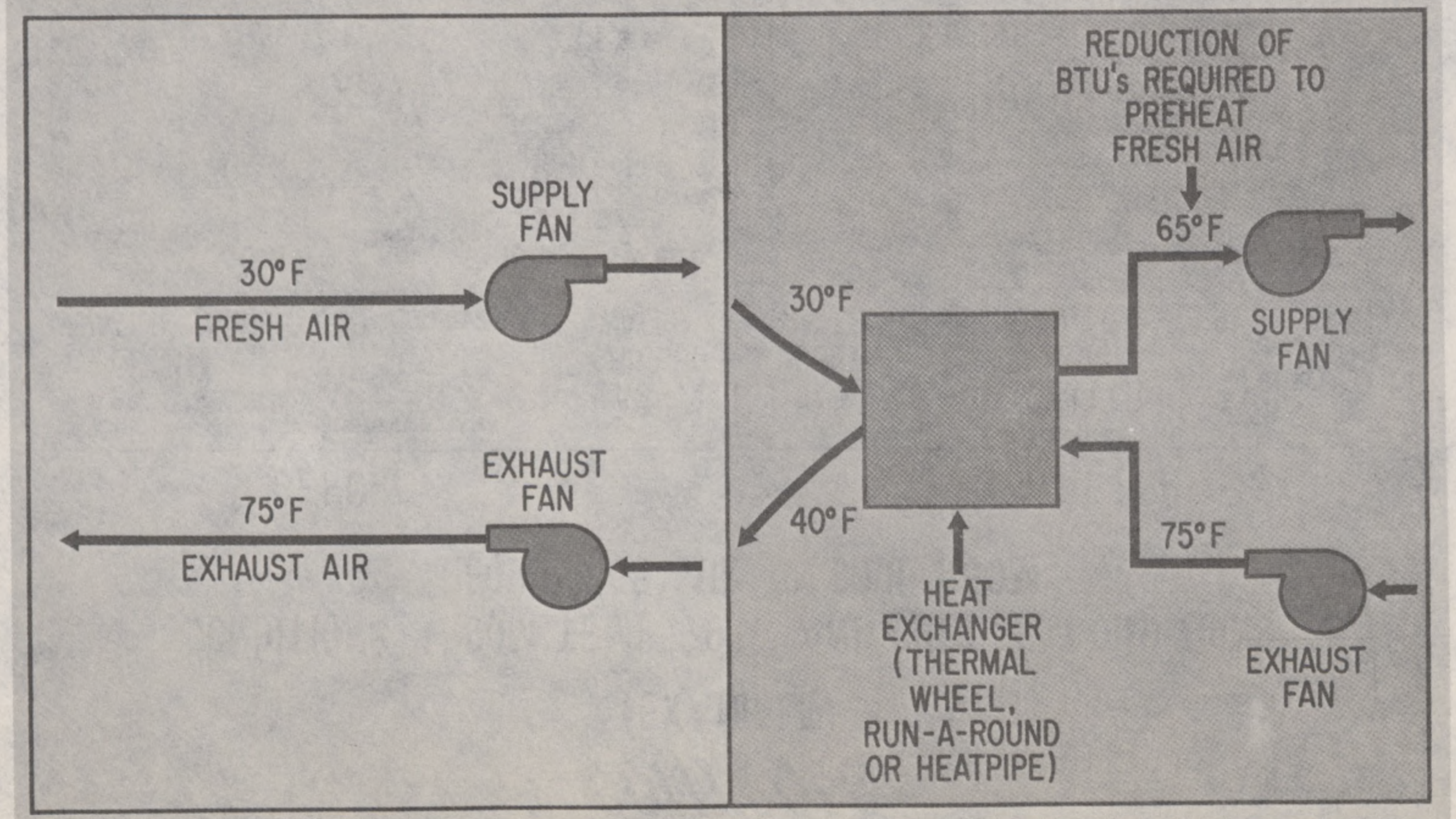
- AIR SYSTEMS (HEATING & AIR CONDITIONING)
- AIR CONDITIONING PLANTS
- CONTROL SYSTEMS
- DOMESTIC HOT WATER

PROJECTS:

- VA HOSPITAL, NEW YORK, N.Y. - COMPLETED DEC. 1975
- VA HOSPITAL, WEST HAVEN, CONN. - STARTED JULY 1976


ENERGY REDUCTION
OTHER RETROFIT PROJECTS
CONTROLS
LOAD MANAGEMENT SYSTEM
DEMOLITION
SOLAR ENERGY
ENERGY RECOVERY (THERMAL) WHEEL
"HEAT-PIPE" ENERGY RECOVERY UNIT
RUN-AROUND HEAT RECOVERY SYSTEM

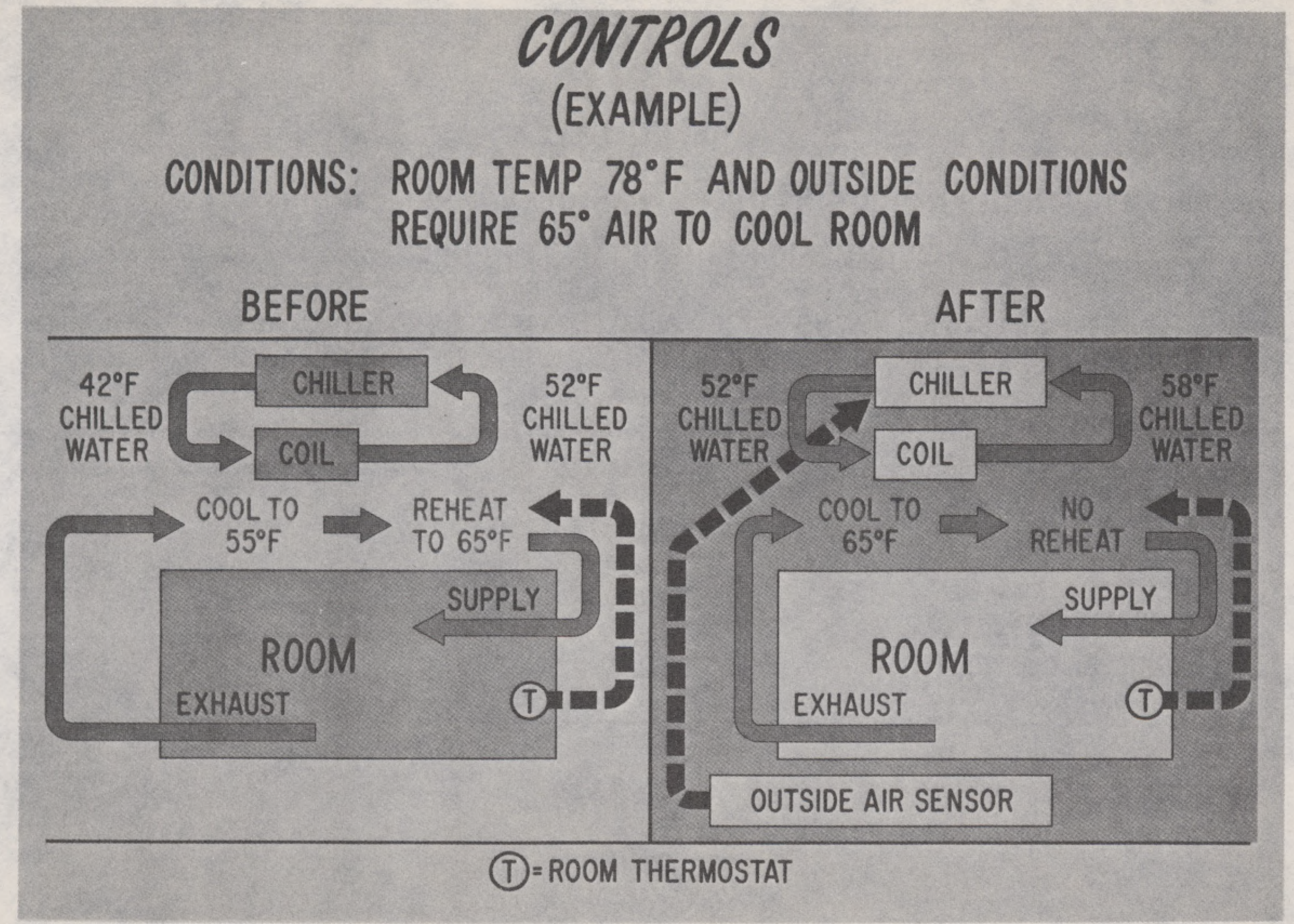
RETROFIT
(EXAMPLE)



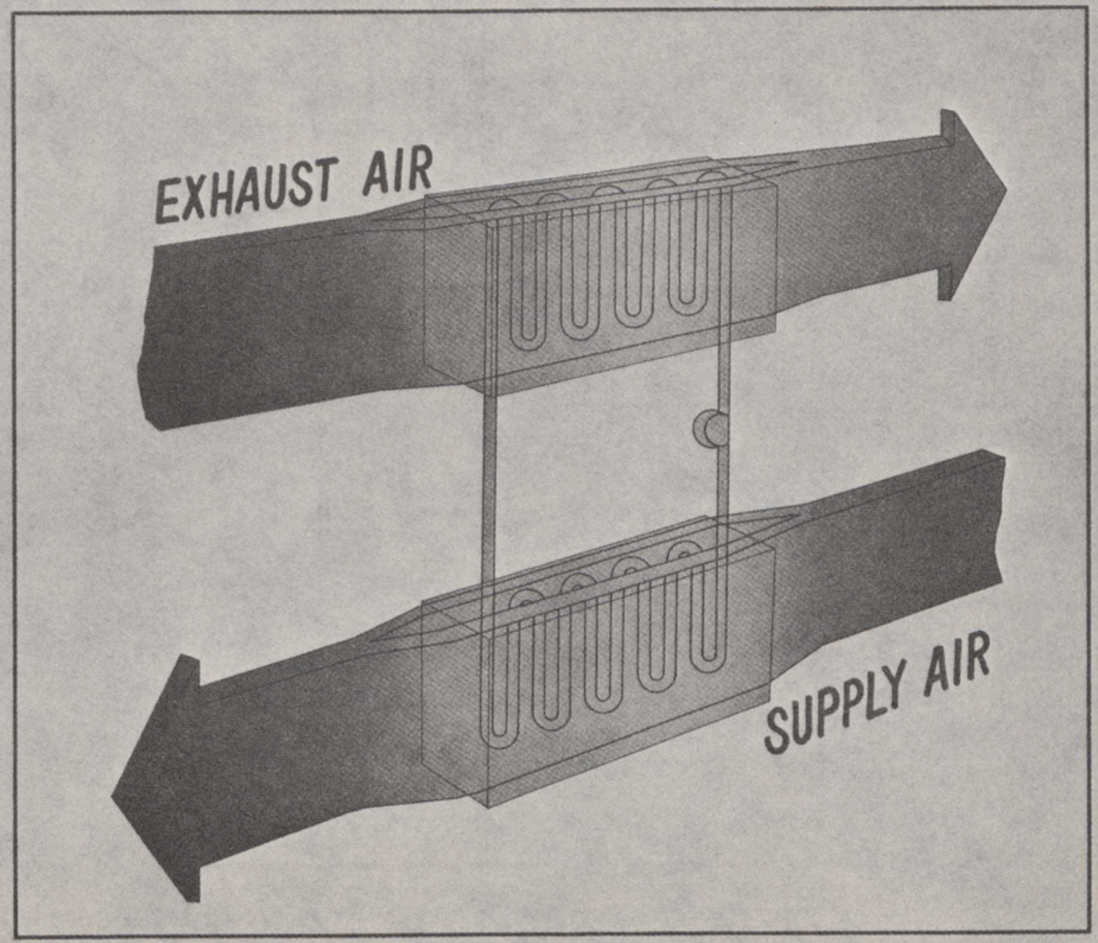
CONTROLS

(EXAMPLE)

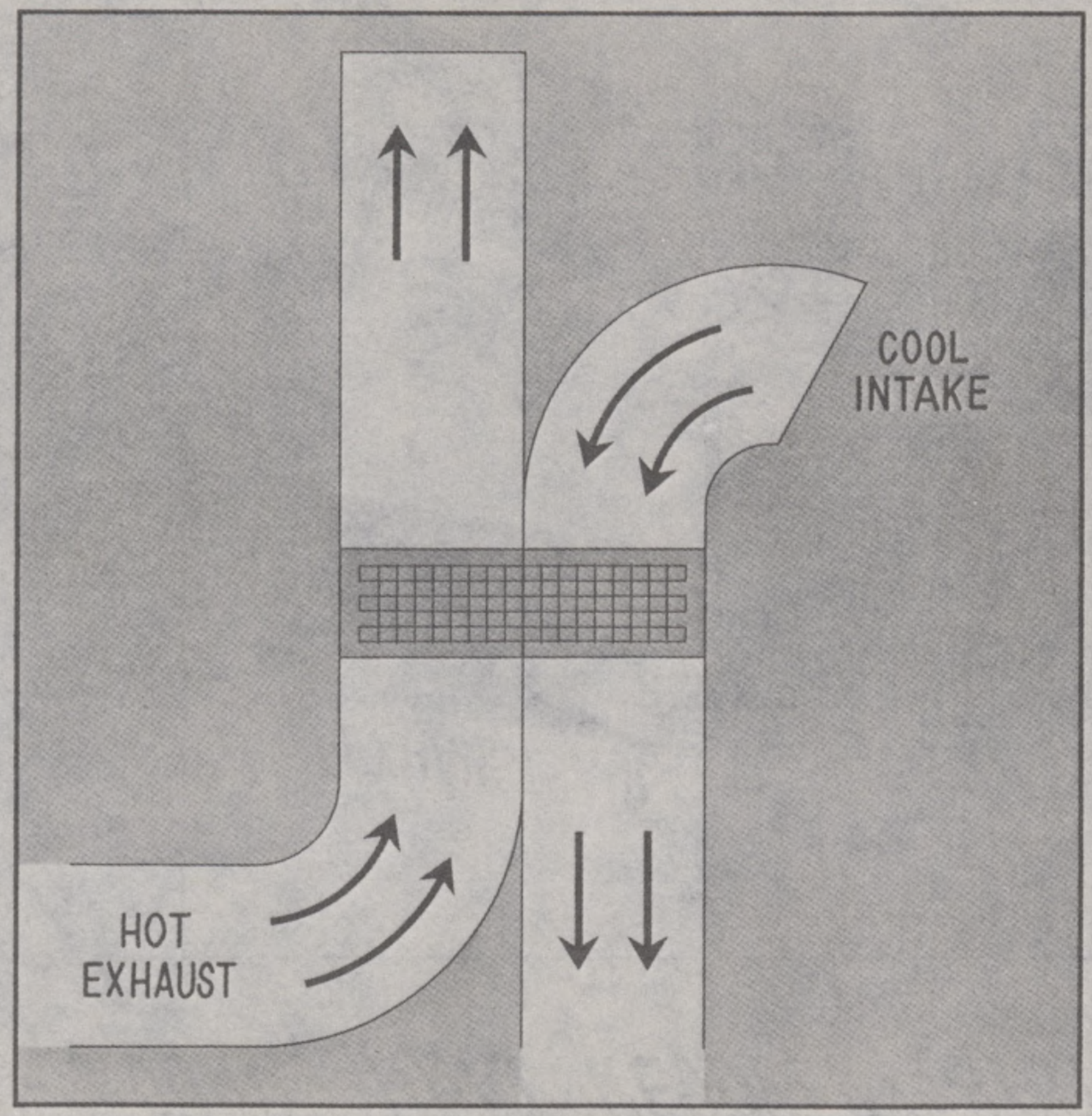
CONDITIONS: ROOM TEMP 78°F AND OUTSIDE CONDITIONS REQUIRE 65° AIR TO COOL ROOM



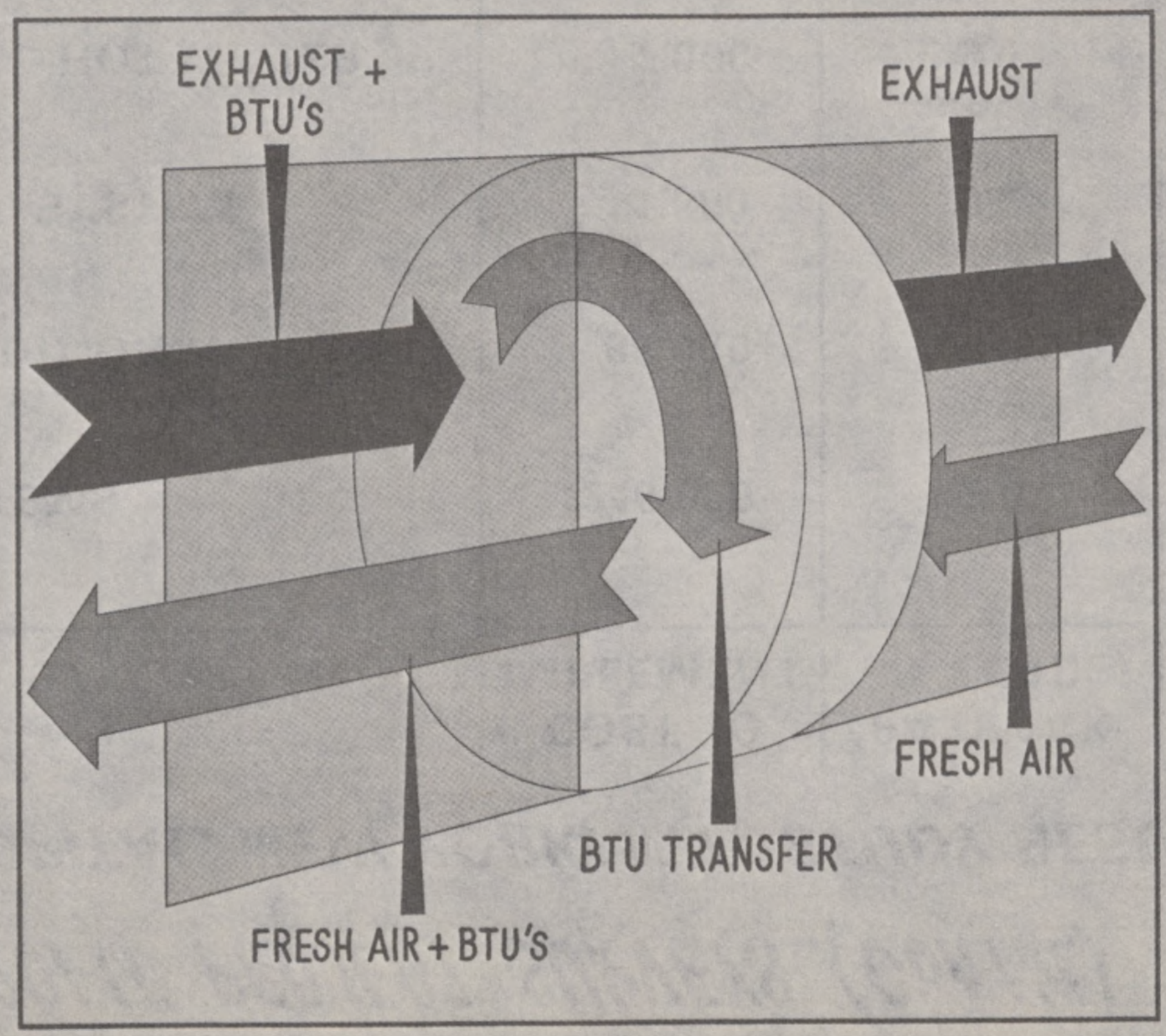
"RUN-AROUND" HEAT RECOVERY SYSTEM



"HEATPIPE" ENERGY RECOVERY UNIT



ENERGY RECOVERY WHEEL
(THERMAL WHEEL)



E. RETROFIT PROJECT SURVEYS (Cont'd.)

VA HOSPITAL, NEW YORK, N.Y., STUDY RESULTS

SYSTEM	COST TO IMPLEMENT	PAYBACK (IN YEARS)	ANNUAL SAVINGS
AIR SYSTEMS	$246,000	2.0	$143,000
AIR CONDITIONING PLANT	98,000	6.0	22,000
CONTROL SYSTEM	1,800	0.2	16,000
DOMESTIC HOT WATER	7,000	3.0	3,100
OTHER	90,000	7.0	13,000

BTU's SAVED: 66 BILLION PER YEAR

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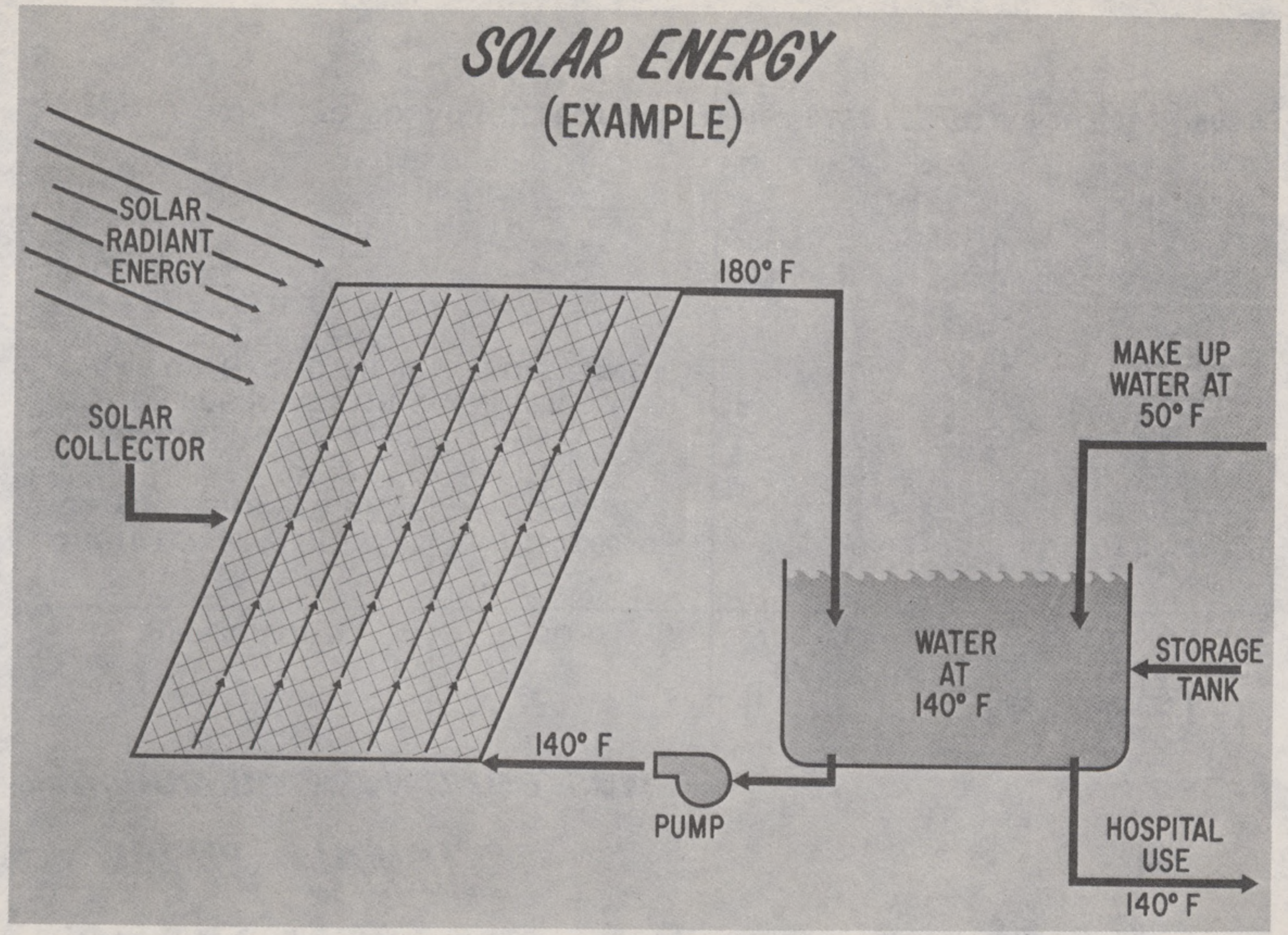
F. SOLAR ENERGY

VA HOSPITAL, SAN DIEGO, CALIF.

APPLICATION	COST	PAYBACK (IN YEARS)	ESTIMATED BTUs SAVED PER YEAR (IN BILLIONS)
DISTILLED WATER — 300 GALLONS PER DAY	$50,000	20	1.0
DOMESTIC HOT WATER, BOILER PRE-HEAT FOR MAKE UP, HYDROTHERAPY POOL, PRE-HEAT AND PRE-COOL OUTSIDE AIR*	250,000 (E.R.D.A. MAY FUND)	20	3.4

*ROOF MOUNTED SOLAR COLLECTORS TO HEAT WATER TO ABOUT 160°-180° F

SOLAR ENERGY
(EXAMPLE)



G. PRODUCT TESTING

	STATUS
BALCO "FUEL SAV-R" : DEVICE FOR IMPROVING AIR/FUEL MIXING PROCESS IN OIL FIRED BOILERS RESULTING IN MORE BTUs AVAILABLE FROM A GALLON OF FUEL	TEST TERMINATED AT MANUFACTURER'S REQUEST. NO FURTHER ACTION ANTICIPATED
"TECHNOL" FUEL ADDITIVE : ADDITIVE USED TO IMPROVE FUEL OIL CONSUMPTION AND EFFICIENCY	CONTRACT PREPARA-TION UNDERWAY TO TEST MANUFACTURER'S CLAIMS
WATER FLOW CONTROL DEVICES : INSTALLATION OF AN INEXPENSIVE "INSERT" FOR SHOWER HEADS WHICH REDUCES THE FLOW OF WATER	IMPLEMENTED AT VA HOSPITAL, WASHINGTON, D.C. FOR $150. SAVINGS ESTIMATED AT $8,600 PER YEAR

ACTION PLAN

ACTION PLAN

1. EXPAND AND IMPROVE HOSPITAL ENERGY CONTROL SYSTEM (RSH)
2. CONDUCT OPERATIONS SURVEYS
3. CONDUCT RETROFIT SURVEYS, AND
4. IMPLEMENT RETROFIT PROJECTS
5. IMPLEMENT NEW DESIGN STANDARDS TO DECREASE ENERGY USAGE IN FUTURE MAJOR CONSTRUCTION PROJECTS.
6. DEMOLISH UNUSED BUILDINGS
7. ESTABLISH ENERGY CONSUMPTION GOALS FOR EACH VA HEALTH CARE FACILITY
8. PROVIDE REGULARLY INFORMATION TO THE VA HEALTH CARE FACILITIES
9. INTENSIFY PUBLICITY EFFORTS
10. INSTITUTE AWARDS PROGRAM

1. EXPAND & IMPROVE HOSPITAL ENERGY CONTROL SYSTEM (RSH)

- **FUNDING REQUIREMENTS:**

FY 1978	$130,000
FY 1979	150,000
FY 1980	160,000
FY 1981	180,000
FY 1982	200,000

COULD BE PROCESSED ON VA COMPUTERS BY VA PERSONNEL

- **ESTIMATED SAVINGS, FY 1978 - FY 1982:**

400 BILLION BTUs PER YEAR

$900,000 PER YEAR

2. CONDUCT OPERATIONS SURVEYS

- **OBJECTIVE:**

  IMPROVE ENERGY SYSTEM OPERATIONS AT 45 VA HEALTH CARE FACILITIES WITH AIR CONDITIONING SYSTEMS GREATER THAN 800 TONS CAPACITY

- **FUNDING:**

  $200,000 IN FY 1977

- **ESTIMATED SAVINGS, FY 1978 - FY 1982:**

  600 BILLION BTUs PER YEAR

  $1.6 - $1.8 MILLION PER YEAR

3. CONDUCT RETROFIT SURVEYS

- ***OBJECTIVE:***

  STUDY ENERGY SYSTEMS OF 100 VA HEALTH CARE FACILITIES TO DETERMINE WAYS FOR REDUCING ENERGY CONSUMPTION BY RETROFIT PROJECTS

- ***FUNDING:***

FY 1977 . . .	**$ 360,000**
FY 1978 . . .	**400,000**
FY 1979 . . .	**440,000**

4. IMPLEMENT RETROFIT PROJECTS

- ***FUNDING AND SAVINGS:***

FY	FUNDING (IN MILLION $)		ESTIMATED SAVINGS IN BTUs (BILLIONS)
	NRM	CONSTRUCTION	
1978	7.0	6.4	750
1979	7.0	10.8	980
1980	7.0	15.3	1,230
1981	7.0	17.8	1,380
1982	7.0	11.3	1,000

- ***PAYBACK (IN YEARS):***

AIR SYSTEMS (HEATING & AIR CONDITIONING)	2-4
REFRIGERATION	3-6
CONTROLS	1-2
DOMESTIC HOT WATER	3-4
SOLAR ENERGY	10-20
LOAD MANAGEMENT SYSTEMS	2-5

5. IMPLEMENT NEW DESIGN STANDARDS FOR MAJOR CONSTRUCTION PROJECTS

- **OBJECTIVE:**

  INCREASE FUNDING OF MAJOR CONSTRUCTION PROJECTS TO PROVIDE FOR SOLAR ENERGY AND OTHER ENERGY SAVING APPLICATIONS

- **FUNDING: (IN MILLION $)**

  FY 1978 . . . 19.8

  FY 1979 . . . 12.5

  FY 1980 . . . 14.5

  FY 1981 . . . 16.5

  FY 1982 . . . 18.5

6. DEMOLISH UNUSED BUILDINGS

- **OBJECTIVE:**

  DEMOLISH UNUSED BUILDINGS EACH YEAR FROM 1977 TO 1982

- **FUNDING: (IN MILLION $)**

FY 1977	0.1 (COST OF DEMOLITION STUDY)
FY 1978	NEGLIGIBLE
FY 1979	1.5
FY 1980	1.5
FY 1981	1.5
FY 1982	1.5

- **ESTIMATED SAVINGS IN BTUs: (IN BILLIONS)**

FY 1980	50
FY 1981	50
FY 1982	50

OFFICE OF CONSTRUCTION CONTRIBUTION

- **REVIEW PROJECTS UNDER DESIGN AND INSTITUTE ENERGY SAVING MEASURES**

- **DEVELOP ENERGY IMPACT STATEMENTS FOR ALL MAJOR CONSTRUCTION PROJECTS**

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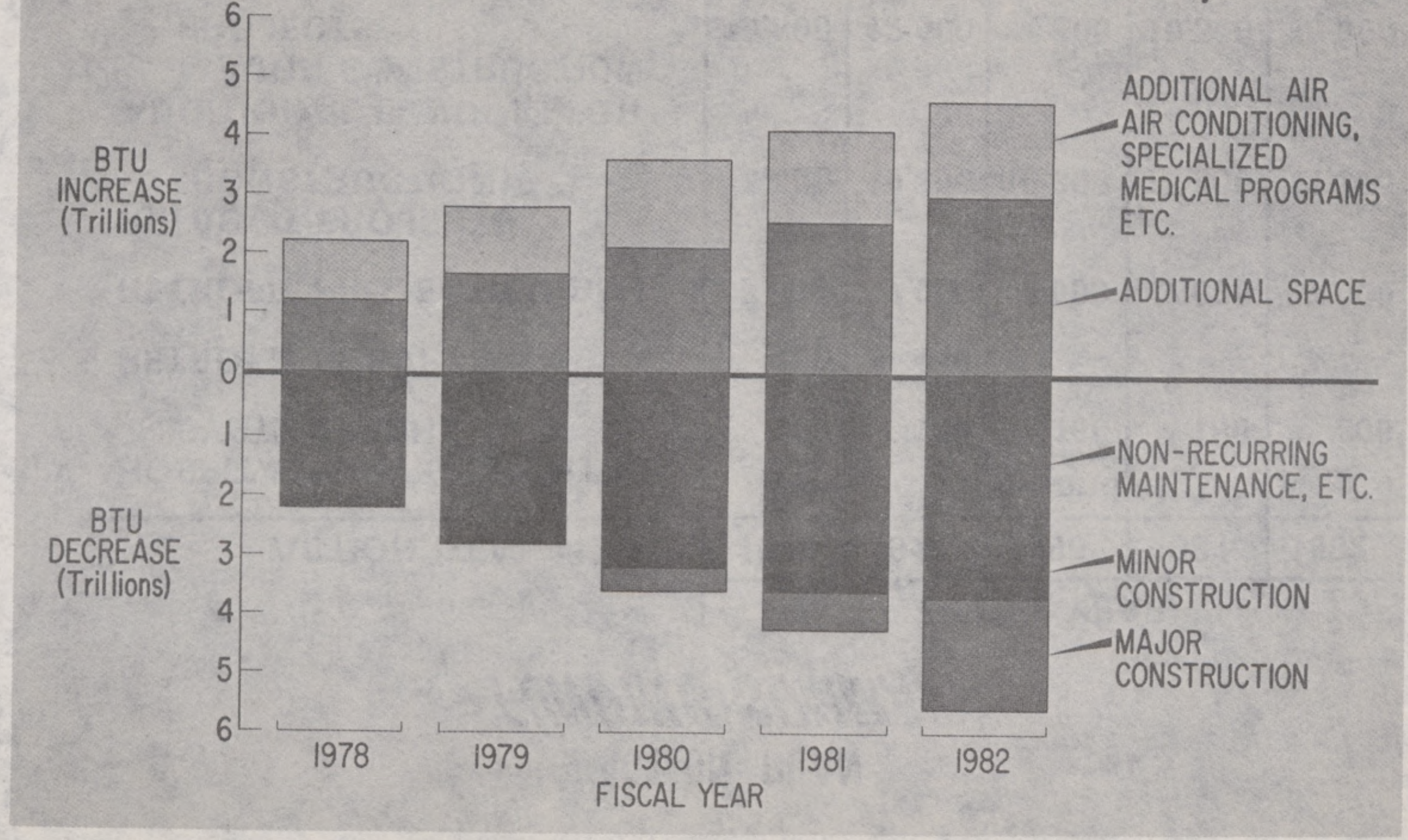
ACTION PLAN
FUNDING SUMMARY

ACTION ITEM	FISCAL YEAR 1978	1979	1980	1981	1982
		(Thousand $)			
HOSPITAL ENERGY CONTROL SYSTEM (RSH)	130	150	160	180	200
RETROFIT SURVEYS	400	440	—	—	—
RETROFIT PROJECTS (NRM)	7,000	7,000	7,000	7,000	7,000
RETROFIT PROJECTS (CONSTRUCTION)	6,400	10,800	15,300	17,800	11,300
ADDITIONAL FUNDING FOR MAJOR CONSTRUCTION PROJECTS	19,800	12,500	14,500	16,500	18,500
DEMOLITION	—	1,500	1,500	1,500	1,500
TOTAL	33,730	32,390	38,460	42,980	38,500

ACTION PLAN

SUMMARY OF CHANGE IN ENERGY USE (BTU's)

(BTU's REDUCED BY FEA FACTOR FOR ELECTRICAL ENERGY)



Attachment

VETERANS ADMINISTRATION
DEPARTMENT OF MEDICINE AND SURGERY
WASHINGTON, D. C.

August 1976

FIVE-YEAR ENERGY CONSERVATION PLAN (FY 1978-1982)

A. BACKGROUND

1. The total federal energy usage in FY-1975 was 1,752 trillion BTU's. The Veterans Administration used 37.5 trillion BTU's or 2.1% of this total, and is fifth in energy consumption among all federal agencies. In March, 1976, the Administrator of Veterans Affairs set a goal of zero growth for energy consumption in FY-1976 over that used in FY-1975.

2. Further, it is the goal of the Department of Medicine and Surgery to maintain a zero growth in energy consumption during the five year period FY 1977 through FY 1982.

3. To obtain this goal, a five-year energy conservation plan has been developed in three parts as follows:

a. The problem of energy conservation
b. Energy Conservation activities to date
c. Action plan

B. THE PROBLEM OF ENERGY CONSERVATION IN THE VA:

1. VA energy costs for the purchase of fuel oil, electricity, natural gas, steam, etc., have increased from $23.9 million in FY-1970 to an estimated cost of $96.8 million in FY-1977 (see figure 1 below)

Fiscal Year	Energy Costs (millions)	BTU's Consumed (trillions)
1970	$23.9	Not Available
1971	27.6	Not Available
1972	31.3	Not Available
1973	34.6	40.2
1974	43.4	35,6
1975	61.6	37.5
1976	87.2	37.0
1977 (EST)	96.8	38.0

FIGURE 1

Energy costs over this eight year period have increased 300 percent, or twice the rate of the total medical care costs for the same period. In addition, energy costs, as a percent of gross medical care cost, have increased from 1.4 percent in FY-1970 to an estimated 2.3% in FY-1977. This increase of .9% represents a total of $37.9 million in FY-1977. Based on current budget projections for FY-1977, the increase of $37.9 million could have funded:

a. 2,500 FTEE for one year or;
b. 420,000 patient days or;
c. 18,000 patient episodes or;
d. The operation for one year of the VA hospital at Washington, D. C. or;
e. The operation for one year of the VA hospitals at Indianapolis and Fort Wayne, Indiana combined.

2. In addition to the increased costs of energy, we have projected an overall BTU increase from FY-1976 through FY-1982 of 4.6 trillion BTU's, a 12,3% overall increase. This increase in BTU consumption is attributable to: (1) additional square feet being added to the VA system as a result of new hospitals, nursing homes, domiciliaries, clinical additions, etc. (2) additional systems such as air conditioning projects, special medical programs, and other energy consuming systems and projects.

3. The VA can expect to pay increased costs for each unit of energy over the next five years, regardless of efforts to conserve energy in the form of BTU savings. See figure 1 for illustration of this problem. BTU consumption for FY 1973-77 is relatively constant while energy costs have nearly tripled. In addition, energy costs, as a percent of total medical care costs, can be expected to increase, thereby subtracting from the funds available for patient care activities.

4. Efforts should be made to analyze and project BTU increases in a more rigorous fashion for the next five years and beyond. This will require the combined efforts of DM&S and Office of Construction staff to analyze and predict cost and BTU increases on a project basis.

5. An effort is required to construct major new facilities and systems using rigorous energy conservation measures to minimize future growth.

6. Additional efforts are necessary to further decrease the present level of energy consumption in existing facilities.

C. ENERGY CONSERVATION ACTIVITIES TO DATE - HIGHLIGHTS:

1. Activities to date have included:

   a. establishment of Energy Conservation Steering and Working Committees;
   b. the implementation of a VA-wide energy reporting system;
   c. the dissemination of information on new techniques and approaches for energy conservation;
   d. implementation of technical guidance and;
   e. the funding of energy conservation projects.

2. The funding of energy conservation projects has included:

   a. Hospital Energy Control System (HECS)
   b. Retrofit projects through the NRM program
   c. Load management systems
   d. Thermal surveys
   e. Retrofit project surveys
   f. Solar energy demonstration project
   g. Product testing

3. HOSPITAL ENERGY CONTROL SYSTEMS (HECS):

The HECS System is developed and will be implemented at all VA health care facilities by October 1976. The contractor for this system is Reynolds, Smith and Hills, Inc. (RSH). The purpose of this system is to implement a nation-wide energy control system for monitoring and analyzing energy consumption using a computer program developed specifically for the VA. Monthly, the VA health care facilities submit energy usage data to RSH for processing and reports. The energy data input is reconstituted into a management of energy usage factor called an MEU, where units are BTU's/ Degree Day/ Square Foot. This allows us to compare hospitals without regard to size and location. Funding for this project, to date, is $444,450.

4. RETROFIT PROJECTS FUNDED FROM THE NRM PROGRAM:

Figure 2 illustrates the level of funding, estimated payback, and estimated BTU's saved by projects from FY-1976 and FY-1977 NRM programs.

Five Year Energy Plan (Con't)

	Cost (Million $)	Est. Payback (in years)	Btu's Saved/Yr (Billions)
FY-1976 - Total	1.50	5-7	50-70
FY-1977 - Total	5.00		180-220
Insulation	0.66	4-6	
Controls	1.48	2-4	
Equipment	1.20	5-7	
Windows	1.60	8-10	

FIGURE 2

5. LOAD MANAGEMENT SYSTEMS:

The objective of load management systems is the reduction of BTU consumption by manual, automatic, or computer controlled devices. This is accomplished by running equipment only when needed: sequencing heating and cooling: providing only heating and cooling actually needed: and providing heating and cooling from the most efficient sources. Figure 3 illustrates cost/payback data on three installations currently under development. The system will be evaluated for effectiveness after they have been on line for approximately one year. At that time, we will consider proceeding with installing additional load management systems.

HFC	Cost (Thousands)	Est. Payback (in years)	Est. BTU's (Saved/Yr Bill)
San Diego, Ca	$211	3	23
San Antonio, TX	73	1	24
Washington, D. C.	330	*	*

FIGURE 3

6. THERMAL SURVEYS:

The objective of this project is the detection of high energy loss areas such as underground steam distribution systems utilizing photographic techniques. Surveys have been conducted at our health care facilities at Perry Point and Fort Howard, Maryland, Hampton, Virginia, Northport, New York, Bedford and Brockton, Massachusetts, and Togus, Maine. The cost of the surveys is $32,500 and final reports have been received.

7. RETROFIT PROJECT SURVEYS:

The objective of these surveys is to determine ways to reduce energy consumption through retrofit of existing systems at health care facilities. This is accomplished by concentrating on those systems which have the greatest potential for savings and selecting projects with payback of less than five years. The systems having greatest potential for savings are heating and air conditioning systems, air conditioning plants, control systems, and domestic hot water. A retrofit survey was completed at VAH New York, New York, in December 1975 and one is underway at West Haven, Connecticut. Figure 4 illustrates the results from the study at VAH New York, New York.

Systems	Cost to Implement	Payback (in years)	Annual Savings
Air Systems	$246,000	2.0	$143,000
Air Conditioning Plant	98,000	6.0	22,000
Controls	1,800	0.2	16,000
Domestic Hot Water	7,000	3.0	3,100
Other	90,000	7.0	13,000

TOTAL BTU SAVINGS - 66 BILLION BTU's PER YEAR

FIGURE 4

8. SOLAR ENERGY DEMONSTRATION:

We are presently developing two solar energy demonstration projects at San Diego, California. The first one, costing $290,000 will be funded by ERDA. This will use roof mounted solar heat collectors (10,000 sq. ft.) to heat domestic hot water, heat the swimming pool, pre-heat boiler water, and to partially heat and cool the building. The second project, funded by the VA NRM Program ($62,000) will use special roof mounted solar units to provide about 95% of the hospital's distilled water requirements.

9. PRODUCT TESTING:

To date, we have funded three projects to test new products for use in VA health care facilities:

a. A device called "Balco" Fuel Saver was advertised with a guarantee to save 7 1/2% on fuel costs. We were ready to install and test three units using the ASME Standard Tests, however the manufacturer requested that we not purchase the units. No further action is anticipated on this project.

b. "TECHNOL" fuel is used to improve fuel oil consumption and efficiency. The manufactor claims a decrease in consumption of fuel oil of 5% to 20%, depending on the particular configuration of the boiler plant. A testing contract is in the final stages of preparation to test the manufacturer's claims.

c. Water flow control devices are an inexpensive insert for reducing the flow of water, thus saving on the cost of water and energy to heat it. These devices have been installed at VAH Washington, D. C. for $150. Savings are estimated at $8,600 per year.

As additional products appear which have potential for energy savings, the Engineering Service plans to take appropriate action to test and/or install them as soon as possible. The boiler plant at VAH Brockton, Mass., is being outfitted with measuring devices to perform efficiency testing under controlled conditions.

D. ACTION PLAN FOR ENERGY CONSERVATION

1. GENERAL

The following items constitute the DM&S five-year action plan for energy conservation.

a. Expand and improve the Hospital Energy Control Systems (HECS)
b. Conduct energy systems operations surveys
c. Conduct retrofit project surveys
d. Implement retrofit projects through the NRM and Minor Construction Programs
e. Develop new designs standards to reduce energy requirements for future construction projects
f. Demolish unused buildings
g. Establish energy consumption goals for each VA health care facility

Five Year Energy Plan (Con't)

h. Provide regular energy conservation information to all VA health care facilities
i. Intensify publicity efforts
j. Institute awards program for conservation of energy

2. EXPAND AND IMPROVE THE HOSPITAL ENERGY CONTROL SYSTEM (HECS):

We plan to expand the subject system to provide additional analysis and reports capability to assist the health care facilities and Engineering Service VACO in managing energy consumption at the field stations. In addition, we think that the VACO effort of collecting energy conservation data on a quarterly basis (CEP Program) can be accomplished by the HECS system. The HECS system will provide all energy data and analyses for Central Office and FEA. Funding requirements are as follows.

FY-1978	$130,000
FY-1979	150,000
FY-1980	160,000
FY-1981	180,000
FY-1982	200,000

We expect that more efficient management of energy resources at the health care facilities will result in saving 400 billion BTU's per year through 1982. The estimated savings in dollars would approximate $900,000 per year through 1982.

3. CONDUCT ENERGY SYSTEMS OPERATION SURVEYS:

The objective of this program is to improve energy system operations at 45 VA health care facilities with air conditioning systems greater than 800 tons capacity. Estimated funding for this program is $200,000 to be funded locally or from VACO in FY-1977. Savings are anticipated at 600 billion BTU's, which is equivalent to $1.6 million - $1.8 per year.

4. CONDUCT RETROFIT PROJECT SURVEYS:

The objective of this survey is to study the energy systems of 100 VA health care facilities to determine ways for reducing energy consumption by retrofit projects to be funded in future fiscal years from the NRM and Construction programs. We plan to fund these surveys over three fiscal years, starting in FY-1977 as follows:

FY-1977	$360,000
FY-1978	400,000
FY-1979	440,000

5. IMPLEMENT RETROFIT PROJECTS:

We plan to implement retrofit projects as a result of the retrofit project surveys starting in FY-1978. See figure 5 for funding and estimated BTU savings by fiscal year through FY 1982. We plan to concentrate on those projects which can realize paybacks of six years or less such as heating, ventilating and air conditioning systems; domestic hot water; and load management systems. In addition, we hope to fund additional projects utilizing solar energy based on results from the San Diego prototype projects currently underway.

Fiscal Year	Funding (Millions) NRM	Construction	BTU Savings (Billion)
1978	7.0	6.4	750
1979	7.0	10.8	980
1980	7.0	15.3	1230
1981	7.0	17.8	1380
1982	7.0	11.3	1000

FIGURE 5

6. DEMOLISH UNUSED BUILDINGS:

The objective of this program is to demolish unused buildings each year from FY-1979 through FY 1982. See Figure 6 for funding requirements and estimated savings in BTU's. We plan to accomplish a VACO study in FY-1977 to identify those buildings in the VA health care system which can be demolished, including estimates for cost of demolition and estimated savings in energy and other costs associated with maintaining unused buildings.

Fiscal Year	Funding (Millions)	BTU Savings (Billions)
1979	1.5	
1980	1.5	50
1981	1.5	50
1982	1.5	50

FIGURE 6

Five Year Energy Plan (Con't)

7. DEVELOP NEW DESIGN STANDARDS:

We expect the Office of Construction to develop new design standards for insulation, windows, and mechanical systems to decrease the use of energy required for future major construction projects. Implementation of new design standards and other energy conservation methods for major construction projects is estimated as follows:

FISCAL YEAR	FUNDING (MILLIONS)
1978	19.8
1979	12.5
1980	14.5
1981	16.5
1982	18.5

8. PROVIDE REGULAR INFORMATION TO VA HEALTH CARE FACILITIES:

We plan to provide regular information such as news letters and information bulletins to the health care facilities on energy saving ideas.

9. INTENSIFY PUBLICITY EFFORTS:

We plan to intensify publicity efforts through the use of articles in VANGUARD and other media such as professional journals and Engineering News Record.

10. INSTITUTE AWARDS PROGRAM

We plan to institute an awards program wherein the Administrator will make annual awards to health care facilities for reduced energy consumption.

11. ESTABLISH ENERGY CONSUMPTION GOALS FOR EACH HEALTH CARE FACILITY

Based on information received from the Hospital Energy Control System (HECS), we plan to establish energy goals for reduced energy consumption at each of the health care facilities every fiscal year.

Five Year Energy Plan (Con't)

E . ACTION PLAN SUMMARY:

1. Figure 7 illustrates, in summary form, the required funding for the action plan discussed in part D.

Action	Funding ($ in thousands) FY-78	FY-79	FY-80	FY-81	FY-82
Hospital Energy Control Sys (HECS)	130	150	160	180	200
HCF Retrofit Surveys	400	440			
Projects					
NRM	7,000	7,000	7,000	7,000	7,000
Construction					
Minor Misc	3,800	6,800	9,000	10,000	6,300
Minor	2,600	4,000	6,300	7,800	5,000
Major	19,800	12,500	14,500	16,500	18,500
Demolition		1,500	1,500	1,500	1,500
TOTAL	33,370	32,390	38,460	42,980	38,500

FIGURE 7

2. Figure 8 summarizes the BTU's increase as a result of additional space, air conditioning, special medical programs, etc., and the expected offset decrease as a result of implementing the action plan.

Fiscal Year	Cumulative BTU Increase (Billions)	Cumulative Decrease (Billions)
1978	2,200	2,200
1979	2,800	2,800
1980	3,600	3,600
1981	4,100	4,260
1982	4,600	5,620

FIGURE 8

3. ADDITIONAL OFFICE OF CONSTRUCTION ENERGY CONSERVATION MEASURES:

We are working with the Office of Construction to...

a. Review projects currently under design and, where appropriate, institute energy measures.
b. Develop energy impact statements for all major construction projects, delineating the net increase in BTU's and cost for the first five years of operation as a result of constructing the particular project.

VETERANS ADMINISTRATION

OFFICE OF CONSTRUCTION ENERGY CONSERVATION

Energy Saving Highlights of Office of Construction

An energy bank that makes ice in winter to cool a hospital the next summer, solar energy to provide another hospital's hot water, and a university-spawned computer program to choose the optimum air conditioning system from among 30 possible methods -- these are among the futuristic projects being developed by the Veterans Administration in an intensive drive to conserve the nation's vital energy.

In Wilmington, Delaware, a VA research laboratory is being equipped with solar panels to provide heating and cooling systems that will be linked to a computer feeding data to the agency's Washington, D. C. headquarters.

VA engineers there will compare the building's energy requirements with those over a four-year span when only conventional energy sources were used for heating and cooling.

In a separate project, a new 60-bed VA nursing home in Wilmington will be equipped with an energy bank that will convert waste energy from a heat pump into ice which will be stored in a huge, underground tank for use during the summer when it will provide chilled water for cooling the building.

VA engineers describe the system as unique and say it will achieve significant energy savings from the beginning.

Under design for installation at the VA hospital in Buffalo, N. Y., is a system that will use the facility's incinerator in conjunction with a waste heat boiler to produce steam -- burning 1,000 pounds of waste per hour -- to recover an energy equivalent of 83,000 gallons of oil each year.

Solar energy will provide hot water for use in a VA nursing home in Palo Alto, California; a new hospital in Augusta, Ga.; a clinic in Reno, Nevada and a research and education building in Miami, Florida.

In a joint effort with VA engineers, scientists at the University of Pittsburg are designing for VA a computer program which will allow the agency to analyze over 30 different air conditioning systems for optimum energy consumption in VA hospital.

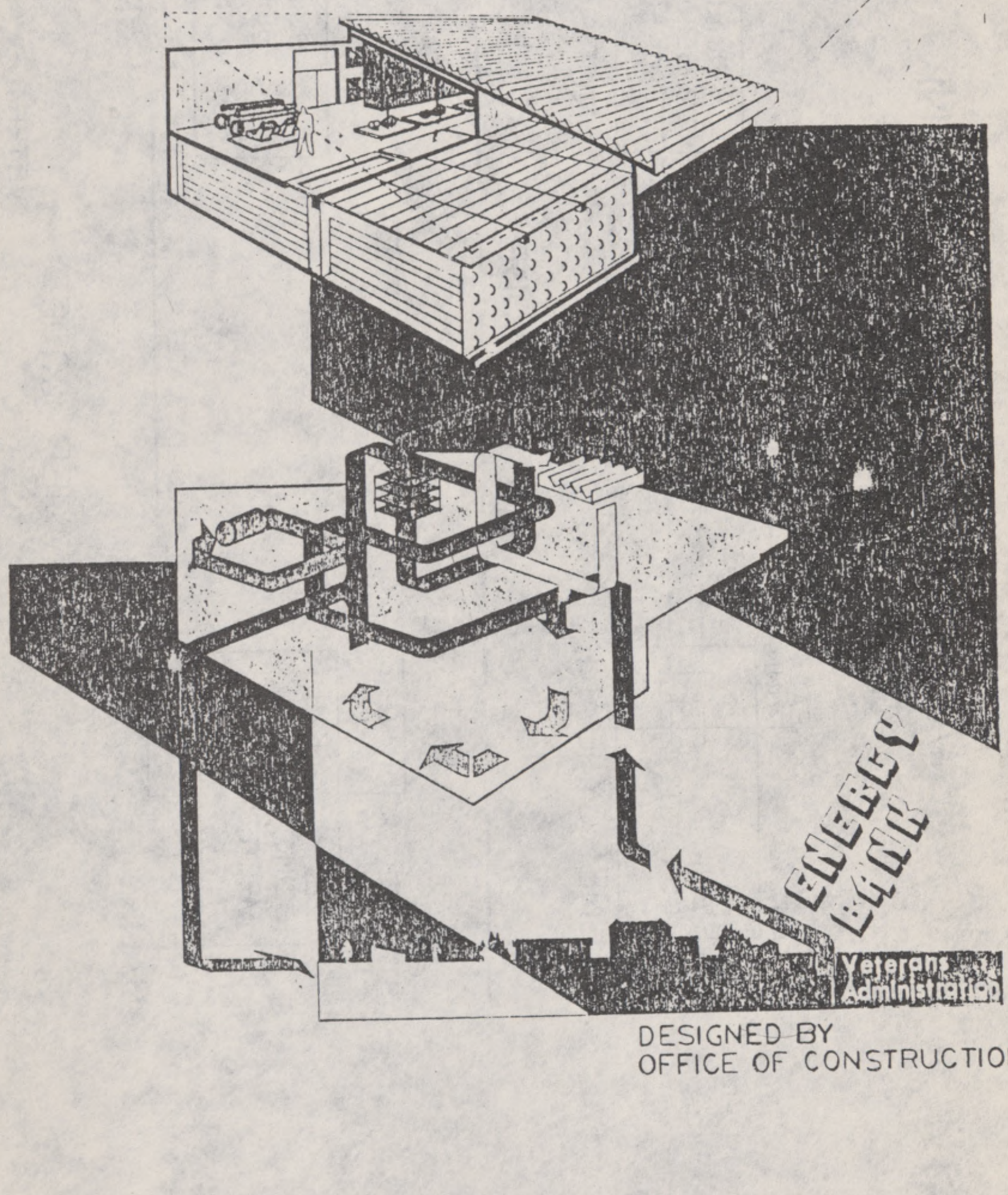
And at the VA hospital in the nation's capitol, a computer system that is the vanguard of others to come operates the hospital's environmental control system.

The computer optimizes air conditioning and heating equipment so that the most use is made of the required energy. It even schedules equipment maintenance. VA engineers say that they were also able to use the computer to determine that an existing cooling plant had sufficient capacity to take care of a planned building addition.

Looking even further into the future, VA engineers are exploring the possibility of increasing the agency's efficient use of energy by installing what are known as "total energy systems" by which hospitals and other VA facilities generate their own energy and make the most efficient use of the waste by-products.

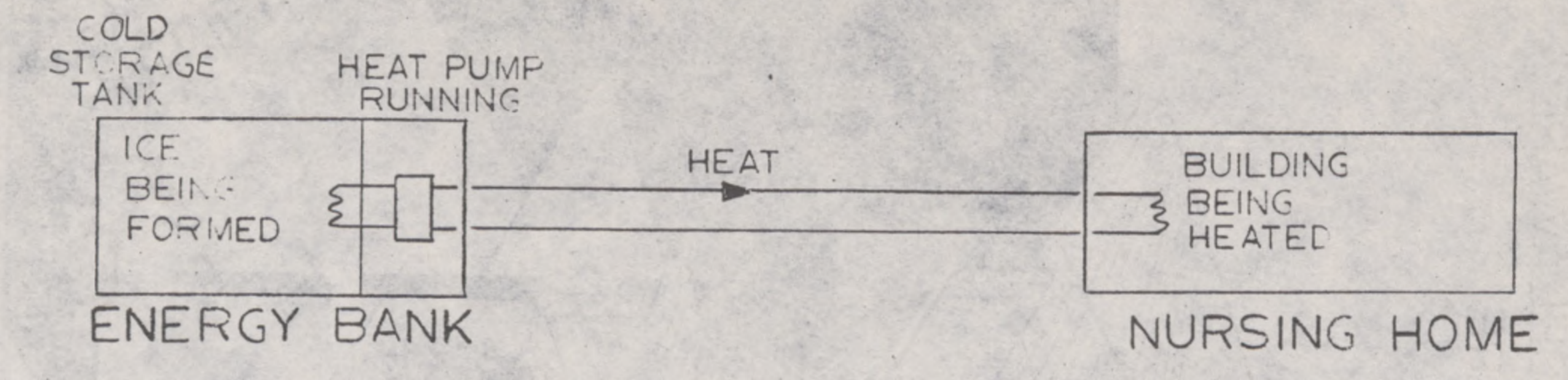
We are using all known energy technology together with results from our research efforts in our current construction program and we intend to keep abreast of any new developments in the energy conservation field in the years ahead.

VA HOSPITAL WILMINGTON, DELAWARE
60-BED NURSING HOME CARE

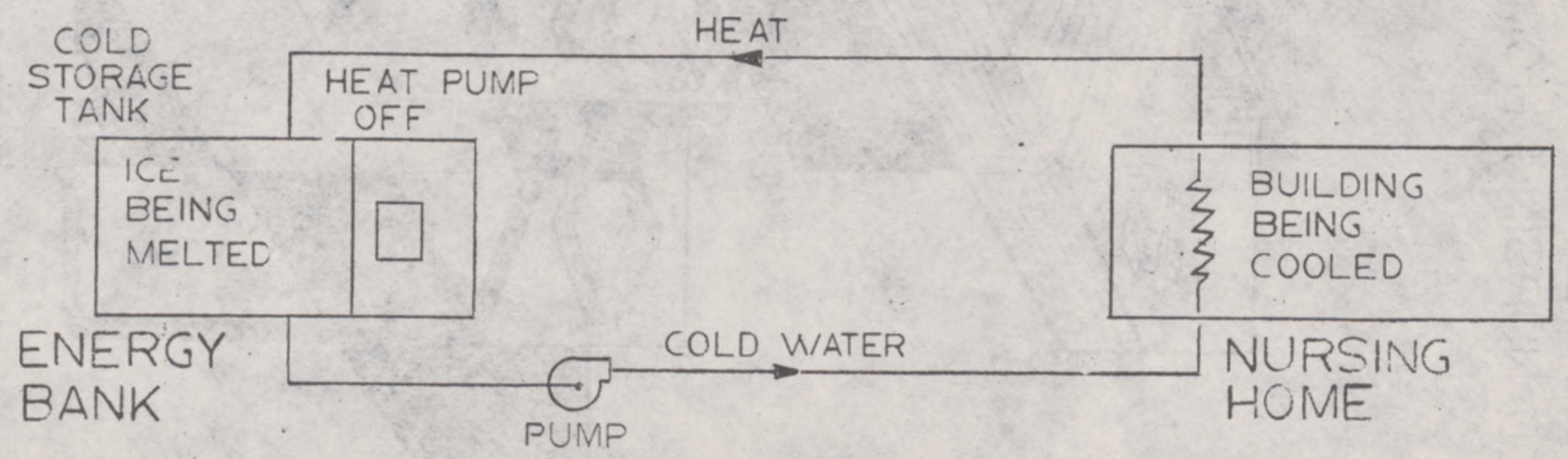


DESIGNED BY
OFFICE OF CONSTRUCTION

WILMINGTON ENERGY BANK



WINTER MODE



SUMMER MODE

VETERANS ADMINISTRATION
OFFICE OF CONSTRUCTION

COMPUTER PROGRAM

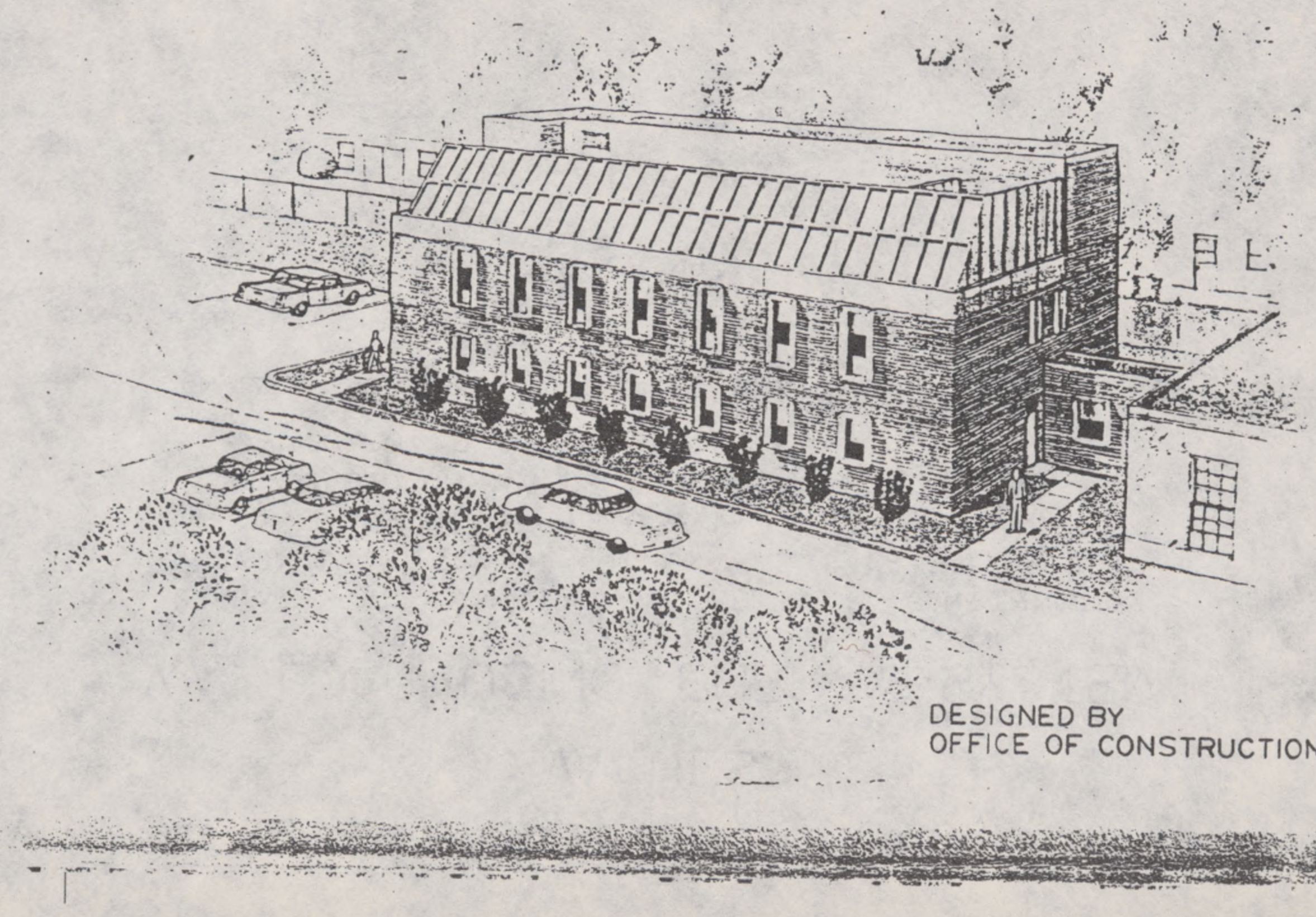
VALUES

V.A. LOAD USING ENERGY SYSTEM

1. DESIGNED FOR V A NEEDS BY OFFICE OF CONSTRUCTION IN CONJUNCTION WITH THE UNIVERSITY OF PITTSBURGH
   - BASED ON V.A. REQUIREMENTS
   - BASED ON V.A. DEFAULT VALUES
   - OUTPUT FOR V.A. USE
2. ANALYZE 30 AIR CONDITIONING SYSTEMS
3. ONE DAY RESULTS
4. OPERATIONAL IN DECEMBER 1976

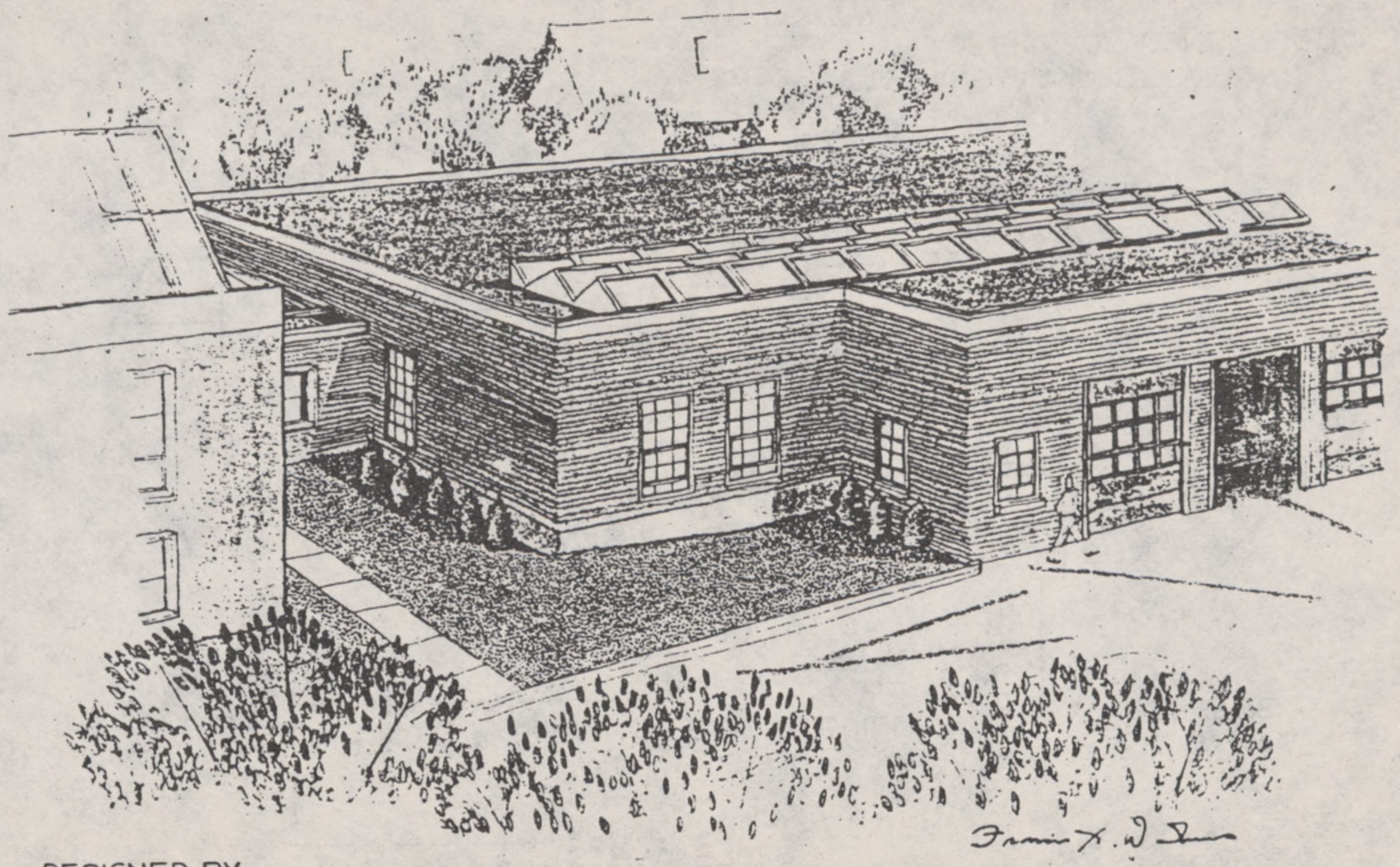
VETERANS ADMINISTRATION
OFFICE OF CONSTRUCTION

VA HOSPITAL WILMINGTON, DELAWARE
SOLAR DEMONSTRATION PROJECT NO. 1



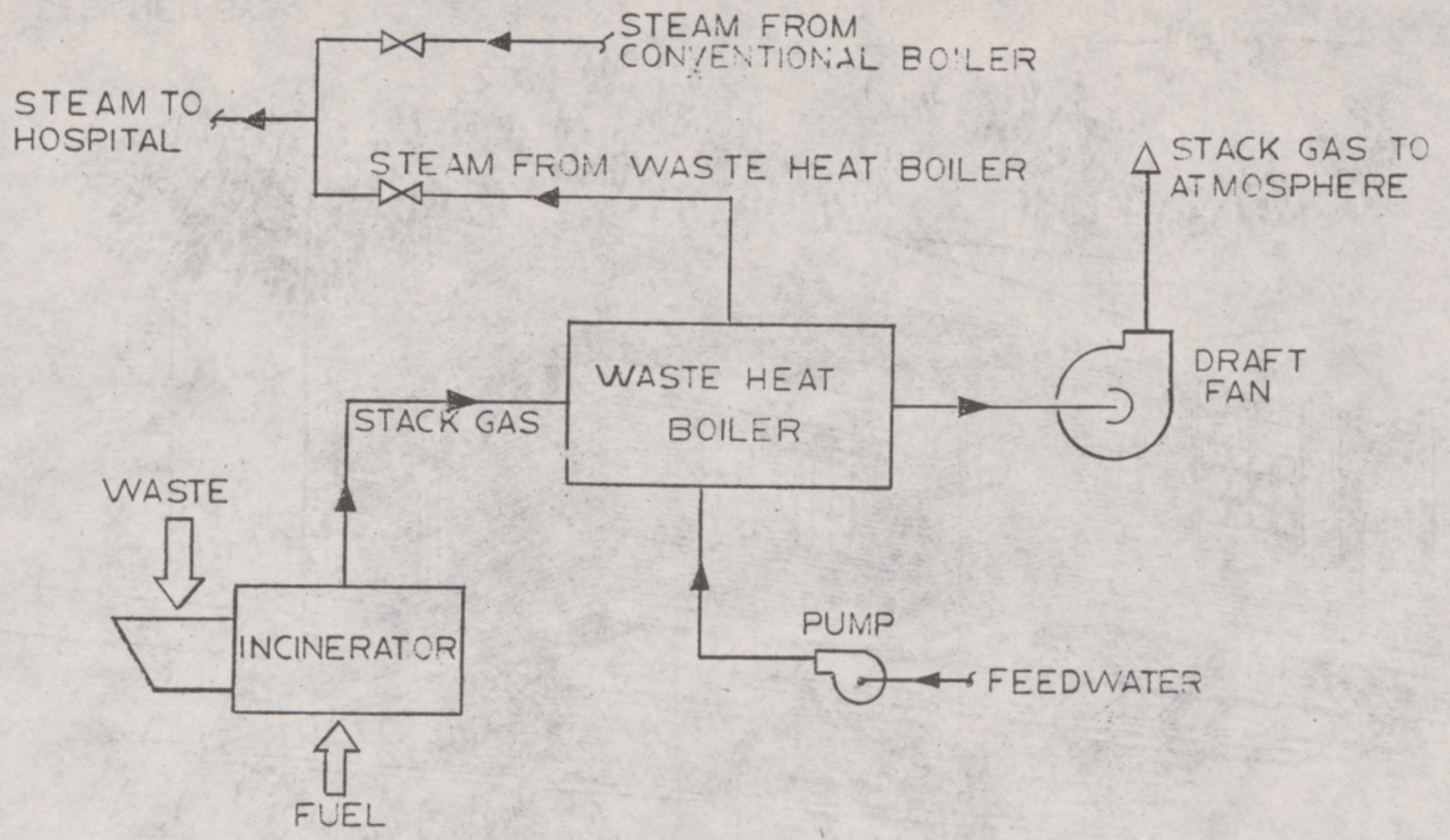
DESIGNED BY
OFFICE OF CONSTRUCTION

VA HOSPITAL WILMINGTON, DELAWARE
SOLAR DEMONSTRATION PROJECT NO. 1



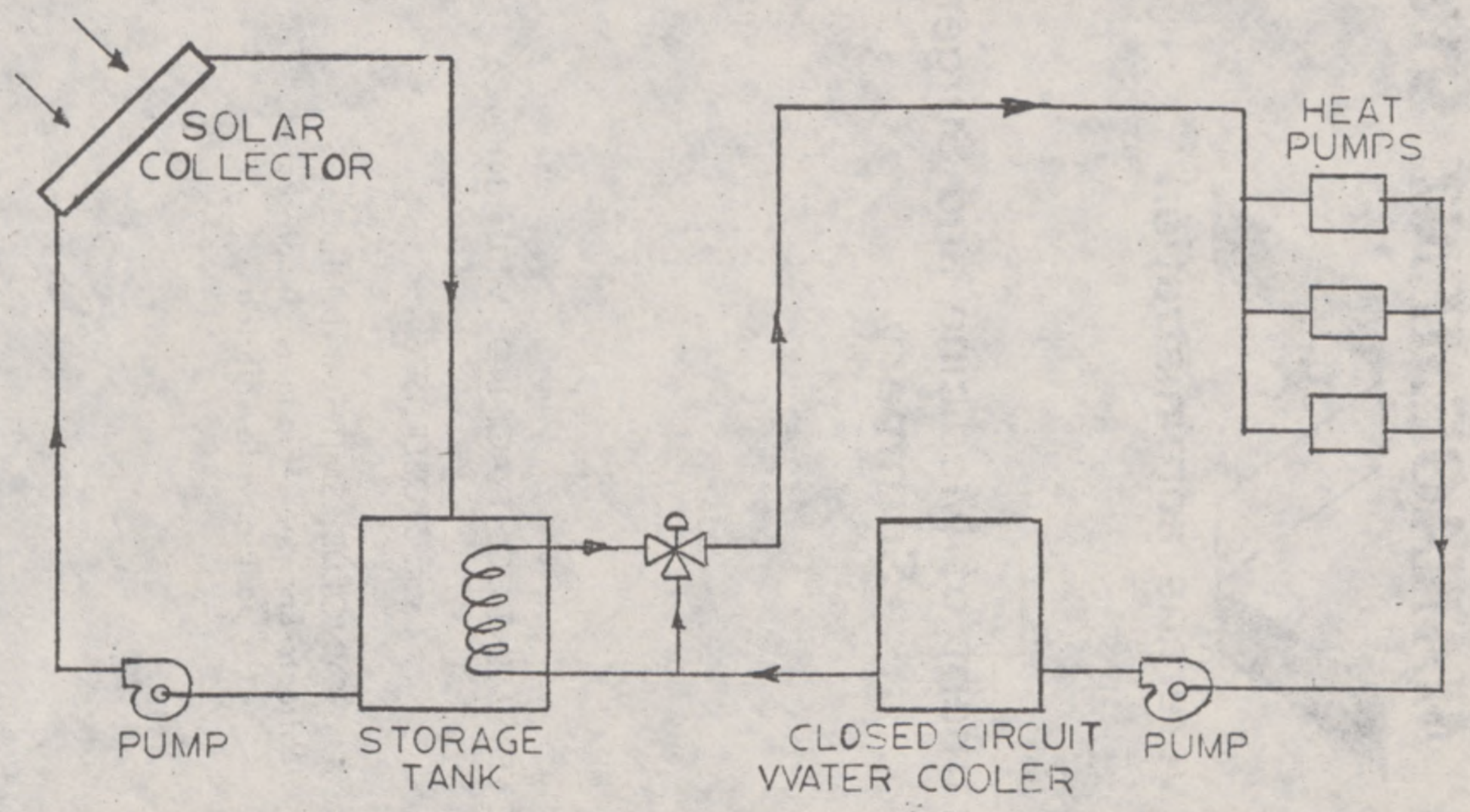
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INCINERATOR WASTE HEAT RECOVERY



VETERANS ADMINISTRATION
OFFICE OF CONSTRUCTION

PALO ALTO
SOLAR ASSISTED HEAT PUMP



VETERANS ADMINISTRATION
OFFICE OF CONSTRUCTION

ENERGY MANAGEMENT SYSTEM

veterans administration

Department of Medicine and Surgery
Summary

GOVERNMENT CONTRACT NO. V101(134)P-436

OCTOBER 1976

REYNOLDS, SMITH AND HILLS
Architects-Engineers-Planners, Incorporated
Jacksonville, Florida

ACKNOWLEDGEMENTS

The Chiefs, Engineering Service of all Veterans Administration Hospitals have attended one of eight highly-effective Energy Management Workshops presented by Floyd A. Miller, Project Director for Reynolds, Smith and Hills.

We have been gratified with our energy conservation results in achieving the VA's goal of zero energy growth for Fiscal Year 1976.

I personally would like to urge each Hospital Director and staff to continue their strong and effective support in this national effort.

JOHN D. CHASE, M.D.
Chief Medical Director

INTRODUCTION

The Veterans Administration and other government agencies have been directed to reduce their demands on the nation's energy resources. This is of great importance to the VA as it is the fifth largest user of energy among all federal agencies.

The Department of Medicine and Surgery responded by retaining Reynolds, Smith and Hills to technically assist and guide the VA in their energy conservation efforts at all existing medical facilities by establishing a computerized energy analysis, monitoring and control system. This nationwide pioneering effort is now completed.

Subsequently, the Administrator of Veterans Affairs, Richard L. Roudebush set a goal for zero growth of energy consumption in Fiscal Year 1976 over that used in Fiscal Year 1975.

Significant to meeting this difficult goal has been eight highly effective Energy Management Workshops for the Chiefs, Engineering Service of all Veterans Administration Hospitals which were presented by Reynolds, Smith and Hills during 1976.

Conservation methods were explored and energy records from each hospital for the past 36 months were examined as input data to the Hospital Energy Control System, previously developed and tested with many hospitals by Reynolds, Smith and Hills. These data were used to establish Energy Baselines and Management of Energy Usage Indices for Fiscal Years 1974, 1975 and 1976 for all VA Hospitals. Two Baseline reports were also made and subsequently reviewed with the submitting hospital for acceptance which indicates that the workshop training has achieved a significant learning and motivative level. Staffs at the hospitals are cooperative, interested in a well-planned formal energy conservation program and have demonstrated that energy consumption can and will be reduced at the individual facilities.

Energy conservation ideas were formally exchanged during these well-received Workshops and the many conservation opportunities that exist at most Veterans Administration Hospitals were identified for corrective action and future funding as required. This Department of Medicine and Surgery Summary shows the present status of energy consumption at all VA Hospitals as each Chief, Engineering Service starts to apply the extensive and available energy conservation technology towards an improved Management of Energy Usage Index. The conservation program efforts and its results will be measured by the Hospital Energy Control System. The present goal of (1) slowing energy consumption at most of the 172 hospitals in the Veterans Administration system and (2) containing overall energy usage at zero growth has been achieved.

Effective Energy Management Workshops, strongly supported conservation technology, and the Hospital Energy Control System, provide the necessary tools for this important, but difficult, national effort which has been effectively demonstrated for high energy intensive medical complexes. A VA Five-Year Energy Conservation Plan has been developed and approved which will allow the Department of Medicine and Surgery to maintain zero energy growth in the future.

For the Veterans Administration, such a more efficient management of energy resources throughout their medical facilities, will allow more health care funds for - - -

"the Veteran, his widow, and his children."

SUMMARY

The three-year energy baselines for the remaining Veterans Administration Hospitals have been successfully established and added to the Hospital Energy Control System at Reynolds, Smith and Hills in Jacksonville, Florida. The hospitals now in the computerized energy data base represent all of the VA Hospital System and include:

1. 2,057,000 square ft. - 1527 bed VAH at Hines, Illinois
2. 1,971,000 square ft. - 1909 bed VAC at Wood (Milwaukee), Wisconsin
3. 1,485,000 square ft. - 960 bed VAH at North Little Rock, Arkansas
4. 1,390,000 square ft. - 863 bed VAH at Minneapolis, Minnesota
5. 1,297,000 square ft. - 1455 bed VAH at Montrose, New York
6. 1,285,000 square ft. - 930 bed VAH at Sepulveda, California
7. 1,260,000 square ft. - 1576 bed VAH at North Chicago (Downey), Illinois
8. 1,255,000 square ft. - 1771 bed VAH at Long Beach, California
9. 1,247,000 square ft. - 982 bed VAH at Northport, New York
10. 1,200,000 square ft. - 1272 bed VAH at Battle Creek, Michigan
11. 1,188,000 square ft. - 993 bed VAH at Brockton, Massachusetts
12. 1,186,000 square ft. - 1330 bed VAH at Houston, Texas
13. 1,156,000 square ft. - 1044 bed VAH at Perry Point, Maryland
14. 1,121,000 square ft. - 827 bed VAH at Palo Alto, California
15. 1,118,000 square ft. - 1023 bed VAH at Bedford, Massachusetts
16. 1,082,000 square ft. - 1187 bed VAH at Marion, Indiana
17. 1,071,000 square ft. - 1170 bed VAC at Temple, Texas
18. 1,069,000 square ft. - 999 bed VAH at Brecksville (Cleveland), Ohio
19. 1,050,000 square ft. - 868 bed VAH at Jamaica Plains (Boston), Massachusetts
20. 1,049,000 square ft. - 1998 bed VAC at Dayton, Ohio
21. 1,046,000 square ft. - 786 bed VAH at West Haven, Connecticut
22. 1,041,000 square ft. - 1568 bed VAH at Lyons, New Jersey
23. 1,039,000 square ft. - 1312 bed VAC at Wadsworth (Los Angeles), California
24. 976,000 square ft. - 1332 bed VAH at Danville, Illinois
25. 941,000 square ft. - 1153 bed VAH at Canandaigua, New York
26. 940,000 square ft. - 1165 bed VAD at White City, Oregon
27. 937,000 square ft. - 1112 bed VAH at East Orange, New Jersey
28. 929,000 square ft. - 1025 bed VAH at Lebanon, Pennsylvania
29. 928,000 square ft. - 1485 bed VAC at Mountain Home (Johnson City), Tennessee
30. 927,000 square ft. - 1212 bed VAH at Tuskegee, Alabama
31. 905,000 square ft. - 924 bed VAH at Buffalo, New York
32. 894,000 square ft. - 1000 bed VAH at Brooklyn, New York

33. 875,000 square ft. - 852 bed VAH at Murfreesboro, Tennessee
34. 865,000 square ft. - 1285 bed VAH at Chillicothe, Ohio
35. 862,000 square ft. - 949 bed VAH at Salem, Virginia
36. 846,000 square ft. - 351 bed VAH at San Francisco, California
37. 836,000 square ft. - 1425 bed VAC at Leavenworth, Kansas
38. 834,000 square ft. - 920 bed VAH at Highland Drive (Pittsburgh), Pennsylvania
39. 834,000 square ft. - 585 bed VAH at Jefferson Barracks (St. Louis), Missouri
40. 821,000 square ft. - 923 bed VAH at Memphis, Tennessee
41. 815,000 square ft. - 1252 bed VAC at Hampton, Virginia
42. 815,000 square ft. - 659 bed VAH at San Diego, California
43. 804,000 square ft. - 1010 bed VAH at Salisbury, North Carolina
44. 803,000 square ft. - 874 bed VAH at Bronx, New York
45. 798,000 square ft. - 790 bed VAH at Miami, Florida
46. 788,000 square ft. - 980 bed VAH at Lenwood (Augusta), Georgia
47. 784,000 square ft. - 900 bed VAH at Tomah, Wisconsin
48. 778,000 square ft. - 1184 bed VAH at Waco, Texas
49. 775,000 square ft. - 705 bed VAH at Northampton, Massachusetts
50. 755,000 square ft. - 680 bed VAH at Allen Park, Missouri
51. 750,000 square ft. - 987 bed VAH at Topeka, Kansas
52. 740,000 square ft. - 1030 bed VAH at New York, New York
53. 736,000 square ft. - 692 bed VAC at San Juan, Puerto Rico
54. 730,000 square ft. - 961 bed VAC at Dublin, Georgia
55. 722,000 square ft. - 645 bed VAH at Cincinatti, Ohio
56. 711,000 square ft. - 909 bed VAH at Knoxville, Iowa
57. 709,000 square ft. - 739 bed VAH at Dallas, Texas
58. 709,000 square ft. - 630 bed VAH at Leestown (Lexington), Kentucky
59. 706,000 square ft. - 681 bed VAC at Togus , Maine
60. 697,000 square ft. - 151 bed VAH at St. Albans, New York
61. 684,000 square ft. - 1475 bed VAH at Coatesville, Pennsylvania
62. 662,000 square ft. - 1225 bed VAC at Martinsburg, West Virginia
63. 656,000 square ft. - 529 bed VAH at Lakeside,Chicago, Illinois
64. 654,000 square ft. - 600 bed VAH at Fort Lyon, Colorado
65. 647,000 square ft. - 364 bed VAH at Sheridan, Wyoming
66. 646,000 square ft. - 600 bed VAH at San Antonio, Texas
67. 638,000 square ft. - 538 bed VAH at Westside, Chicago, Illinois
68. 636,000 square ft. - 552 bed VAH at Salt Lake City, Utah
69. 635,000 square ft. - 708 bed VAH at Washington, D.C.
70. 625,000 square ft. - 685 bed VAH at Menlo Park, California
71. 600,000 square ft. - 500 bed VAH at Columbia, South Carolina
72. 595,000 square ft. - 786 bed VAH at Wade Park (Cleveland), Ohio
73. 590,000 square ft. - 667 bed VAH at Tampa, Florida
74. 587,000 square ft. - 512 bed VAH at Oakland (Pittsburgh), Pennsylvania
75. 577,000 square ft. - 1115 bed VAC at Bay Pines, Florida
76. 562,000 square ft. - 973 bed VAH at St. Cloud, Minnesota
77. 558,000 square ft. - 470 bed VAH at Brentwood (Los Angeles), California
78. 545,000 square ft. - 463 bed VAH at Oklahoma City, Oklahoma
79. 533,000 square ft. - 679 bed VAH at American Lake, Washington
80. 512,000 square ft. - 386 bed VAH at Aspinwall (Pittsburgh), Pennsylvania

81. 498,000 square ft. - 430 bed VAH at Ann Arbor, Michigan
82. 480,000 square ft. - 503 bed VAH at Durham, North Carolina
83. 477,000 square ft. - 330 bed VAH at Phoenix, Arizona
84. 473,000 square ft. - 496 bed VAH at New Orleans, Louisiana
85. 470,000 square ft. - 464 bed VAH at Shreveport, Louisiana
86. 469,000 square ft. - 550 bed VAH at Atlanta (Decatur), Georgia
87. 466,000 square ft. - 456 bed VAH at Vancouver, Washington
88. 465,000 square ft. - 496 bed VAH at Butler, Pennsylvania
89. 461,000 square ft. - 406 bed VAH at Cochran (St. Louis), Missouri
90. 460,000 square ft. - 460 bed VAH at Little Rock, Arkansas
91. 458,000 square ft. - 490 bed VAH at Kansas City, Missouri
92. 450,000 square ft. - 500 bed VAH at Wilkes-Barre, Pennsylvania
93. 448,000 square ft. - 490 bed VAH at Philadelphia, Pennsylvania
94. 440,000 square ft. - 619 bed VAH at Asheville, North Carolina
95. 440,000 square ft. - 489 bed VAH at Albuquerque, New Mexico
96. 438,000 square ft. - 444 bed VAH at Omaha, Nebraska
97. 433,000 square ft. - 710 bed VAH at Tuscaloosa, Alabama
98. 429,000 square ft. - 439 bed VAH at Denver, Colorado
99. 428,000 square ft. - 480 bed VAH at Gainesville, Florida
100. 427,000 square ft. - 442 bed VAH at Tucson, Arizona
101. 424,000 square ft. - 499 bed VAH at Birmingham, Alabama
102. 421,000 square ft. - 444 bed VAH at Louisville, Kentucky
103. 420,000 square ft. - 1048 bed VAC at Bath, New York
104. 412,000 square ft. - 669 bed VAC at Gulfport, Mississippi
105. 410,000 square ft. - 527 bed VAH at Portland, Oregon
106. 410,000 square ft. - 451 bed VAH at West Tenth Street (Indianapolis), Indiana
107. 406,000 square ft. - 470 bed VAH at Alexandria, Louisiana
108. 405,000 square ft. - 277 bed VAH at Fort Howard, Maryland
109. 404,000 square ft. - 500 bed VAC at Jackson, Mississippi
110. 397,000 square ft. - 438 bed VAH at Madison, Wisconsin
111. 396,000 square ft. - 813 bed VAC at Biloxi, Mississippi
112. 396,000 square ft. - 360 bed VAH at Iowa City, Iowa
113. 395,000 square ft. - 460 bed VAH at Columbia, Missouri
114. 382,000 square ft. - 451 bed VAH at Martinez, California
115. 376,000 square ft. - 336 bed VAC at Wilmington, Delaware
116. 372,000 square ft. - 370 bed VAH at Cooper Drive (Lexington), Kentucky
117. 371,000 square ft. - 431 bed VAH at Charleston, South Carolina
118. 367,000 square ft. - 743 bed VAC at Hot Springs, South Dakota
119. 352,000 square ft. - 318 bed VAH at Forest Hill (Augusta), Georgia
120. 351,000 square ft. - 468 bed VAC at Prescott, Arizona
121. 343,000 square ft. - 348 bed VAH at Providence, Rhode Island
122. 337,000 square ft. - 291 bed VAH at Baltimore, Maryland
123. 335,000 square ft. - 354 bed VAH at Castle Point, New York
124. 335,000 square ft. - 202 bed VAC at Wichita, Kansas
125. 331,000 square ft. - 389 bed VAH at Fort Meade, South Dakota
126. 331,000 square ft. - 313 bed VAH at Seattle, Washington

127.	328,000	square ft. -	403 bed VAH at Lake City, Florida
128.	323,000	square ft. -	274 bed VAC at Fargo, North Dakota
129.	300,000	square ft. -	485 bed VAH at Nashville, Tennessee
130.	297,000	square ft. -	160 bed VAC at Fort Harrison, Montana
131.	283,000	square ft. -	275 bed VAH at Big Spring, Texas
132.	281,000	square ft. -	214 bed VAH at Grand Island, Nebraska
133.	280,000	square ft. -	324 bed VAC at Sioux Falls, South Dakota
134.	278,000	square ft. -	241 bed VAH at Batavia, New York
135.	275,000	square ft. -	345 bed VAH at Kerrville, Texas
136.	262,000	square ft. -	224 bed VAH at Clarksburg, West Virginia
137.	257,000	square ft. -	170 bed VAH at Huntington, West Virginia
138.	255,000	square ft. -	267 bed VAH at Cold Spring (Indianapolis), Indiana
139.	254,000	square ft. -	274 bed VAH at Iron Mountain, Missouri
140.	250,000	square ft. -	190 bed VAH at Newington, Connecticut
141.	248,000	square ft. -	275 bed VAH at Fresno, California
142.	248,000	square ft. -	172 bed VAH at Boise, Idaho
143.	247,000	square ft. -	391 bed VAH at Fayetteville, North Carolina
144.	246,000	square ft. -	190 bed VAH at Walla Walla, Washington
145.	245,000	square ft. -	225 bed VAH at Poplar Bluf, Missouri
146.	238,000	square ft. -	465 bed VAH at Roseburg, Oregon
147.	220,000	square ft. -	215 bed VAH at Saginaw, Michigan
148.	220,000	square ft. -	194 bed VAH at Altoona, Pennsylvania
149.	219,000	square ft. -	188 bed VAH at Manchester, New Hampshire
150.	216,000	square ft. -	182 bed VAH at Erie, Pennsylvania
151.	214,000	square ft. -	408 bed VAC at Bonham, Texas
152.	214,000	square ft. -	247 bed VAH at Muskogee, Oklahoma
153.	214,000	square ft. -	191 bed VAH at Livermore, California
154.	210,000	square ft. -	222 bed VAH at Marlin, Texas
155.	206,000	square ft. -	220 bed VAH at Fayetteville, Arkansas
156.	204,000	square ft. -	218 bed VAH at Fort Wayne, Indiana
157.	198,000	square ft. -	216 bed VAH at Beckley, West Virginia
158.	198,000	square ft. -	211 bed VAH at Lincoln, Nebraska
159.	184,000	square ft. -	213 bed VAH at Spokane, Washington
160.	179,000	square ft. -	206 bed VAH at Montgomery, Alabama
161.	169,000	square ft. -	223 bed VAH at Reno, Nevada
162.	169,000	square ft. -	157 bed VAH at Grand Junction, Colorado
163.	155,000	square ft. -	176 bed VAH at Marion, Illinois
164.	152,000	square ft. -	137 bed VAH at Amarillo, Texas
165.	145,000	square ft. -	259 bed VAH at West Roxbury (Boston), Massachusetts
166.	144,000	square ft. -	176 bed VAC at Cheyenne, Wyoming
167.	143,000	square ft. -	116 bed VAH at Miles City, Montana
TOTALS:	99,437,000	sq.ft.	107,937 beds

Overall energy consumption in these 167 VA hospitals for the Fiscal Year of 1976 is essentially stable over Fiscal Year 1975 and is classified as follows:

85 Hospitals Reducing Annual Consumption
82 Hospitals Increasing Annual Consumption

Exhibits 1 and 2 present details of the change in energy consumption for all VA hospitals from Fiscal Year 1975 to Fiscal Year 1976. Over 50 percent of the facilities are now saving energy due to the conservation program.

In order to compare Energy Management among hospitals of different sizes and geographic locations, a Management of Energy Usage Index, previously developed by Project Director Floyd A. Miller, is given for all these VA hospitals in Exhibit 3. The M.E.U. Index measures Btu's per hour for each square foot after adjusting for degree days of weather. As indicated in Exhibit 3, the 3-year improvement in the M.E.U. Index serves as a basis for ranking the VA hospitals according to their ability to manage energy and the effectiveness of the energy conservation efforts.

The VA system of 172 medical facilities in the nation is divided into 28 Medical Districts as shown in Exhibit 4. Exhibit 5 provides an interesting and revealing two-year comparison of these Medical Districts and starts to establish an initial priority for the proper allocation of available funds from the Five-Year Energy Conservation Plan.

Finally, Exhibit 6 shows the latest Management of Energy Usage Summary which is prepared quarterly for the Washington, D.C. Central Office, Engineering Service of the Veterans Administration. In this current quarter, energy is being managed from a low of 0.94 Btu's per hour to a high of 6.67 Btu's per hour for each square foot of space. This summary provides another useful and current basis for the proper allocation of available energy conservation funds within the Veterans Administration to achieve realistic energy consumption goals for each of their many facilities. Other governmental, public, private and teaching complexes should follow the lead of the VA and set similar realistic energy consumption goals - - - and help in our national effort of PROJECT INDEPENDENCE - ENERGY.

EXHIBIT 1
85 HOSPITALS REDUCING ANNUAL CONSUMPTION
FY-1976 VS. FY-1975

WOOD, Wisconsin	- 49 Billion BTUS	- 8.9%
OAKLAND (PITTSBURGH), Pennsylvania	- 44	- 18.0
BRONX, New York	- 33	- 9.0
BRECKSVILLE (CLEVELAND), Ohio	- 31	- 11.0
ST. ALBANS, New York	- 27	- 11.2
COLUMBIA, Missouri	- 24	- 16.8
KANSAS CITY, Missouri	- 21	- 11.9
WADSWORTH (LOS ANGELES), California	- 19	- 5.7
LEBANON, Pennsylvania	- 18	- 9.8
TOPEKA, Kansas	- 17	- 7.9
WEST TENTH ST. (INDIANAPOLIS), Indiana	- 14	- 14.9
MINNEAPOLIS, Minnesota	- 14	- 4.3
FORT MEADE, South Dakota	- 13	- 7.8
JEFFERSON BARRACKS (ST. LOUIS), Missouri	- 13	- 5.0
TEMPLE, Texas	- 12	- 5.2
BEDFORD, Massachusetts	- 12	- 3.9
NORTH CHICAGO (DOWNEY), Illinois	- 12	- 3.0
BIG SPRING, Texas	- 11	- 19.0
JAMAICA (BOSTON), Massachusetts	- 11	- 6.2
SAN DIEGO, California	- 10	- 5.5
HOT SPRINGS, South Dakota	- 9	- 9.5
LENWOOD (AUGUSTA), Georgia	- 9	- 5.8
LAKESIDE (CHICAGO), Illinois	- 9	- 4.4
BUTLER, Pennsylvania	- 8	- 6.7
SALISBURY, North Carolina	- 8	- 4.9
KNOXVILLE, Iowa	- 8	- 4.5
SALEM, Virginia	- 8	- 4.2
TOGUS, Maine	- 7	- 4.3
SALT LAKE CITY, Utah	- 7	- 3.6
LITTLE ROCK, Arkansas	- 6	- 5.6
NASHVILLE, Tennessee	- 6	- 5.4
TOMAH, Wisconsin	- 6	- 3.2
CHILLICOTHE, Ohio	- 6	- 2.9
NORTHPORT, New York	- 6	- 1.8
DALLAS, Texas	- 6	- 1.9
MONTGOMERY, Alabama	- 5	- 11.1
ALTOONA, Pennsylvania	- 5	- 8.1
PRESCOTT, Arizona	- 5	- 5.6
MENLO PARK (PALO ALTO), California	- 5	- 4.2
ALLEN PARK, Michigan	- 5	- 3.1
BUFFALO, New York	- 5	- 3.0
MARTINSBURG, West Virginia	- 5	- 2.4
MARION, Illinois	- 4	- 7.7
BILOXI, Mississippi	- 4	- 5.0
COCHRAN (ST. LOUIS), Missouri	- 4	- 4.5

EXHIBIT 1 (Cont.)
85 HOSPITALS REDUCING ANNUAL CONSUMPTION
FY-1976 VS. FY-1975

PORTLAND, Oregon	- 4	- 3.9
LOUISVILLE, Kentucky	- 4	- 3.5
MADISON, Wisconsin	- 4	- 2.8
PALO ALTO, California	- 4	- 1.6
CHEYENNE, Wyoming	- 3	- 7.0
BONHAM, Texas	- 3	- 5.2
WICHITA, Kansas	- 3	- 5.1
FORT HARRISON, Montana	- 3	- 4.4
BRENTWOOD (LOS ANGELES), California	- 3	- 3.9
MARLIN, Texas	- 3	- 2.9
ST. CLOUD, Minnesota	- 3	- 2.0
MARION, Indiana	- 3	- 1.4
PERRY POINT, Maryland	- 3	- 1.1
FORT HOWARD, Maryland	- 2	- 3.1
COLD SPRING ROAD (INDIANAPOLIS), Indiana	- 2	- 3.1
WALLA WALLA, Washington	- 2	- 2.9
TUCSON, Arizona	- 2	- 2.6
WILMINGTON, Delaware	- 2	- 2.1
SHERIDAN, Wyoming	- 2	- 1.6
MEMPHIS, Tennessee	- 2	- 1.1
DANVILLE, Illinois	- 2	- 0.9
TUSKEGEE, Alabama	- 2	- 0.9
AMARILLO, Texas	- 1	- 2.6
HUNTINGTON, West Virginia	- 1	- 2.3
LINCOLN, Nebraska	- 1	- 2.1
GRAND ISLAND, Nebraska	- 1	- 1.8
SIOUX FALLS, South Dakota	- 1	- 1.3
JACKSON, Mississippi	- 1	- 1.0
CINCINATTI, Ohio	- 1	- 0.6
BATH, New York	- 1	- 0.6
FORT WAYNE, Indiana	0	0.0
MUSKOGEE, Oklahoma	0	0.0
LIVERMORE, California	0	0.0
FRESNO, California	0	0.0
BOISE, Idaho	0	0.0
MARTINEZ, California	0	0.0
SHREVEPORT, Louisiana	0	0.0
ASPINWALL (PITTSBURGH), Pennsylvania	0	0.0
CLARKSBURG, West Virginia	0	0.0
WEST HAVEN, Connecticut	0	0.0

SOURCE: Hospital Energy Control System, Reynolds, Smith and Hills, Jacksonville, Florida

EXHIBIT 2
82 HOSPITALS INCREASING ANNUAL CONSUMPTION
FY-1976 VS. FY-1975

OKLAHOMA CITY, Oklahoma	+	1 Billion BTUS	+	0.7%
SEPULVEDA, California	+	1	+	0.8
GULFPORT, Mississippi	+	1	+	0.8
DUBLIN, Georgia	+	1	+	0.8
NEW ORLEANS. Louisiana	+	1	+	0.9
BAY PINES, Florida	+	1	+	1.0
ALEXANDRIA, Louisiana	+	1	+	1.1
IRON MOUNTAIN, Montana	+	1	+	1.5
KERRVILLE, Texas	+	1	+	1.6
WEST ROXBURY, Massachusetts	+	1	+	2.0
POPLAR BLUF, Missouri	+	1	+	2.1
SAGINAW, Michigan	+	1	+	2.4
MARLIN, Texas	+	1	+	2.4
RENO, Nevada	+	1	+	3.1
F.D. ROOSEVELT (MONTROSE), New York	+	2	+	0.8
NORTHAMPTON, Massachusetts	+	2	+	1.6
GAINESVILLE, Floirda	+	2	+	1.8
PHILADELPHIA, Pennsylvania	+	2	+	1.8
LAKE CITY, Florida	+	2	+	2.5
FARGO, North Dakota	+	2	+	2.8
ERIE, Pennsylvania	+	2	+	3.3
MILES CITY, Montana	+	2	+	4.1
FAYETTEVILLE, Arkansas	+	2	+	4.5
CANANDAIGUA, New York	+	3	+	1.4
TAMPA, Florida	+	3	+	1.9
COOPER DRIVE (LEXINGTON), Kentucky	+	3	+	3.4
FOREST HILL (AUGUSTA), Georgia	+	3	+	4.3
BATAVIA, New York	+	3	+	4.8
BECKLEY, West Virginia	+	3	+	6.0
LYONS, New Jersey	+	4	+	1.7
WHITE CITY, Oregon	+	4	+	3.2
WILKES-BARRE, Pennsylvania	+	4	+	3.6
BIRMINGHAM, Alabama	+	4	+	4.4
BALTIMORE, Maryland	+	4	+	5.1
MANCHESTER, New Hampshire	+	4	+	6.6
ROSEBURG, Oregon	+	4	+	6.6
GRAND JUNCTION, Colorado	+	4	+	7.3
BATTLE CREEK, Michigan	+	5	+	2.0
NORTH LITTLE ROCK, Arkansas	+	5	+	2.5
COATSVILLE, Pennsylvania	+	5	+	2.6
LESSTOWN (LEXINGTON), Kentucky	+	5	+	3.5
AMERICAN LAKE, Washington	+	5	+	3.9

EXHIBIT 2 (Cont.)
82 HOSPITALS INCREASING ANNUAL CONSUMPTION
FY-1976 VS. FY-1975

PROVIDENCE, Rhode Island	+ 5	+ 5.7
NEWINGTON, Connecticut	+ 5	+ 8.6
DURHAM, North Carolina	+ 6	+ 4.0
ATLANTA (DECATUR), Georgia	+ 6	+ 4.4
DENVER, Colorado	+ 6	+ 4.8
SPOKANE, Washington	+ 6	+ 12.3
HOUSTON, Texas	+ 7	+ 2.1
WESTSIDE (CHIGACO), Illinois	+ 7	+ 5.1
ASHEVILLE, North Carolina	+ 7	+ 5.1
MIAMI, Florida	+ 7	+ 5.6
COLUMBIA, South Carolina	+ 7	+ 9.5
FORT LYON, Colorado	+ 8	+ 5.6
VANCOUVER, Washington	+ 8	+ 7.9
DAYTON, Ohio	+ 9	+ 3.5
CHARLESTON, South Carolina	+ 9	+ 11.4
HAMPTON, Virginia	+ 10	+ 5.5
ANN ARBOR, Michigan	+ 10	+ 9.5
BROOKLYN, New York	+ 11	+ 4.0
NEW YORK, New York	+ 11	+ 4.1
WACO, Texas	+ 11	+ 6.8
WASHINGTON, D.C.	+ 12	+ 5.8
IOWA CITY, Iowa	+ 12	+ 10.0
FAYETTEVILLE, North Carolina	+ 12	+ 20.0
CASTLE POINT, New York	+ 13	+ 15.3
MOUNTAIN HOME, Tennessee	+ 14	+ 8.4
WADE PARK (CLEVELAND), Ohio	+ 15	+ 6.1
TUSCALOOSA, Alabama	+ 15	+ 17.7
EAST ORANGE, New Jersey	+ 16	+ 6.8
SAN JUAN, Puerto Rico	+ 16	+ 18.6
HINES, Illinois	+ 17	+ 2.9
HIGHLANDS (PITTSBURGH), Pennsylvania	+ 17	+ 2.9
SEATTLE, Washington	+ 18	+ 21.2
SAN FRANCISCO, California	+ 20	+ 16.0
BROCKTON, Massachusetts	+ 21	+ 11.5
LONG BEACH, California	+ 22	+ 9.1
LEAVENWORTH, Kansas	+ 23	+ 10.1
MURFREESBORO, Tennessee	+ 29	+ 19.9
SAN ANTONIO, Texas	+ 50	+ 20.7
PHOENIX, Arizona	+ 55	+ 88.7
OMAHA, Nebraska	+ 135	+116.4

SOURCE: Hospital Energy Control System, Reynolds, Smith and Hills, Jacksonville, Florida.

EXHIBIT 3

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*** HOSPITAL ENERGY CONTROL SYSTEM ***
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3-YEAR MEU IMPROVEMENT

* * * * V A HOSPITAL SUMMARY * * * *

ID	NAME	M SQFT	BEDS	FY-1974 DDAY	FY-1974 BIL BTU	FY-1974 MEU	FY-1975 DDAY	FY-1975 BIL BTU	FY-1975 MEU	FY-1976 DDAY	FY-1976 BIL BTU	FY-1976 MEU	MEU PCT CNG
623 20	MUSKOGEE OK	214	247	4832	71	5.3	4898	73	3.7	4849	73	3.2	-40
514 02	BATH NEW YORK	420	1048	6730	150	3.3	7275	162	2.5	7751	161	2.2	-34
579A23	HOT SPRINGS SD	367	743	7169	100	1.6	7921	95	1.4	7265	86	1.3	-28
646 05	PITTS(OAKLAND)	587	512	5847	238	3.3	6467	244	2.9	6456	200	2.4	-26
695 16	WOOD WI	1971	1909	7519	592	2.1	7759	550	1.9	7347	501	1.6	-24
564 19	FAYETTEVILLE AR	206	220	4112	49	2.7	5717	45	1.7	5138	47	2.1	-22
539 13	CINCINATTI OH	722	645	5347	166	2.5	5693	169	2.1	5551	168	2.0	-20
641 06	PERRY POINT MD	1156	1044	5189	280	1.8	5989	283	1.5	5985	280	1.5	-19
592 23	KNOXVILLE IA	711	909	7445	184	1.6	7973	177	1.6	6675	169	1.3	-19
603 11	LOUISVILLE KY	421	444	5268	118	2.2	5564	113	1.8	5594	109	1.8	-18
599 27	LIVERMORE CA	214	191	2878	58	4.0	3740	56	3.1	3466	56	3.3	-18
664 26	SAN DIEGO CA	815	659	1670	184	5.0	2054	181	4.4	1745	171	4.2	-16
503 05	ALTOONA PENN	220	194	6216	60	2.2	7312	62	2.1	6957	57	1.9	-16
570 27	FRESNO CA	248	275	4170	67	2.0	4811	67	1.7	4546	67	1.7	-15
677 22	TOPEKA KS	750	987	6222	213	2.2	6595	216	2.0	6064	195	1.9	-14
589 22	KANSAS CITY MO	458	490	6113	171	2.9	6749	176	2.6	6066	155	2.5	-14
640P27	PALO ALTO CA	1121	827	2967	245	4.2	2992	250	4.4	2944	246	3.7	-12
530 26	BRENTWOOD CA	558	470	2501	79	2.6	3001	78	2.1	2437	75	2.3	-12
529 05	BUTLER PENN	465	496	7001	123	1.5	7343	120	1.4	6967	112	1.3	-12
541B13	BRECKSVILLE OH	1069	999	6221	211	1.8	6800	282	1.8	6392	251	1.6	-11
543 21	COLUMBIA MO	395	460	6099	138	2.8	6476	143	2.8	5694	119	2.5	-11
626 11	NASHVILLE TN	300	485	4814	124	3.8	5131	112	3.1	4654	106	3.4	-11
519 25	BIG SPRING TX	283	275	4391	53	1.9	4348	58	2.0	4092	47	1.7	-11
585 16	IRON MOUNTAIN MI	254	274	8855	75	1.8	8721	67	1.6	8637	68	1.6	-11
556 17	NORTH(DOWNEY)IL	1260	1576	6696	391	2.2	7155	397	1.9	6741	385	2.0	- 9
526 03	BRONX NY	803	874	5734	392	4.5	6171	369	3.8	5923	336	4.1	- 9
520B10	BILOXI MS	396	813	4078	82	2.3	3759	80	2.3	3880	76	2.1	- 9
568 23	FORT MEADE SD	331	389	7562	152	2.9	8186	166	3.0	7378	153	2.7	- 9
646A05	PITTS(ASPINWALL)	512	386	5847	69	.9	6467	68	.8	6456	68	.9	- 8
612 27	MARTINEZ CA	382	451	3114	65	2.5	3750	71	2.2	3508	71	2.3	- 8
594 12	LAKE CITY FL	328	403	3711	84	2.6	3681	81	2.5	3851	83	2.4	- 8
655 14	SAGINAW MI	220	215	7230	45	1.4	7394	42	1.3	7093	43	1.3	- 8
665 26	SEPULVEDA CA	1285	930	2865	124	1.4	3197	128	1.3	3104	129	1.3	- 7
515 14	BATTLE CREEK MI	1200	1272	6829	255	1.4	7009	255	1.3	6630	260	1.3	- 7
528 02	BUFFALO NY	905	924	7218	171	1.5	7205	204	1.5	6989	198	1.4	- 7
522 20	BONHAM TX	214	408	4583	66	2.8	2726	58	2.4	4356	55	2.6	- 7
674 20	TEMPLE TX	1071	1170	4715	201	1.8	5363	188	1.4	4350	176	1.7	- 6
532 02	CANANDAIGUA NY	941	1153	7149	213	1.4	7183	211	1.3	6909	214	1.3	- 6
583 15	WEST TENTH IN	410	451	5977	74	1.7	6529	94	1.8	6237	80	1.6	- 6
402 01	TOGUS MAINE	706	681	7485	157	1.3	7589	164	1.5	7768	157	1.3	- 5
691 26	WADSWORTH CA	1039	1312	2501	308	4.7	3001	334	4.3	2437	315	4.5	- 4
657A21	JEFFERSON MO	834	585	6228	269	2.4	6348	259	2.3	5750	246	2.3	- 4
353 12	GAINESVILLE FL	428	480	4541	116	2.5	4374	112	2.5	4439	114	2.4	- 4
648 28	PORTLAND OR	410	527	5367	105	2.5	4754	103	2.5	4733	99	2.4	- 4
619 10	MONTGOMERY AL	179	206	4084	45	2.6	3903	45	2.7	4286	40	2.5	- 4
680 10	TUSKEGEE AL	927	1212	3646	221	3.1	4016	229	2.6	3737	231	3.0	- 3
673 12	TAMPA FL	590	667	4164	170	3.1	4125	161	3.1	4173	164	3.0	- 3
520A10	GULFPORT MS	412	669	4065	135	3.2	3937	126	3.1	3996	127	3.1	- 3
596A11	COOPER DRIVE KY	372	370	5291	85	2.1	5641	89	1.9	5576	92	2.0	- 3
558 08	DURHAM NC	480	503	4234	140	3.3	4990	149	2.7	4353	155	3.2	- 2
645 05	PITTS(HIGHLAND)	834	920	5844	205	1.9	6234	217	1.8	5935	208	1.9	- 1

EXHIBIT 3 (Cont.)

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*** HOSPITAL ENERGY CONTROL SYSTEM ***
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* * * *   V A HOSPITAL SUMMARY   * * * *
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3-YEAR MEU IMPROVEMENT

ID	NAME	M SQFT	BEDS	FY-1974 DDAY	FY-1974 BIL BTU	FY-1974 MEU	FY-1975 DDAY	FY-1975 BIL BTU	FY-1975 MEU	FY-1976 DDAY	FY-1976 BIL BTU	FY-1976 MEU	MEU PCT CNG
578 17	HINES IL	2057	1527	7007	564	1.9	7179	586	1.9	6983	603	1.9	0
618 18	MINNEAPOLIS MN	1390	863	8656	313	1.3	8942	325	1.1	8027	311	1.3	0
620A03	MONTROSE NEW YORK	1297	1455	6355	237	1.2	6468	242	1.1	6538	244	1.2	0
610 15	MARION IN	1082	1187	6511	204	1.3	7058	222	1.3	6470	219	1.3	0
550 15	DANVILLE IL	976	1332	6426	246	1.6	6646	233	1.6	6118	231	1.6	0
659 08	SALISBURY NC	804	1010	4810	157	1.6	5303	164	1.5	4966	156	1.6	0
676 16	TOMAH WI	784	900	8006	182	1.4	8372	189	1.3	7358	183	1.4	0
567 24	FORT LYON CO	654	600	6299	146	1.4	6372	144	1.3	6336	152	1.4	0
660 24	SALT LAKE CITY UT	636	552	6727	183	2.0	6875	196	2.0	6722	189	2.0	0
683 28	VANCOUVER WA	466	456	4789	105	2.0	4804	102	1.8	4851	11C	2.0	0
554 24	DENVER CO	429	439	6496	119	2.2	6882	124	2.0	6234	13C	2.2	0
678 25	TUCSON AZ	427	442	4624	79	1.8	4614	76	1.7	4356	74	1.8	0
607 16	MADISON WI	397	438	7964	134	2.3	8016	143	2.4	7537	139	2.3	0
649 25	PRESCOTT AZ	351	468	5674	92	2.3	6117	89	2.3	5503	84	2.3	0
452 22	WICHITA KS	335	202	6127	58	1.2	6349	59	1.3	5866	56	1.2	0
574 23	GRAND ISLAND NE	281	214	7344	53	1.3	7757	56	1.3	7008	55	1.3	0
438 18	SIOUX FALLS SD	280	324	8334	73	1.5	8645	76	1.7	8206	75	1.5	0
581 07	HUNTINGTON WV	257	170	5447	42	1.1	6208	44	1.1	5955	43	1.1	0
583A15	COLDSPRING IN	255	267	5998	66	1.7	6731	65	1.5	6081	63	1.7	0
504 25	AMARILLO TX	152	137	5255	36	2.0	5638	38	2.2	5077	37	2.0	0
531 28	BOISE ID	248	172	6189	53	1.5	6388	54	1.6	3396	54	1.5	0
597 23	LINCOLN NE	198	211	7346	45	1.6	7797	48	1.5	6932	47	1.6	0
509A09	LENWOOD AUGUSTAGA	788	980	3975	129	1.5	4424	155	1.6	4463	146	1.5	2
621 08	MOUNTAIN HOME TN	928	1485	4494	162	1.7	4982	167	1.6	4805	181	1.8	3
541 13	WADE PARK OH	595	786	6242	225	4.0	6800	246	4.0	6071	261	4.1	3
505 28	AMERICAN LAKE WA	533	679	4945	134	2.3	5226	130	2.3	5140	135	2.4	4
644 25	PHOENIX AZ	477	330	5363	53	2.5	5363	62	2.3	5418	117	2.6	4
540 05	CLARKSBURG WVIR	262	224	4687	53	1.9	5203	61	2.0	5454	61	2.0	4
609 21	MARION IL	155	176	5669	49	2.7	6037	52	2.7	5233	48	2.8	4
523 01	BOSTON(JAMAICA)MA	1050	868	6222	198	1.2	6237	177	1.3	5904	166	1.3	5
552 14	DAYTON OH	1049	1998	5891	260	1.9	6464	256	1.6	6077	265	1.8	5
689 03	WEST HAVEN CONN	1046	786	5881	215	1.7	6690	224	1.5	5926	224	1.8	5
658 07	SALEM VIRGINIA	862	949	4762	182	1.8	5324	192	1.7	4924	184	1.9	5
614 11	MEMPHIS TN	821	923	4696	193	2.0	5026	183	1.8	4569	181	2.1	5
535 17	LAKESIDE CHICAGO	656	529	7075	191	2.0	7181	203	2.1	6717	194	2.1	5
635 20	OKLAHOMA CITY OK	545	463	4709	132	2.2	5423	140	2.1	4799	141	2.3	5
501 25	ALBUQUERQUE NM	440	489	5747	98	1.9	5927	103	1.9	5628	10C	2.0	5
566 06	FORT HOWARD MD	405	277	5525	62	1.3	5559	65	1.3	5366	63	1.3	5
460 04	WILMINGTON DEL	376	336	5658	95	2.1	5952	97	2.0	5605	95	2.2	5
611 20	MARLIN TX	210	222	4637	42	2.0	5761	42	1.6	4568	43	2.1	5
569 15	FORT WAYNE IN	204	218	6507	56	2.0	7257	55	1.8	6129	55	2.1	5
654 27	RENO NEVADA	169	223	5978	32	1.7	6600	32	1.7	6442	33	1.8	5
442 24	CHEYENNE WY	144	176	7322	39	2.0	8124	43	1.9	7341	4C	2.1	5
561 04	EAST ORANGE NJ	937	1112	5632	299	2.1	5929	235	1.8	5759	251	2.3	6
662 27	SAN FRANCISCO CA	846	351	3382	116	2.7	3326	125	2.9	3314	145	2.9	7
590 07	HAMPTON VIR	815	1252	4396	173	1.9	4994	183	1.7	4801	193	2.0	7
546 12	MIAMI FL	798	790	4699	126	1.4	4716	118	1.3	4438	125	1.5	7
506 14	ANN ARBOR MI	498	430	7011	102	1.5	7360	105	1.3	6802	115	1.6	7
512 06	BALTIMORE MD	337	291	5526	77	2.0	5559	78	1.9	5366	82	2.1	7
553 14	ALLEN PARK MI	755	680	7010	154	1.3	7366	162	1.4	6763	157	1.4	8
544 09	COLUMBIA SC	600	500	4047	69	1.2	4396	74	1.1	4115	81	1.3	8

EXHIBIT 3 (Cont.)

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*** HOSPITAL ENERGY CONTROL SYSTEM ***
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* * * * V A HOSPITAL SUMMARY * * * *

3-YEAR MEU IMPROVEMENT

ID	NAME	M SQFT	BEDS	FY-1974 DDAY	FY-1974 BIL BTU	FY-1974 MEU	FY-1975 DDAY	FY-1975 BIL BTU	FY-1975 MEU	FY-1976 DDAY	FY-1976 BIL BTU	FY-1976 MEU	MEU PCT CNG
656 18	ST CLOUD MN	562	973	.9342	143	1.2	9635	149	1.1	9044	146	1.3	8
657 21	COCHRAN STLOUISMO	461	406	6228	82	1.3	6348	89	1.4	5671	85	1.4	8
637 08	ASHEVILLE NC	440	619	4414	129	3.0	4800	138	3.1	4805	145	3.2	8
436 24	FORT HARRISON MT	297	160	8715	62	1.2	8692	68	1.2	8039	65	1.3	8
608 01	MANCHESTER NH	219	188	8002	57	1.5	8032	61	1.8	8399	65	1.6	8
666 24	SHERIDAN WY	647	364	7827	124	1.1	8611	124	1.1	7653	122	1.2	9
688 06	WASHINGTON DC	635	708	5062	196	2.8	5521	206	2.5	4803	194	3.0	9
513 02	BATAVIA NEW YORK	278	241	7304	63	1.3	7105	63	1.4	6997	66	1.4	9
687 28	WALLA WALLA WASH	246	190	5590	68	2.1	5578	69	2.4	5407	67	2.3	9
562 06	ERIE PENN	216	182	6687	55	2.0	7227	60	1.9	6793	62	2.2	9
518 01	BEDFORD MASS	1118	1023	6264	308	1.9	6237	307	1.9	5902	295	2.1	10
692 28	WHITE CITY OR	940	1165	5348	116	1.0	5607	126	1.0	5589	130	1.1	10
516 12	BAY PINES FL	577	1115	4164	104	1.8	4098	104	1.8	4200	105	1.7	10
642 04	PHILADELPHIA PENN	448	490	5765	106	2.0	5846	111	2.0	5624	113	2.2	10
598 19	LITTLE ROCK AK	460	460	4710	93	1.9	5021	107	2.1	4616	101	2.1	11
580 20	HOUSTON TX	1186	1330	4190	336	2.5	4048	330	2.5	3762	337	2.8	12
668 28	SPOKANE WA	184	213	7292	52	1.7	7498	49	1.8	7160	55	1.9	12
538 14	CHILLICOTHE OH	865	1285	6154	192	1.6	6362	209	1.5	5521	203	1.8	13
423 10	JACKSON MS	404	500	4221	99	2.4	4219	101	2.5	4671	100	2.7	13
647 21	POPLAR BLUF MO	245	225	5505	44	1.5	5952	47	1.5	5500	48	1.7	13
690 01	WEST ROXBURY MASS	145	259	6222	50	2.6	6237	50	2.7	5904	51	3.0	13
630 03	NEW YORK NY	740	1030	5734	267	2.9	5888	269	2.8	5683	280	3.3	14
549 20	DALLAS TEXAS	709	739	4783	330	4.2	4783	330	4.2	4341	324	4.8	14
596 11	LEESTOWN KY	709	630	5412	130	1.4	5645	143	1.5	5571	148	1.6	14
542 04	COATSVILLE PENN	684	1475	6742	184	1.5	6766	193	1.6	6511	198	1.7	14
521 10	BIRMINGHAM AL	424	499	4267	95	2.2	4262	91	2.2	4203	95	2.5	14
502A19	ALEXANDRIA LA	406	470	4118	97	2.2	4175	94	2.2	4135	95	2.5	14
517 07	BECKLEY WVIRGINIA	198	216	5309	48	2.1	5281	50	2.7	5450	53	2.4	14
617 24	MILES CITY MT	143	116	7506	49	2.2	7917	49	2.4	7316	51	2.5	14
686 22	LEAVENWORTH KS	836	1425	6113	209	1.9	6747	227	1.9	6116	250	2.2	16
600 26	LONG BEACH CA	1255	1771	2436	222	3.2	2400	242	3.5	2303	264	3.7	17
537 17	WESTSIDE CHICAGO	638	538	7075	120	1.2	7179	137	1.3	6717	144	1.4	17
525 01	BROCKTON MASS	1188	993	6222	176	1.1	6237	182	1.1	6384	203	1.3	18
631 01	NORTHAMPTON MASS	775	705	7275	123	1.0	7321	129	1.0	7198	131	1.1	18
629 19	NEW ORLEANS LA	473	496	4095	104	2.2	3866	108	2.4	3895	109	2.6	18
508 09	ATLANTA DECATURGA	469	550	4052	130	2.8	4363	138	2.8	4200	144	3.3	18
534 09	CHARLESTON SC	371	431	3782	77	2.2	3997	79	2.2	3706	88	2.6	18
437 18	FARGO ND	323	274	10140	69	1.1	9681	71	1.2	9196	73	1.3	18
591 20	KERRVILLE TX	275	345	4327	63	2.2	4445	64	2.2	3938	65	2.6	18
627 03	NEWINGTON CONN	250	190	6845	58	1.6	6951	58	1.6	6646	63	1.9	18
667 19	SHREVEPORT LA	470	464	4183	130	2.6	4364	139	2.9	3897	139	3.1	19
340 23	IOWA CITY IA	396	360	6867	102	2.1	7234	120	2.3	6688	132	2.5	19
650 01	PROVIDENCE RI	343	348	6390	82	1.7	6532	87	1.8	6546	92	2.0	19
533 03	CASTLE POINT NY	335	354	6907	88	1.7	7104	85	1.6	6728	98	2.0	19
557 09	DUBLIN GA	730	961	4072	119	1.5	4143	125	1.6	3978	126	1.8	20
693 04	WILKES-BARRE PENN	450	500	7004	112	1.6	6438	112	1.8	6235	116	1.9	20
613 06	MARTINSBURG WVIR	662	1225	5740	203	2.1	6232	208	2.0	5217	203	2.6	21
509 09	FOREST HILL AUGGA	352	318	3975	64	1.9	4424	70	1.9	4021	73	2.3	21
604 04	LYONS NEW JERSEY	1041	1568	6277	223	1.5	6459	230	1.4	6003	234	1.9	24
685 20	WACO TX	778	1184	4719	151	1.7	4867	162	1.7	4410	173	2.1	24
575 24	GRAND JUNCTION CO	169	157	7213	51	2.3	7117	55	2.5	6916	59	2.9	26

EXHIBIT 3 (Cont.)

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*** HOSPITAL ENERGY CONTROL SYSTEM ***
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* * * * V A HOSPITAL SUMMARY * * * *

3-YEAR MEU IMPROVEMENT

ID	NAME	M SQFT	BEDS	FY-1974 DDAY	FY-1974 BIL BTU	FY-1974 MEU	FY-1975 DDAY	FY-1975 BIL BTU	FY-1975 MEU	FY-1976 DDAY	FY-1976 BIL BTU	FY-1976 MEU	MEU PCT CNG
595 04	LEBANON PENN	929	1025	5799	158	1.3	6161	183	1.5	5337	165	1.6	29
663 28	SEATTLE WA	331	313	5555	79	2.4	5211	85	2.5	5136	103	3.1	29
331 08	FAYETTEVILLE NC	247	391	4412	56	2.1	4647	60	2.1	4636	72	2.7	29
435 03	SAN JUAN PR	736	692	5840	84	.8	5758	86	.8	5484	102	1.0	30
598A19	N.LITTLE ROCK AR	1485	960	4720	180	0.9	5021	200	1.0	4616	205	1.2	33
527 03	BROOKLYN NEW YORK	894	1000	6034	240	1.9	5888	272	2.2	5683	283	2.6	33
527A03	ST ALBANS NYORK	697	151	6034	197	1.9	5888	241	2.3	5683	214	2.6	34
632 03	NORTHPORT NY	1247	982	5748	323	2.0	5718	331	2.1	5020	325	2.7	35
653 28	ROSEBURG OR	238	465	6528	60	1.7	5979	61	1.8	5886	65	2.3	35
640A27	MENLO PARK CA	625	685	3027	122	3.6	3196	120	3.2	2289	115	5.2	44
679 10	TUSCALOOSA AL	433	710	4248	78	1.7	4227	85	1.8	3845	100	2.6	53
622 11	MURFREESBORO TN	875	852	4775	116	1.5	5369	146	1.8	4732	175	2.3	53
671 20	SAN ANTONIO TX	646	600	3195	199	2.4	4655	242	3.3	4438	292	4.7	96
636 23	OMAHA NE	438	444	7102	99	1.7	7551	116	1.9	6667	251	4.4	159

SOURCE- REYNOLDS SMITH AND HILLS, JACKSONVILLE, FLORIDA

VETERANS ADMINISTRATION

DEPARTMENT OF MEDICINE AND SURGERY MEDICAL DISTRICTS



MEDICAL DISTRICT NO. 1
BEDFORD
BOSTON
BOSTON OPC
BROCKTON
MANCHESTER
NORTHAMPTON
PROVIDENCE
TOGUS
WEST ROXBURY
WHITE RIVER JUNCTION

MEDICAL DISTRICT NO. 2
ALBANY
BATAVIA
BATH
BUFFALO
CANANDAIGUA
SYRACUSE

MEDICAL DISTRICT NO. 3
BRONX
BROOKLYN (2)
BROOKLYN OPC
CASTLE POINT
MONTROSE
NEWINGTON
NEW YORK
NORTHPORT
SAN JUAN
WEST HAVEN

MEDICAL DISTRICT NO. 4
COATESVILLE
EAST ORANGE
LEBANON
LYONS
PHILADELPHIA
WILKES-BARRE
WILMINGTON

MEDICAL DISTRICT NO. 5
ALTOONA
BUTLER
CLARKSBURG
PITTSBURGH (Highland Drive)
PITTSBURGH (University Drive)
ERIE

MEDICAL DISTRICT NO. 6
BALTIMORE
FT. HOWARD
MARTINSBURG
PERRY POINT
WASHINGTON

MEDICAL DISTRICT NO. 7
BECKLEY
HAMPTON
HUNTINGTON
RICHMOND
SALEM

MEDICAL DISTRICT NO. 8
ASHEVILLE
DURHAM
FAYETTEVILLE, NC
MOUNTAIN HOME
SALISBURY

MEDICAL DISTRICT NO. 9
ATLANTA
AUGUSTA (2)
CHARLESTON
COLUMBIA, SC
DUBLIN

MEDICAL DISTRICT NO. 10
BILOXI (2)
BIRMINGHAM
JACKSON
MONTGOMERY
TUSCALOOSA
TUSKEGEE

MEDICAL DISTRICT NO. 11
LEXINGTON (2)
LOUISVILLE
MEMPHIS
MURFREESBORO
NASHVILLE

MEDICAL DISTRICT NO. 12
BAY PINES
GAINESVILLE
LAKE CITY
MIAMI
TAMPA

MEDICAL DISTRICT NO. 13
CHILLICOTHE
CINCINNATI
CLEVELAND (2)
COLUMBUS OPC
DAYTON

MEDICAL DISTRICT NO. 14
ALLEN PARK
ANN ARBOR
BATTLE CREEK
SAGINAW

MEDICAL DISTRICT NO. 15
DANVILLE
FORT WAYNE
INDIANAPOLIS (2)
MARION, IN

MEDICAL DISTRICT NO. 16
IRON MOUNTAIN
MADISON
TOMAH
WOOD

MEDICAL DISTRICT NO. 17
CHICAGO (LAKESIDE)
CHICAGO (WESTSIDE)
NORTH CHICAGO
HINES

MEDICAL DISTRICT NO. 18
MINNEAPOLIS
ST. CLOUD
SIOUX FALLS
FARGO

MEDICAL DISTRICT NO. 19
ALEXANDRIA
LITTLE ROCK (2)
NEW ORLEANS
SHREVEPORT
FAYETTEVILLE, AR

MEDICAL DISTRICT NO. 20
BONHAM
DALLAS
HOUSTON
KERRVILLE
MARLIN
MUSKOGEE
OKLAHOMA CITY
SAN ANTONIO
SAN ANTONIO OPC
TEMPLE
WACO

MEDICAL DISTRICT NO. 21
COLUMBIA, MO
ST. LOUIS (2)
POPLAR BLUFF
MARION, IL

MEDICAL DISTRICT NO. 22
KANSAS CITY
LEAVENWORTH
TOPEKA
WICHITA

MEDICAL DISTRICT NO. 23
DES MOINES
FT. MEADE
GRAND ISLAND
HOT SPRINGS
IOWA CITY
KNOXVILLE
LINCOLN
OMAHA

MEDICAL DISTRICT NO. 24
CHEYENNE
DENVER
FORT HARRISON
FORT LYON
MILES CITY
SALT LAKE CITY
SHERIDAN
GRAND JUNCTION

MEDICAL DISTRICT NO. 25
ALBUQUERQUE
AMARILLO
BIG SPRING
EL PASO OPC
LUBBOCK OPC
PHOENIX
PRESCOTT
TUCSON

MEDICAL DISTRICT NO. 26
LOMA LINDA
LONG BEACH
LOS ANGELES (BRENTWOOD)
LOS ANGELES (WADSWORTH)
LOS ANGELES OPC
SAN DIEGO
SEPULVEDA

MEDICAL DISTRICT NO. 27
FRESNO
HONOLULU OPC
LIVERMORE
MANILA OPC
MARTINEZ
PALO ALTO (2)
RENO
SAN FRANCISCO

MEDICAL DISTRICT NO. 28
AMERICAN LAKE
BOISE
JUNEAU OPC
PORTLAND
ROSEBURG
SEATTLE
SPOKANE
VANCOUVER
WALLA WALLA
WHITE CITY (DOMICILIARY)

VA MAP 10-1
SEPTEMBER 1976
Distribution: Pw VAF 3-7225
FD

EXHIBIT 4

EXHIBIT 5

VA HOSPITAL SUMMARY
ENERGY USAGE BY MEDICAL DISTRICTS

Dist. No.	No. of Units	No. of Sq. Ft. (M)	No. of Beds	FY-1975 Degree Days	FY-1975 Billion BTU's	FY-1976 Degree Days	FY-1976 Billion BTU's	ANNUAL IMPROVEMENT Billion BTU's	ANNUAL IMPROVEMENT % Chg.
1	8	4,544	5,065	54,422	1,157	54,005	1,160	+3	+0.3
2	4	2,544	3,366	28,768	640	28,646	639	-1	-0.2
3	10	8,045	7,514	62,524	2,177	59,314	2,169	-8	-0.4
4	7	4,865	6,506	43,551	1,161	41,074	1,172	+11	+1.0
5	7	3,096	2,914	46,253	832	45,018	768	-64	-7.7
6	5	3,195	3,545	28,860	840	26,737	822	-18	-2.2
7	4	2,132	2,587	21,807	469	21,130	473	+4	+0.9
8	5	2,899	4,008	24,722	678	23,565	709	+31	+4.6
9	6	3,310	3,740	25,747	641	24,483	658	+17	+2.7
10	7	3,175	4,609	28,323	757	28,618	769	+12	+1.6
11	6	3,498	3,704	32,376	786	30,696	811	+25	+3.2
12	5	2,721	3,455	20,994	576	21,101	591	+15	+2.6
13	5	4,300	5,713	32,119	1,162	29,612	1,148	-14	-1.2
14	4	2,673	2,597	29,129	564	27,288	575	+11	+2.0
15	5	2,927	3,455	34,221	669	31,035	648	-21	-3.1
16	4	3,405	3,521	32,868	949	30,879	891	-58	-6.1
17	4	4,611	4,170	28,694	1,323	27,158	1,326	+3	+0.2
18	4	2,555	2,434	36,903	621	34,473	605	-16	-2.6
19	6	3,500	3,070	28,164	693	26,297	696	+3	+0.4
20	10	5,846	6,708	46,969	1,629	43,811	1,679	+50	+3.1
21	5	2,090	1,852	31,161	590	27,848	546	-44	-7.5
22	4	2,379	3,104	26,440	678	24,112	660	-18	-2.7
23	7	2,722	3,270	54,419	778	48,613	893	+115	+14.8
24	8	3,119	2,564	60,590	803	56,557	808	+5	+0.6
25	6	2,130	2,141	32,007	426	30,074	459	+33	+7.8
26	5	4,952	5,142	13,653	963	12,026	954	-9	-0.9
27	7	3,605	3,003	28,415	721	26,509	733	+12	+1.7
28	9	3,596	4,180	51,045	779	47,298	818	+39	+5.0
SUBTOTALS	167				24,062		24,180	+118	+0.5
ESTIMATED	5				830		745	-85	
SYSTEM TOTALS	172				24,892		24,925	+33	+0.1

SOURCE: Hospital Energy Control System, Reynolds, Smith and Hills - Jacksonville, Florida.

EXHIBIT 6

* * * * * HOSPITAL ENERGY CONTROL SYSTEM * * * * *

VETERANS ADMINISTRATION
WASHINGTON, D.C.
DATE 6/76

* MANAGEMENT OF ENERGY USAGE SUMMARY *

RANKING

HOSPITAL ID CODE	NO--DIST	NAME OF STATION	******M.E.U.****** THIS QTR.AV	YR.AGO QTR.AV	PCT. CNG.	TOTAL ENERGY BILLION BTUS THIS QTR.	YR.AGO QTR.	PCT. CNG.	LAUNDRY ENERGY BILLION BTUS THIS QTR.	YR.AGO QTR.	PCT. CNG.
646A	5	ASPINWALL VAH	0.94	1.03	-9	15.0	15.3	-2	C.0	C.0	0
455	3	SAN JUAN VAC	1.06	0.72	47	28.8	20.7	39	0.8	C.7	11
546	12	MIAMI VAH	1.17	1.00	17	29.0	28.6	2	1.4	1.7	-16
692	28	WHITE CITY VAD	1.32	1.27	4	27.7	28.3	-2	0.0	C.0	0
544	9	COLUMBIA VAH	1.38	1.10	26	16.0	16.3	-2	2.4	1.2	103
436	24	FT HARRISON VAC	1.39	1.29	7	11.7	15.7	-25	0.6	C.7	-7
620A	3	FDROOSEVELT VAH	1.40	1.32	6	45.9	48.2	-5	2.9	4.5	-35
525	1	BROCKTON VAH	1.40	1.41	0	42.1	40.2	5	C.0	C.0	0
529	5	BUTLER VAH	1.43	1.60	-11	22.3	24.3	-9	1.6	1.6	0
537	17	WESTSIDE VAH	1.46	1.46	0	23.9	26.2	-9	0.0	C.0	0
665	26	SEPULVEDA VAH	1.46	1.84	-21	33.0	33.2	-1	C.0	C.0	0
655	14	SAGINAW VAH	1.49	1.64	-9	9.0	9.1	-1	C.0	C.0	0
523	1	JAMAICA PL. VAH	1.49	1.37	9	34.6	34.4	1	0.0	C.0	0
610	15	MARION VAH	1.51	1.53	-1	40.6	43.8	-7	3.7	2.6	40
579A	23	HOT SPRINGS VAC	1.53	2.23	-31	16.8	22.0	-24	2.4	2.4	0
437	18	FARGO VAC	1.54	1.74	-11	13.5	15.9	-15	0.5	C.5	-7
641	6	PERRY POINT VAH	1.54	1.49	4	56.4	59.1	-5	7.4	4.8	53
528	2	BUFFALO VAH	1.55	1.64	-6	40.6	41.8	-3	3.0	2.9	5
516	12	BAY PINES VAC	1.55	1.14	37	24.1	24.5	-2	3.5	3.4	3
402	1	TOGUS VAC	1.56	1.64	-5	33.3	36.5	-9	3.5	3.7	-3
515	14	BATTLE CREEK VA	1.56	1.63	-4	55.3	53.1	4	5.2	4.3	21
631	1	NORTHAMPTON VAH	1.57	1.32	19	26.8	26.3	2	1.5	1.4	4
581	7	HUNTINGTON VAH	1.59	1.13	40	10.5	8.6	22	1.3	1.3	0
452	22	WICHITA VAC	1.62	1.93	-16	11.9	13.6	-13	0.7	1.6	-53
566	6	FORT HOWARD VAH	1.64	1.72	-4	15.5	15.1	3	0.0	C.0	0
666	24	SHERIDAN VAH	1.65	1.39	18	29.5	29.6	-1	1.0	1.0	-4
598A	19	NO.LITTLE ROCK	1.65	1.12	48	46.0	44.9	3	7.0	7.0	0
513	2	BATAVIA VAH	1.68	1.65	1	14.7	13.8	7	2.1	1.9	10
540	5	CLARKSBURG VAH	1.68	2.67	-37	12.4	13.5	-8	0.8	C.8	9
653	28	ROSEBURG VAH	1.73	1.62	6	15.5	15.1	3	1.7	1.3	25
678	25	TUCSON VAH	1.73	1.79	-3	17.1	16.4	4	0.0	C.0	0
530	26	BRENTWOOD VAH	1.80	1.88	-4	19.0	20.1	-5	0.0	C.0	0
618	18	MINNEAPOLIS VAH	1.82	1.55	17	58.7	62.7	-6	3.0	2.9	5
532	2	CANANDAIGUA VAH	1.85	1.55	19	50.7	45.4	12	5.4	4.5	20
574	23	GRAND ISL VAH	1.86	1.92	-3	11.4	12.2	-6	0.6	0.5	10
656	18	ST CLOUD VAH	1.86	1.68	11	27.9	29.1	-4	2.6	2.8	-8
689	3	WEST HAVEN VAH	1.87	1.61	16	49.4	45.7	8	2.2	1.7	28
695	16	WOOD VAC	1.87	1.97	-5	102.0	107.8	-5	2.4	3.9	-39
520B	10	BILOXI VAC	1.87	2.33	-20	14.9	17.8	-17	0.0	C.0	0
676	16	TOMAH VAH	1.87	1.63	15	39.6	37.2	6	3.6	2.7	31
657	21	COCHRAN VAH JC	1.88	1.70	11	17.1	17.3	-1	0.0	C.0	0
608	1	MANCHESTER VAH	1.92	2.33	-17	14.0	13.8	1	1.6	1.6	0
595	4	LEBANON VAH	1.96	2.54	-23	32.4	41.3	-22	3.7	4.4	-16
570	27	FRESNO VAH	1.96	2.07	-5	15.7	16.0	-2	6.6	4.8	39
567	24	FORT LYON VAH	1.99	1.58	26	34.6	28.0	24	5.4	4.9	9
645	5	HIGHLAND DR VAH	2.00	2.08	-4	41.3	42.1	-2	0.0	C.0	0

EXHIBIT 6 (Cont.)

* * * * * HOSPITAL ENERGY CONTROL SYSTEM * * * * *

VETERANS ADMINISTRATION
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* MANAGEMENT OF ENERGY USAGE SUMMARY *

RANKING → ******M.E.U.******

HOSPITAL ID CODE	NO--DIST	NAME OF STATICN	TOTAL ENERGY BILLION BTUS			LAUNDRY ENERGY BILLION BTUS		
			THIS QTR.AV	YR.AGO QTR.AV	PCT. CNG.	THIS QTR.	YR.AGO QTR.	PCT. CNG.
557	9	DUBLIN VAC	2.00	1.63	22	23.2	26.8	-13	1.2	1.9	-35
592	23	KNOXVILLE VAH	2.00	2.34	-14	32.6	31.5	3	4.3	8.2	-48
644	25	PHOENIX VAH	2.01	2.53	-20	35.0	17.8	97	4.8	2.1	127
509A	9	LENWOOD VAH	2.01	1.76	14	28.4	31.8	-11	4.1	3.9	6
658	7	SALEM VAH	2.01	2.25	-11	35.3	41.4	-15	3.0	2.8	7
553	14	ALLEN PARK VAH	2.03	1.89	7	39.1	37.8	4	2.0	1.7	22
662	27	SAN FRNCISO VAH	2.06	2.67	-23	39.1	32.8	19	0.0	0.0	0
550	15	DANVILLE VAH	2.06	1.86	11	46.1	46.1	0	3.9	5.2	-26
438	18	SIOUX FALLS VAC	2.09	2.42	-14	15.1	16.4	-8	0.8	0.9	-14
654	27	RENO VAH	2.11	1.83	15	8.3	7.5	11	0.0	0.0	0
531	28	BOISE VAH	2.12	2.43	-12	12.3	13.3	-7	0.7	0.9	-22
519	25	BIG SPRING VAH	2.14	2.00	7	11.0	12.7	-13	0.9	0.9	-3
659	8	SALISBURY VAH	2.15	1.67	29	32.9	31.6	4	2.7	2.5	7
585	16	IRON MTN. VAH	2.16	1.97	9	14.7	14.6	1	0.9	0.8	13
668	28	SPOKANE VAH	2.17	2.23	-3	11.0	11.8	-7	0.6	0.6	-7
538	14	CHILLICOTHE VAH	2.17	1.86	17	46.8	51.2	-9	2.5	2.2	13
583	15	WEST TENTH ST.	2.19	2.61	-16	21.9	21.6	1	0.0	0.0	0
646	5	OAKLAND VAH	2.20	3.46	-37	43.4	60.1	-28	6.4	4.1	55
683	28	VANCOUVER VAH	2.20	1.94	14	24.1	24.5	-2	4.2	3.7	16
590	7	HAMPTON VAC	2.23	2.03	10	40.7	41.7	-2	4.4	4.4	0
514	2	BATH VAC	2.24	2.87	-22	31.8	34.4	-7	2.4	2.3	3
597	23	LINCOLN VAH	2.24	1.98	13	9.8	9.1	8	0.0	0.0	0
542	4	COATESVILLE VAH	2.26	2.30	-2	48.7	48.4	1	5.3	5.5	-4
596	11	LEESTOWN VAH	2.26	1.83	23	31.0	28.2	10	0.0	0.0	0
627	3	NEWINGTON VAH	2.27	2.44	-7	13.5	13.5	0	0.0	0.0	0
674	20	TEMPLE VAC	2.28	1.22	87	36.5	33.8	8	0.0	0.0	0
650	1	PROVIDENCE VAH	2.29	2.55	-10	19.1	19.6	-2	1.0	1.0	-2
603	11	LOUISVILLE VAH	2.29	2.35	-3	23.9	25.3	-6	3.7	4.3	-13
622	11	MURFREESBOROVAH	2.30	2.34	-2	37.7	33.5	13	3.5	3.1	12
503	5	ALTOONA VAH	2.30	2.49	-8	12.3	12.6	-2	0.3	0.3	8
506	14	ANN ARBOR VAH	2.33	1.74	34	28.5	22.3	28	1.2	1.4	-12
621	8	MTN HOME VAC	2.33	2.08	12	40.9	34.9	17	3.5	2.1	66
612	27	MARTINEZ VAH	2.35	2.38	-1	15.7	17.1	-8	0.0	0.0	0
512	6	BALTIMORE VAH	2.37	2.26	5	17.3	16.6	5	0.0	0.0	0
541B	13	BRECKSVILLE VAH	2.37	1.62	47	69.4	50.1	38	4.5	3.8	19
647	21	POPLAR BLUF VAH	2.42	2.03	20	10.8	11.0	-2	0.1	0.1	0
562	6	ERIE VAH	2.48	1.88	32	13.5	12.6	7	0.1	0.1	0
535	17	LAKESIDE VAH	2.48	2.36	5	41.3	40.8	1	0.0	0.0	0
518	1	BEDFORD VAH	2.48	2.21	12	61.7	63.0	-2	1.3	1.3	1
677	22	TOPEKA VAH	2.51	2.38	5	40.0	42.4	-6	1.8	2.3	-21
353	12	GAINESVILLE VAH	2.51	2.19	14	26.6	27.5	-3	0.0	0.0	0
552	14	DAYTON VAC	2.51	1.96	28	58.4	54.4	7	3.8	3.2	20
460	4	WILMINGTON VAC	2.52	2.53	-1	21.1	20.7	2	0.0	0.0	0
693	4	WILKES-BARREVAH	2.55	2.15	19	25.6	22.7	13	1.1	1.2	-8
649	25	PRESCOTT VAC	2.55	2.77	-8	19.7	22.7	-13	0.0	0.0	0
583A	15	COLDSPRING RD.	2.56	1.97	30	15.4	13.1	18	2.1	1.9	12

EXHIBIT 6 (Cont.)

* * * * * HOSPITAL ENERGY CONTROL SYSTEM * * * * *

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WASHINGTON, D.C.
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****
* MANAGEMENT OF ENERGY USAGE SUMMARY *
****

RANKING

HOSPITAL ID CODE			******M.E.U.******			TOTAL ENERGY BILLION BTUS			LAUNDRY ENERGY BILLION BTUS		
NO--DIST		NAME OF STATION	THIS QTR.AV	YR.AGO QTR.AV	PCT. CNG.	THIS QTR.	YR.AGO QTR.	PCT. CNG.	THIS QTR.	YR.AGO QTR.	PCT. CNG.
556	17	NORTHSIDE VAH	2.57	2.51	2	81.8	90.3	-9	3.3	5.5	-40
642	4	PHILA VAH	2.57	2.49	3	26.2	24.0	9	0.0	C.0	0
640P	27	PALO ALTO VAH	2.57	4.20	-39	60.7	63.7	-5	6.1	5.9	3
505	28	AMERICAN LK VAH	2.59	2.39	8	31.1	31.8	-2	1.6	2.1	-23
442	24	CHEYENNE VAC	2.60	2.14	21	9.6	10.1	-5	0.0	C.0	0
502A	19	ALEXANDRIA VAH	2.62	2.33	12	17.8	21.2	-16	0.0	2.2	*00
527A	3	ST ALBANS VAH	2.63	2.38	11	42.4	38.3	11	0.0	C.0	0
539	13	CINCINNATI VAH	2.65	2.46	8	36.2	38.3	-5	0.0	C.0	0
685	20	WACO VAH	2.65	2.04	30	36.7	36.6	0	3.4	2.9	16
613	6	MARTINSBURG VAC	2.68	2.14	25	42.5	44.2	-4	5.1	3.3	54
578	17	HINES VAH	2.68	2.42	10	136.4	136.2	0	6.1	7.8	-22
533	3	CASTLEPOINTVAH	2.79	2.22	26	21.0	17.4	21	0.0	0.0	0
660	24	SALT LAKE VAH	2.80	2.62	7	38.3	47.0	-19	2.6	2.6	0
527	3	BROOKLYN VAH	2.80	2.84	-2	60.2	59.1	2	4.6	4.6	0
611	20	MARLIN VAH	2.80	1.06	165	10.8	10.9	-1	0.0	C.0	0
569	15	VAH FT WAYNE	2.80	2.20	27	12.4	10.9	14	0.0	C.0	0
504	25	AMARILLO VAH	2.81	3.09	-9	8.0	8.7	-7	0.0	0.0	0
648	28	PORTLAND VAH	2.81	2.75	2	23.4	23.9	-2	0.0	C.0	0
607	16	MADISON VAH	2.85	2.94	-3	28.2	30.3	-7	0.6	0.6	-3
596A	11	COOPER DR VAH	2.88	2.21	30	19.9	17.5	14	0.0	0.0	0
501	25	ALBUQUERQUE VAH	2.89	2.68	8	22.8	24.0	-5	0.7	C.6	11
629	19	NEW ORLEANS VAH	2.89	2.44	19	27.4	27.4	0	0.0	1.1	*00
561	4	EAST ORANGE VAH	2.90	2.40	21	58.8	51.0	15	0.0	C.0	0
554	24	DENVER VAH	2.92	2.72	7	29.5	30.5	-3	3.0	3.4	-12
598	19	LITTLE ROCK VAH	3.05	2.26	35	22.1	24.5	-10	0.0	0.0	0
673	12	TAMPA VAH	3.08	2.02	52	41.1	38.3	7	0.0	C.0	0
331	8	FAYETTEVILL VAH	3.10	2.71	14	15.6	14.9	5	1.1	1.0	2
509	9	FOREST HILL VAH	3.11	2.20	42	16.6	16.1	3	0.0	0.0	0
614	11	MEMPHIS VAH	3.13	1.69	86	42.5	42.3	0	1.2	4.0	-69
657A	21	JEFFERSON B.VAH	3.14	2.81	11	52.7	53.2	-1	0.7	2.7	-73
520A	10	GULFPORT VAC	3.19	2.88	11	29.0	30.4	-5	2.3	1.9	16
594	12	LAKE CITY VAH	3.21	2.21	45	19.4	19.2	1	3.2	3.0	6
687	28	WALLA WALLA VAH	3.21	3.32	-3	14.6	15.7	-7	0.2	0.2	-4
517	7	BECKLEY VAH	3.22	2.83	14	11.9	10.2	18	0.0	0.0	0
686	22	LEAVENWORTH VAC	3.24	2.72	19	52.0	51.3	1	1.4	1.5	-10
604	4	LYONS VAH	3.31	1.83	81	61.0	56.5	8	3.8	3.4	13
663	28	SEATTLE VAH	3.33	2.89	15	23.6	22.7	4	0.0	0.0	0
635	20	OKLA CITY VAH	3.33	2.80	19	29.9	30.2	-1	1.9	1.6	23
688	6	WASHINGTON VAH	3.34	3.08	8	39.5	47.2	-16	0.0	0.0	0
679	10	TUSCALOOSA VAH	3.42	1.53	124	23.5	17.9	31	3.4	3.7	-8
580	20	HOUSTON VAH	3.45	2.36	46	78.9	77.8	2	10.8	11.0	-2
690	1	W.ROXBURY VAH	3.46	3.45	0	10.7	11.4	-6	0.0	0.0	0
619	10	MONTGOMERY VAH	3.49	2.72	28	7.6	9.6	-21	0.0	0.0	0
680	10	TUSKEGEE VAH	3.56	2.74	30	45.6	53.7	-15	1.2	1.2	7
534	9	CHARLESTON VAH	3.57	2.23	60	22.1	20.2	9	2.1	1.0	111

EXHIBIT 6 (Cont.)

* * * * * HOSPITAL ENERGY CONTROL SYSTEM * * * * *

VETERANS ADMINISTRATION
WASHINGTON, D.C.
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****
* MANAGEMENT OF ENERGY USAGE SUMMARY *
****

RANKING

HOSPITAL ID CODE			******M.E.U.******			TOTAL ENERGY BILLION BTUS			LAUNDRY ENERGY BILLION BTUS		
NO--DIST		NAME OF STATION	THIS QTR.AV	YR.AGO QTR.AV	PCT. CNG.	THIS QTR.	YR.AGO QTR.	PCT. CNG.	THIS QTR.	YR.AGO QTR.	PCT. CNG.
526	3	BRONX VAH	3.58	3.70	-3	68.1	83.7	-19	0.0	0.0	0
591	20	KERRVILLE VAH	3.60	2.26	59	15.8	13.5	17	1.3	1.2	11
640A	27	MENLO PARK VAH	3.61	4.75	-24	26.3	30.1	-12	0.0	0.0	0
543	21	COLUMBIA VAH	3.61	3.82	-5	26.2	29.8	-12	0.5	0.6	-10
599	27	LIVERMORE VAH	3.65	3.60	1	13.6	14.4	-5	0.0	0.0	0
617	24	MILES CITY VAH	3.72	3.65	2	10.6	11.2	-5	0.0	0.0	0
564	19	FAY VAH	3.72	2.86	30	12.4	10.4	20	0.8	0.9	-11
691	26	WADSWORTH VAHC	3.76	3.88	-3	83.1	87.6	-5	10.4	10.1	4
340	23	IOWA CITY VAH	3.77	2.80	35	28.4	25.4	12	0.0	0.0	0
589	22	KANSAS CITY VAH	3.77	3.56	6	32.7	37.8	-13	3.5	3.7	-4
667	19	SHREVEPORT VAH	3.82	2.93	31	30.4	31.0	-2	3.8	1.9	95
568	23	FORT MEADE VAH	3.85	4.93	-22	34.3	43.7	-21	2.2	0.8	173
521	10	BIRMINGHAM VAH	3.88	2.38	63	22.8	22.2	3	0.0	0.0	0
423	10	JACKSON VAC	3.98	2.62	52	23.4	24.8	-6	0.0	0.0	0
558	8	DURHAM VAH	3.98	3.61	10	36.5	33.9	8	0.0	0.0	0
623	20	MUSKOGEE VAH	4.00	4.69	-15	16.1	18.0	-11	0.8	0.8	8
630	3	NEW YORK VAH	4.05	3.65	11	70.9	61.3	16	4.6	5.0	-9
609	21	MARION VAH	4.23	3.77	12	10.8	10.9	-1	0.0	0.0	0
522	20	BONHAM VAC	4.26	2.74	55	13.0	12.5	4	0.7	0.9	-24
671	20	SAN ANTONIO VAH	4.38	4.42	-1	74.1	73.8	0	1.9	1.4	38
541	13	WADE PARK VAH	4.50	4.55	-1	60.3	61.9	-3	0.0	0.0	0
637	8	ASHEVILLE VAH	4.59	4.61	0	34.8	31.2	12	1.0	1.1	-7
632	3	NORTHPORT VAH	4.64	2.97	56	69.7	72.7	-4	5.1	4.7	9
600	26	LONG BEACH VAH	4.65	5.83	-20	63.9	69.4	-8	0.3	0.3	0
626	11	NASHVILLE VAH	4.70	4.21	12	24.2	26.7	-9	0.0	0.0	0
508	9	ATLANTA VAH	4.81	3.20	50	32.1	30.9	4	1.9	2.0	-4
575	24	GRAND JCT VAH	4.99	3.77	32	15.2	13.9	10	0.4	0.6	-36
664	26	SAN DIEGO VAH	5.04	6.96	-28	39.8	43.1	-7	2.4	2.4	0
636	23	OMAHA VAH	6.15	2.93	110	54.6	28.8	90	1.6	1.9	-20
549	20	DALLAS VAH	6.67	5.24	27	80.4	81.6	-1	1.4	1.6	-15

DELINQUENT HOSPITALS	MONTHS DELINQUENT
ALBANY, NEW YORK	36
DES MOINES, IOWA	36
RICHMOND, VIRGINIA	36
SYRACUSE, NEW YORK	36
WHITE RIVER JUNCTION, VERMONT	36

SOURCE: REYNOLDS, SMITH AND HILLS - JACKSONVILLE, FLORIDA

PUBLICATIONS

The results of the total study, developed under Government Contracts No. V594P-454, V101 (134) P-273, P-401 and P-436 are available in the following volumes:

Stage 1 - BASELINE SURVEY, published February, 1974, identifies and unifies all elements of energy consumption and establishes significant and measurable energy parameters at hospitals.

State 2 - OPERATIONAL STUDY, published March, 1974, inspects and reviews hospital operations and isolates areas of correctable losses.

Stage 3 - HOSPITAL ENERGY CONTROL SYSTEM, published April, 1974, presents the philosophy and programming specifications for a computer-based energy data reporting system to measure and compare "Management of Energy Usage" for all hospitals.

SUMMARY - ENERGY CONSERVATION STUDY, published in July, 1974, highlights the important findings of the initial three-state study.

USERS MANUAL-HOSPITAL ENERGY CONTROL SYSTEM, published October, 1975, contains the final implemented system.

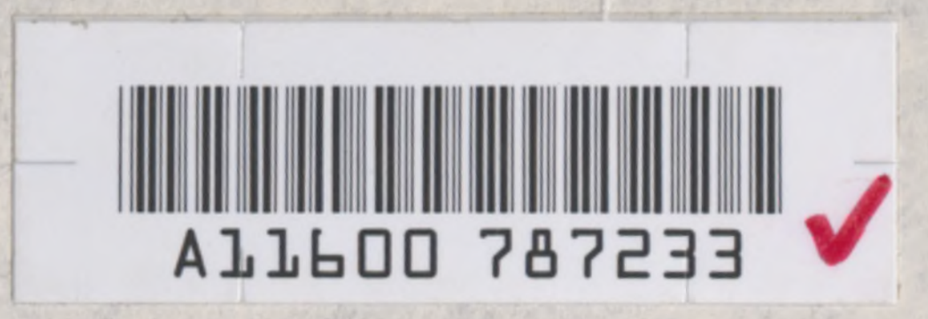
EXECUTIVE SUMMARY - ENERGY MANAGEMENT SYSTEM, published November, 1975, presents the energy conservation savings of three VA hospitals.

INSTRUCTIONS MANUAL - HOSPITAL ENERGY CONTROL SYSTEM, published January, 1976, defines the required energy data elements for the computer system.

DATA SUMMARY - ENERGY MANAGEMENT SYSTEM, published March, 1976, details the energy consumption patterns of 23 VA hospitals for 30 months.

HOSPITAL DATA SUMMARY - ENERGY MANAGEMENT SYSTEM, published May, 1976, shows the energy conservation results of 63 VA hospitals for 33 months.

BASELINE SUMMARY - ENERGY MANAGEMENT SYSTEM, published August, 1976, indicates the improvement of conservation at 114 VA hospitals during 36 months.


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