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# CAPITOL POWER PLANT IMPROVEMENTS

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## HEARING

BEFORE THE

SUBCOMMITTEE ON  
PUBLIC BUILDINGS AND GROUNDS

OF THE

COMMITTEE ON PUBLIC WORKS

HOUSE OF REPRESENTATIVES

NINETY-SECOND CONGRESS

SECOND SESSION

ON

### H.R. 14475

TO PROVIDE FOR CERTAIN IMPROVEMENTS TO THE CAPITOL  
POWER PLANT AND ITS DISTRIBUTION SYSTEM

JUNE 13, 1972

Printed for the use of the Committee on Public Works



U.S. GOVERNMENT PRINTING OFFICE

WASHINGTON : 1972

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## CAPITOL POWER PLANT IMPROVEMENTS

TUESDAY, JUNE 13, 1972

HOUSE OF REPRESENTATIVES,  
SUBCOMMITTEE ON PUBLIC BUILDINGS AND GROUNDS  
OF THE COMMITTEE ON PUBLIC WORKS,  
*Washington, D.C.*

The subcommittee met in room 2167, Rayburn House Office Building, at 11 a.m., Hon. Kenneth J. Gray, chairman, presiding.

Mr. GRAY. The Subcommittee on Public Buildings and Grounds will please come to order.

I would like to thank all of our colleagues for coming this morning.

We are here for the purpose of holding open and public hearings on H.R. 14475, introduced by Mr. Gray of Illinois and Mr. Harsha of Ohio, at the request of the Architect of the Capitol.

The proposed bill would provide for certain improvements relating to the Capitol Power Plant and its distribution systems.

Without objection, a copy of the bill, H.R. 14475 will appear at this point in the record.

(H.R. 14475 referred to follows:)

(1)

99<sup>th</sup> CONGRESS  
2<sup>d</sup> SESSION

# H. R. 14475

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## IN THE HOUSE OF REPRESENTATIVES

APRIL 19, 1972

Mr. GRAY (for himself and Mr. HARSHA) introduced the following bill; which was referred to the Committee on Public Works

---

## A BILL

To provide for certain improvements relating to the Capitol Power Plant and its distribution systems.

1        *Be it enacted by the Senate and House of Representa-*  
2        *tives of the United States of America in Congress assembled,*  
3        That the Architect of the Capitol, under the direction of the  
4        House Office Building Commission, is hereby authorized  
5        and directed to make modifications to the Capitol Power  
6        Plant, its steam and chilled water distribution systems, in-  
7        cluding the enlargement thereof, required to supply steam  
8        and chilled water for air-conditioning refrigeration for the  
9        Library of Congress James Madison Memorial Building, in  
10       addition to the buildings now supplied with such service by  
11       the plant, with sufficient reserve plant capacity to provide for

1 projected additional loads through 1980, including necessary  
2 environmental control and other appurtenant facilities, in  
3 substantial accordance with the following basic plan:

4 (1) Demolish the existing two-story annex building  
5 constructed in 1931, located west of the original turbine  
6 room of the power plant.

7 (2) Construct on and adjacent to the site of the annex  
8 building, after its demolition, a new building to house a refrigeration  
9 plant of twenty-four thousand tons nominal capacity,  
10 to be operated in conjunction with the existing refrigeration  
11 plant of fifteen thousand four hundred tons capacity,  
12 as the first increment of a future modular-type plant.

13 (3) Install in the new refrigeration plant building four  
14 or more centrifugal refrigeration machines having a total  
15 nominal capacity of twenty-four thousand tons, together  
16 with necessary cooling towers, chilled water and condenser  
17 water pump and piping systems, local equipment controls,  
18 electrical load center and other associated auxiliary equipment.  
19

20 (4) Install on the existing power plant site a new outdoor  
21 main electrical substation and underground distribution  
22 system.

23 (5) Construct on the power plant site a new operations  
24 building and install therein (a) equipment necessary to  
25 centralize the administration and control functions of both

1 the new and existing refrigeration plants, (b) new sanitary  
2 and maintenance facilities, and (c) central monitoring and  
3 control equipment adequate to supervise and direct the  
4 operation of the entire Capitol Power Plant and its distribu-  
5 tion systems.

6 (6) Install in a tunnel across the north portion of the  
7 existing power plant site a new underground chilled water  
8 pipe "headering" system to provide for appropriate connec-  
9 tion of the existing and proposed new refrigeration plants  
10 with the existing and future distribution systems.

11 (7) Install necessary supply and return mains in branch  
12 tunnels and/or conduits to connect the Library of Congress  
13 James Madison Memorial Building and the proposed Senate  
14 Office Building Extension to the existing steam distribution  
15 system and to the chilled water distribution system with  
16 flow-limiting equipment and flow and temperature meas-  
17 uring instrumentation.

18 (8) Modify the existing chilled water distribution sys-  
19 tem to accommodate the additional flow of chilled water  
20 to the James Madison Memorial Building and the proposed  
21 Senate Office Building Extension.

22 (9) Install sectionalizing valves in both the chilled  
23 water supply and return mains at selected points in the  
24 existing distribution system.

1       (10) Reactivate, or replace as necessary, inoperative  
2 existing flow-limiting and flow-metering devices on chilled  
3 water mains in buildings supplied by the plant, and install  
4 new devices where they do not exist in such buildings.

5       (11) Install new dust collectors for the four existing  
6 oil-fired boilers and make necessary resulting modifications  
7 to mechanical draft equipment and smoke monitoring devices.

8       (12) Install new acoustical enclosures to minimize the  
9 noise from existing induced draft fans, overfire fans, forced  
10 draft fans, and diesel-driven air compressors.

11       (13) Soundproof local control rooms for protection of  
12 operators in both the existing refrigeration plant and the  
13 new refrigeration plant building.

14       (14) Install new noise attenuated ventilation system for  
15 the existing refrigeration plant and for the new refrigeration  
16 plant building.

17       (15) Install an acoustical barrier for the existing cool-  
18 ing tower installations to shield local residents from objec-  
19 tionable noise.

20       (16) Provide temporary quarters to house the present  
21 annex building activities until the new operations building is  
22 constructed and available for occupancy.

23       SEC. 2. The Architect of the Capitol, under the direc-  
24 tion of the House Office Building Commission, is hereby  
25 authorized and directed to enter into such contracts, incur  
26 such obligations, and make such expenditures, including

1 expenditures for personal and other services, as may be neces-  
2 sary to carry out the provisions of this Act. However, any  
3 changes in the basic plan described in the first section of this  
4 Act shall be subject to the approval of the Commission.

5       SEC. 3. The Architect of the Capitol shall, as soon as  
6 practicable after the date of enactment of this Act, comply  
7 with all applicable provisions of the National Environmental  
8 Policy Act of 1969 with respect to the modifications  
9 authorized by this Act, and, until there is such compliance,  
10 no funds shall be obligated in connection with such modifica-  
11 tions for any purpose other than acquisition of site data and  
12 necessary equipment.

13       SEC. 4. There is hereby authorized to be appropriated a  
14 total amount not to exceed \$17,400,000, to remain avail-  
15 able until expended, to carry out the provisions of this Act.  
16 The Architect of the Capitol, under the direction of the House  
17 Office Building Commission, is authorized, subject to section 3  
18 of this Act, to obligate such total amount, prior to the actual  
19 appropriation of the full amount thereof, after an appropria-  
20 tion of any part of such total amount shall have been made.  
21 Any amounts appropriated pursuant to this authorization  
22 shall be carried under the appropriation account "Modifica-  
23 tions and Enlargement, Capitol Power Plant" as an addi-  
24 tion to the appropriation of \$1,200,000 provided under that  
25 heading in the Supplemental Appropriations Act, 1972 (85  
26 Stat. 637; Public Law 92-184).

Mr. GRAY. We are highly honored this morning to have our distinguished Architect of the Capitol, the Honorable George M. White, accompanied by Mr. Mario E. Campioli, Assistant Architect of the Capitol; Philip L. Roof, executive assistant; Charles A. Henlock, administrative officer; Benjamin F. Markert, coordinating engineer; William F. Raines, administrative assistant; and Robert R. Jones, representative of the firm of Hennessy, Hansen, & Jones, consulting engineers.

Gentlemen, we are delighted to see all of you here this morning. Mr. Architect, you may proceed in your own fashion.

**STATEMENT OF GEORGE M. WHITE, ARCHITECT OF THE CAPITOL; ACCOMPANIED BY MARIO E. CAMPIOLI, ASSISTANT ARCHITECT OF THE CAPITOL; PHILIP L. ROOF, EXECUTIVE ASSISTANT; CHARLES A. HENLOCK, ADMINISTRATIVE OFFICER; BENJAMIN F. MARKERT, COORDINATING ENGINEER; WILLIAM F. RAINES, ADMINISTRATIVE ASSISTANT; AND ROBERT R. JONES, REPRESENTATIVE OF THE FIRM OF HENNESSY, HANSEN & JONES, CONSULTING ENGINEERS**

Mr. WHITE. Thank you, Mr. Chairman. We have presented a statement for the record that I will not read, but I will touch upon the highlights of it.

Mr. GRAY. Without objection, the entire statement will be printed in the record at this point.

(The statement referred to follows:)

**REPORT OF THE ARCHITECT OF THE CAPITOL ON H.R. 14475 "A BILL TO PROVIDE FOR CERTAIN IMPROVEMENTS RELATED TO THE CAPITOL POWER PLANT AND ITS DISTRIBUTION SYSTEMS"**

This Bill has the unanimous endorsement of the House Office Building Commission. Its early enactment is strongly urged by the Architect of the Capitol.

The Bill authorizes the Architect of the Capitol, under the direction of the House Office Building Commission, to make modifications to the Capital Power Plant, its steam and chilled water distribution systems, including the enlargement thereof, required to supply steam for heating and chilled water for air-conditioning refrigeration for the Library of Congress James Madison Memorial Building, in addition to the buildings now supplied with such service by the Plant, with sufficient reserve plant capacity to provide for projected additional loads through 1980, including necessary environmental control and other appurtenant facilities.

**INCEPTION AND GROWTH OF PLANT**

The Capitol Power Plant was originally authorized to be constructed on its present site in 1904, and was completed and placed in operation in 1910. Originally the Plant generated both steam for heat and electrical energy for light and power. Commencing in 1938, in addition to this service, the Plant has furnished chilled water for air-conditioning refrigeration. The generation of electrical energy was discontinued in 1951 and since that time all electrical energy requirements have been procured through the Potomac Electric Power Company. The plant now supplies steam and chilled water service only.

The Plant has from time to time undergone major changes and expansion required to meet additional loads imposed upon the Plant as additional buildings and other facilities have been completed and placed under the Architect of the Capitol. Major expansion occurred in 1923, in 1938, in 1950, and again in 1958.

#### JURISDICTION OVER THE PLANT

The original Capitol Power Plant, when constructed in 1904-1910, was constructed by the Architect of the Capitol under the direction of the House Office Building Commission. All expansion and improvement programs since that time have been carried forth by the Architect of the Capitol under the direction of the Commission. Since 1910, the Plant has been operated and maintained by the Architect of the Capitol under the direction and control of the Commission. Throughout the past 68 years statutes have so provided.

#### BUILDINGS NOW SERVED BY THE PLANT

At the present time, the Capitol Power Plant supplies steam for heating and chilled water for air-conditioning to the Capitol, two Senate Office Buildings, three House Office Buildings, two Library of Congress Buildings and the United States Supreme Court Building. The Plant also provides steam for heat to the House and Senate garages and United States Botanic Garden, and on a reimbursable basis to the Washington City Post Office, Government Printing Office, and Folger Shakespeare Library.

#### URGENT NEED FOR PROPOSED EXPANSION

Public Law 89-260, authorizing construction of the Library of Congress James Madison Memorial Building, requires steam for heating and chilled water for air-conditioning to be supplied to that building by connections with the Capitol Power Plant. Contracts have been let for the excavation, foundation mat and foundations walls up to grade, and for the exterior stonework for the Library of Congress James Madison Memorial Building. Work under the excavation and foundation contract, which was awarded April 23, 1971, is now about 81% complete. Work under the exterior stonework contract is in progress, this contract having been let on December 16, 1971.

Contract drawings and specifications for the exterior shell of the superstructure of the Library of Congress James Madison Memorial Building, including the roof, terraces and other exterior features, as well as the interior stonework, concrete floor slabs, reinforced concrete columns and concrete surfaces, have been completed and are now in the final stages of review, and bids for construction are expected to be invited within the next several months.

Contract drawings and specifications for the interior and related work, including the mechanical and electrical systems and other work on the interior of the building not required under the exterior superstructure contract, are also well advanced and a contract for the same is expected to be let several months after the exterior superstructure contract has been let.

The Library of Congress James Madison Memorial Building is due for completion in the latter part of 1975 and the work under the proposed Capitol Power Plant Expansion Program must be coordinated with this timetable so that heat and air-conditioning facilities may be available to the Library of Congress James Madison Memorial Building prior to its completion and occupancy.

#### PROPOSED EXPANSION PROGRAM ANTICIPATED TO MEET PLANT REQUIREMENTS THROUGH 1980

In addition to providing service for the Library of Congress James Madison Memorial Building, the proposed program will provide equipment at the Plant of sufficient capacity to meet additional loads projected through 1980. The principal additions presently anticipated include an extension to the New Senate Office Building, a Page School and Dormitory, and expanded facilities for the Capitol Police Force. The projection includes an allowance for other facilities through 1980.

#### OTHER IMPROVEMENTS PROPOSED

The proposed expansion program includes modifications and changes required to conform to environmental requirements, including both pollution and noise control.

#### INITIAL APPROPRIATION PROVIDED FOR ENGINEERING STUDY

An appropriation of \$150,000 was provided in the Legislative Branch Appropriation Act 1971 to carry out the following recommendations endorsed by the House Office Building Commission, by resolution adopted at a meeting of the Commission on March 19, 1970.

"Resolved, That the House Office Building Commission concurs in the recommendations of the Architect of the Capitol that (1) a comprehensive engineering study of the Capitol Power Plant be undertaken, encompassing expansion of such plant to provide services to the James Madison Memorial Library of Congress Building and any changes that should be made in the interest of air, water, and noise pollution which might be caused by the operation of the plant, and giving full consideration to the long-range function of the plant in its present location; and (2) directs the Architect to submit to the Appropriations Committee a request in the amount of \$150,000 to carry out such study."

At the direction of the House Office Building Commission, the Architect of the Capitol under the appropriation \$150,000 entered into a contract February 19, 1971, with Hennessy, Hansen and Jones, Professional Engineers of New York City, to make the engineering study provided for in the Commission's Resolution.

The engineers submitted their completed study and report to the Architect of the Capitol on October 1, 1971.

In accordance with the terms of the contract, the study included a long-range program projected through the year 2000 and a short-range program projected through 1980.

The Architect of the Capitol concurred in the conclusions and recommendations of the engineers, and the Commission after considering the study and the recommendations of the Architect of the Capitol at a meeting, November 18, 1971, approved the report and the immediate execution of the short-range program, and directed the Architect of the Capitol to request authorizing legislation from the House and Senate Committees on Public Works for the short-range program. The short-range and long-range programs have been carefully coordinated and correlated.

#### PROGRAMS DEVELOPED UNDER ENGINEERING STUDY

Both the short and long-range programs developed under the engineering study contemplate a modular type plant, with the first modules to be constructed under the short-range program and additional modules to be constructed in incremental stages subsequent to 1980 as the demands of the Congress require.

Both the short-range and long-range programs have been so developed as to provide for the assured continuity and adequacy of the steam and chilled water service supplied and to be supplied by the Capitol Power Plant and its associated underground distribution systems, without a change or relocation of site. The present Capitol Power Plant site is adequate in size to meet the requirements of both the short-range and long-range programs.

The objective of the short-range program is to provide ways and means for supplying, on schedule, steam and chilled water in adequate quantities to the Library of Congress James Madison Memorial Building and to have such service ready to deliver not less than six months prior to the projected completion of the building in 1975, and also ready for other imminent projects contemplated, but not yet authorized or approved through 1980.

The long-range program has been developed in such a manner as to provide in the future, subsequent to 1980, the ways and means for continuing the supply of steam and chilled water services for the buildings existing in 1980 and other buildings likely to be constructed thereafter, projected through the year 2000, in the vicinity of the United States Capitol, in a manner that will be compatible with the public's demands for clean air, clean water, noise abatement, and other matters of community interest.

#### PRESENT CAPACITY OF THE PLANT

##### *Boiler plant*

At the present time the Capitol Power Plant is equipped with three large coal-fired steam generators and four oil-fired steam generators which supply the steam for all heating requirements of the buildings served by the Plant. The steam is supplied to the various buildings through approximately three miles of steam lines. At the present time, in compliance with environmental requirements, the fuel being used at the Plant is a low-sulphur content coal and an oil having a low-sulphur and other low adverse chemical content.

The present firm capacity of the boiler plant is 420,000 pounds of steam per hour. At the present time the steam demands are 235,000 pounds per hour. Accordingly, there is adequate boiler capacity to meet projected increased steam requirements through 1980. However, in order to assume the additional steam loads projected through 1980, it will be necessary to provide, for each new service,

new branch connections from existing underground steam and condensate mains and to make other related alterations.

#### *Refrigeration plant*

At the present time, the Capitol Power Plant is equipped with eight refrigeration machines which supply the chilled water for all air-conditioning refrigeration requirements of the buildings served by the Plant. The chilled water is supplied to the buildings through several miles of chilled water lines.

The present installed capacity of the refrigeration plant is 15,400 tons and provides a firm capacity of 13,200 tons. Because there is no spare capacity available at this time to meet the chilled water requirements of the Library of Congress James Madison Memorial Building and other loads projected through 1980, it is imperative that additional refrigeration machines and chilled water lines and connection be provided under the short-range program.

#### APPROPRIATION PROVIDED FOR ENGINEERING SERVICES FOR THE PREPARATION OF CONTRACT DRAWINGS AND SPECIFICATIONS AND OTHER RELATED ITEMS

With the approval of Speaker Carl Albert, Chairman of the House Office Building Commission, and Senator B. Everett Jordan, Chairman of the Coordinating Committee, Library of Congress James Madison Memorial Building, the Architect of the Capitol submitted to the House and Senate Appropriations Committees, November 24, 1971, request for an immediate appropriation of \$1,200,000 to be included in the then pending Supplemental Appropriation Bill, 1972, to permit the Architect to go forward with the engineering and other required services necessary to prepare contract plans and specifications for the plant expansion, and to administer the program until the ensuing year when authorization through the House and Senate Committees on Public Works could be obtained for the full expansion proposed.

The Architect's request was approved by the House and Senate Appropriations Committees and the requested funds were included in the Supplemental Appropriations Act, 1972 (Pub. Law 92-814; 85 Stat. 637), approved December 15, 1971, as follows:

#### "MODIFICATIONS AND ENLARGEMENT, CAPITOL POWER PLANT"

"For engineering and other services for modifications to and enlargement of the Capitol Power Plant, its steam and chilled water distribution systems, for the purpose of supplying steam and chilled water for air-conditioning refrigeration to the Library of Congress James Madison Memorial Building, in addition to the buildings now supplied with such service by the plant, with sufficient reserve to provide for projected additional loads through 1980, including necessary environmental control and other appurtenant facilities, \$1,200,000, to be expended by the Architect of the Capitol under the direction of the House Office Building Commission and to remain available until expended."

#### CONTRACT FOR ENGINEERING SERVICE FOR PROJECT

Under date of January 28, 1972, the House Office Building Commission granted the Architect of the Capitol authority to enter into a contract with John F. Hennessy, Jr., Erwin G. Hansen and Robert R. Jones for furnishing the professional engineering and other services for the modifications to and enlargement of the Capitol Power Plant, its steam and chilled water distribution systems, authorized under the \$1,200,000 appropriation included in the Supplemental Appropriations Act, 1972, for the Power Plant Project.

The engineering service contract was formally executed on January 28, 1972. There follows a section by section analysis of H.R. 14475:

#### SECTION BY SECTION ANALYSIS OF H.R. 14475

##### WORK AUTHORIZED UNDER H.R. 14475 (SHORT-RANGE PROGRAM)

Section 1 describes in detail the short-range program improvements authorized in the Bill, under the basic plan. The work under that program is described in the Bill as follows:

(1) Demolish the existing two-story annex building constructed in 1931, located west of the original turbine room of the power plant.

(2) Construct on and adjacent to the site of the annex building, after its demolition, a new building to house a refrigeration plant of twenty-four thousand

tons nominal capacity, to be operated in conjunction with the existing refrigeration plant of fifteen thousand four hundred tons capacity, as the first increment of a future modular-type plant.

(3) Install in the new refrigeration plant building four or more centrifugal refrigeration machines having a total nominal capacity of twenty-four thousand tons, together with necessary cooling towers, chilled water and condenser water pump and piping systems, local equipment controls, electrical load center and other associated auxiliary equipment.

(4) Install on the existing power plant site a new outdoor main electrical substation and underground distribution system.

(5) Construct on the power plant site a new operations building and install therein (a) equipment necessary to centralize the administration and control functions of both the new and existing refrigeration plants, (b) new sanitary and maintenance facilities, and (c) central monitoring and control equipment adequate to supervise and direct the operation of the entire Capitol Power Plant and its distribution systems.

(6) Install in a tunnel across the north portion of the existing power plant site a new underground chilled water pipe "headering" system to provide for appropriate connection of the existing and proposed new refrigeration plants with the existing and future distribution systems.

(7) Install necessary supply and return mains in branch tunnels and/or conduits to connect the Library of Congress James Madison Memorial Building and the proposed Senate Office Building Extension to the existing steam distribution system and to the chilled water distribution system with flow-limiting equipment and flow and temperature measuring instrumentation.

(8) Modify the existing chilled water distribution system to accommodate the additional flow of chilled water to the James Madison Memorial Building and the proposed Senate Office Building Extension.

(9) Install sectionalizing valves in both the chilled water supply and return mains at selected points in the existing distribution system.

(10) Reactivate, or replace as necessary, inoperative existing flow-limiting and flow-metering devices on chilled water mains in buildings supplied by the plant, and install new devices where they do not exist in such buildings.

(11) Install new dust collectors for the four existing oil-fired boilers and make necessary resulting modifications to mechanical draft equipment and smoke monitoring devices.

(12) Install new acoustical enclosures to minimize the noise from existing induced draft fans, overfire fans, forced draft fans, and diesel-driven air compressors.

(13) Soundproof local control rooms for protection of operators in both the existing refrigeration plant and the new refrigeration plant building.

(14) Install new noise attenuated ventilation system for the existing refrigeration plant and for the new refrigeration plant building.

(15) Install an acoustical barrier for the existing cooling tower installations to shield local residents from objectionable noise.

(16) Provide temporary quarters to house the present annex building activities until the new operations building is constructed and available for occupancy.

#### CONTRACT AUTHORITY

Section 2 authorizes the Architect of the Capitol, under the direction of the House Office Building Commission, to enter into such contracts, incur such obligations, and to make such expenditures, including expenditures for personal and other services, as may be necessary to carry out the provisions of the Bill. This Section also requires that any changes in the basic plan be approved by the House Office Building Commission.

#### ACTIONS REQUIRED WITH RESPECT TO ENVIRONMENTAL LAWS, RULES, REGULATIONS, AND EXECUTIVE ORDERS

Section 3 requires the Architect of the Capitol as soon as practicable after the enactment of the Bill, to comply with all applicable provisions of the National Environmental Policy Act of 1969, with respect to the modifications authorized by the Bill.

This section provides, further, that no funds appropriated in impementation of this Bill shall be obligated in connection with such modifications for any purpose other than for acquisition of site data and necessary equipment, prior to agency reviews and approvals required by that Act.

The impact statement required by Section 102(2) (C) of the National Environmental Policy Act of 1969 is now being prepared and every effort will be made to conclude agency reviews and approvals prior to the award of any contracts for equipment.

However, in view of the urgency of the project, especially with respect to supplying service to the Library of Congress James Madison Memorial Building and the long-lead time required for manufacture and delivery of such items of equipment as the refrigeration machines, section 3 provides the Architect of the Capitol and the Commission with authority to place such orders prior to final review of the environmental impact statement by other agencies in case such action is not concluded by mid-summer, 1972.

FUNDS AUTHORIZED FOR THE PROJECT

Section 4 authorizes the appropriation of a total amount for the work required under H.R. 14475, not to exceed \$17,400,000; provides that such amount when appropriated shall remain available until expended; provides the Architect of the Capitol and the Commission with advance contract authority; also provides that any amounts appropriated under the \$17,400,000 authorization shall be carried under the account "Modifications and Enlargement, Capitol Power Plant" as an addition to the appropriation of \$1,200,000 provided for engineering and other services in the Supplemental Appropriations Act, 1972, and now carried under that Account.

A breakdown of estimate of cost follows:

<i>Breakdown of Estimate of Cost of Short-Range Program Authorized in H.R. 14475</i>	
Refrigeration plant.....	\$11, 100, 000
Distribution systems.....	1, 575, 000
Operations building.....	425, 000
Noise abatement.....	450, 000
Air Pollution control.....	325, 000
Subtotal .....	13, 875, 000
Add: For cost escalation projected to 1973.....	1, 385, 000
Subtotal .....	15, 260, 000
Contingencies, design and administration.....	3, 340, 000
Total .....	18, 600, 000
Deduct: Amount already appropriated in the Supplemental Appropriations Act, 1972, for engineering and other services, for work under this project.....	(—) 1, 200, 000
Estimated Cost of Work Included in H.R. 14475.....	\$17, 400, 000

GEORGE M. WHITE,  
*FAIA, Architect of the Capitol.*

Mr. WHITE. Basically, Mr. Chairman, this is a proposal to provide needed additional capacity for the powerplant and also ultimate improvements to its impact upon the environment, even though it is presently well within the limits that have been set in accordance with law in that regard.

The basic need for capacity arises primarily and initially out of the requirement for cooling capacity for the James Madison Memorial Library Building.

It has been known from the inception of that project that we do not have enough cooling capacity to provide for cooling that building. We no longer have any capacity available for any additional building.

We have, of course, reserve capacity in the plant in the event that a machine should not be in operation for some reason, but we are in-

cluding that reserve capacity when we say we have no more capacity for future buildings.

This bill, incidentally, Mr. Chairman, as we indicated in our statements, has the unanimous endorsement of the House Office Building Commission under the direction of which we operate the Capitol Power Plant.

Perhaps it would be wise to just briefly touch upon the history of the powerplant by stating that it was constructed originally 1904-1910, I believe.

Mr. GRAY. May I interrupt, Mr. Architect.

Would it be possible for you to go to the board and show us where the original plant was constructed and where you propose these expansions?

I think this probably would be helpful to the members.

Mr. WHITE. Mr. Chairman, perhaps it would be wise in that sense to look at these two models in addition to the charts.

Mr. GRAY. Your statement says a major expansion occurred in 1923. When was the first powerplant constructed?

Mr. WHITE. From 1904 to 1910. It was placed in operation December 2, 1910.

Mr. GRAY. 13 years after the first plant was constructed, you had a major expansion?

Mr. WHITE. That is correct.

Mr. GRAY. Then you had another one in 1938 and then again in 1950 and again in 1958?

Mr. WHITE. That is correct.

Mr. GRAY. Is this because of additional buildings and additional requirements?

Mr. WHITE. Yes. That was because of additional buildings and requirements largely for heating, and then in 1938 cooling was added. There was no cooling capacity prior to that time.

Mr. GRAY. There is nothing new in this proposal? You have been following the pattern of need every 8 to 10 to 13 years?

Mr. WHITE. That is correct.

In the early 1900's, when buildings were added to the Capitol complex in the form of the old Senate Office Building and the Cannon House Office Building, a decision needed to be made at that time regarding how to provide heating for the buildings, and the decision was made to provide it in the form of a central plant.

That decision turns out to have been a very good one in that central plants have since that time become used everywhere as a source of heating for a complex of buildings.

Then, in 1938, when cooling came along, a major addition was created in order to provide cooling capacity.

Mr. GRAY. Can you show us where the original plant was built?

Mr. WHITE. The original plant is this portion of the building [indicating].

Mr. GRAY. Where is it on the model?

Mr. WHITE. Looking at this on the model, it would be this building [indicating].

Mr. GRAY. In between the two stacks?

Mr. WHITE. That is correct.

Then, this portion [indicating], which contains the cooling was added later.

This plant also, incidentally, originally provided for the electrical power that was used on the Hill. That is no longer done.

I believe that in 1950 and 1951 it was abandoned at the point when the equipment needed to be replaced, and it was no longer economically feasible to generate this amount of electrical power in our own plant. It was cheaper to buy it from the local power company, which has been done since that time.

Mr. GRAY. We buy it commercially at the present time?

Mr. WHITE. We do.

Mr. SCHWENDEL. It ought to be pointed out that the House is ahead of the Senate on this. It has only been in recent years that they have changed over on the Senate side from direct to alternating current.

I know we burned out 2 or 3 years ago when we tried to play a phonograph there.

Mr. WHITE. In 1951, I understand—

Mr. GRAY. I think the current was changed, but the source of supply has been the local power company since the early fifties.

Mr. WHITE. The source of supply has been the power company since that time. It may have been that the change from d.c. to a.c. in the Capitol and office building was accomplished later, but the source of power as of 1951 was no longer this generating plant.

Mr. GRAY. The Potomac Electric Power Co.?

Mr. WHITE. That is right.

Mr. GRAY. All right. You may proceed.

After the 1923 expansion, the next expansion was in 1938, can you point out what was done?

Mr. WHITE. In 1938, this portion of the building [indicating] was added to provide cooling capacity.

I am not sure whether the entire portion was added or only a section.

This section was added in 1938 [indicating].

Mr. GRAY. What I am trying to get at in talking about the different increments of expansion is whether you can tell us just in ballpark estimates what percentage of increase has occurred?

In other words, have you increased the capacity by 25 or 50 percent, or how does the proposed bill increase the percentages of capacity?

In other words, what in the proposed bill is the percentage of additional capacity you will have?

Mr. WHITE. In terms of cooling, our present capacity is something slightly less than 14,000 tons, actually 13,200 tons of cooling capacity.

Mr. GRAY. In the proposed expansion, you mean?

Mr. WHITE. No. That is now in existence.

Mr. GRAY. Your present capacity?

Mr. WHITE. 13,200 tons is the correct number.

We are proposing to add 24,000 tons at this time.

Mr. GRAY. So you are proposing to almost double?

Mr. WHITE. More than doubling the present capacity.

There are 6,000 tons needed for the James Madison Memorial Building, which is half of our present capacity. We need that for the new building alone.

Mr. GRAY. That is the percentage I was trying to get at. You are proposing a 200-percent increase in your capacity?

Mr. WHITE. That is correct. We are proposing an increase which will not only enable us to provide cooling for the James Madison

Memorial Building, but for possible future buildings within the next 10 years.

It would not be appropriate, it seems to us, economically, to provide for just enough capacity to handle the James Madison Memorial Building, because of the manner in which it would have to be added. And I would be glad to explain that if you would care to have it done.

It involves a question of taking just that amount of known and immediately needed capacity and installing it in this existing building, which could be done.

If, however, one more building of any kind were to be needed and we already know of one which is authorized to be constructed, and site plans for which have been prepared, and that is the John W. McCormick Residential Page School, we will not have enough capacity to serve it.

At that point, then, what we will have done in adding to the existing plant would have been a waste in the economic sense in that it would have to be added to again.

This building, because it was begun in 1904, and because it was added to over the years, is not constructed in such a way as to provide facilities which will enable the installation of modern equipment to be accomplished efficiently, including all of the piping necessary for the cooling.

I have been talking primarily about cooling, Mr. Chairman, because we have adequate heating capacity in this building for at least until 1980, and perhaps longer.

Our problem is not one of heating capacity, but rather cooling capacity.

Mr. GRAY. While we are on the subject of capacity in the new James Madison Building, was this originally intended to have its in-house air-conditioning and heating capacity?

Is this something which has to be added after?

Mr. WHITE. No; the building was originally designed to have its cooling and heating provided from the central plant.

Mr. GRAY. Did we not know when we first started talking about this, that we did not have the capacity to handle this new building?

Mr. WHITE. Yes, we did know that.

Mr. GRAY. Would we not have been better off to have designed all this for the in-house capability of the James Madison Building?

Mr. WHITE. We think not. We think that is an inefficient way to provide heating and cooling for buildings.

Generally speaking, the central plant concept is one that is less expensive to operate and provides more efficiency, which is one of the reasons why it is less expensive to operate, and also provides continuity of service in a more appropriate way than providing cooling and heating within each individual building.

It is a concept which is used universally where there are complexes of buildings such as universities, large shopping centers, and so on.

We could, of course, provide for it within each individual building, but the plant already exists. The distribution system already exists for

the heating capacity, for example, since we provide heating through 3 miles of distribution lines to the two Senate Office Buildings, three House Office Buildings, for the Library of Congress Buildings, the Supreme Court Building, and heating is provided on a reimbursable basis to the Folger Library, which is east of the old library building, and also to the City Post Office Building and the Government Printing Office.

We provide heating for those from this central plant through the distribution lines. With the heating capacity we already have, which is more than adequate, as I say, for well into the future, we merely, for the new James Madison Memorial Library Building, have to connect into the steamline which is already in the street in front of the building.

So, it would be very costly to reproduce that heating capacity within the building since we already have it here.

The cooling, on the other hand, we do need to provide some place. It is more efficient and more economical to provide it through the existing distribution lines that carry the cooling vehicle, which is chilled water. The James Madison Memorial Library Building will be served in the same manner as all of the buildings on the Hill.

So, from the beginning, it was designed to have its sources of energy provided from outside the building.

Mr. GRAY. Well, I am not asking these questions, as the Architect knows, to embarrass him in any way. I have the greatest respect for him.

But if we report a \$17½ million bill out on the House floor, invariably we are going to be charged with committing the taxpayers to more unnecessary spending.

If you remember, we had two separate authorizations; we started with \$75 million and it catapulted up to \$90 million. We are going to be charged with committing them to a \$90 million building knowing full well when we started that we would not have the capacity to air-condition the building, which now involves another \$17 million expenditure.

So I am wondering how we are going to explain this?

Mr. WHITE. Well, Mr. Chairman, I think there are several factors that need to be considered in that connection.

One of them is that the \$17,400,000 which is requested here, is not allocable in its entirety to the James Madison Memorial Library Building. We are asking for more capacity than is required for that, and further, there are costs included that are associated with the environmental impact of the existing heating plant.

Mr. GRAY. But it would be a correct statement, would it not, that if this bill does not pass and the James Madison Memorial Library Building proceeds on schedule, when it is completed there will not be adequate capacity in the existing plant to accommodate the 6,000 tons required to air-condition the building?

Mr. WHITE. That is a correct statement.

We could, as I mentioned, provide one 6,000-ton machine, and a spare machine for backup purposes, put them in the existing plant, and take care of the cooling needs for the James Madison Memorial Building.

Mr. GRAY. What would this cost?

Mr. BAKER. Mr. Chairman, will you yield?

Mr. GRAY. Yes, I yield to the gentleman from Tennessee.

Mr. BAKER. Is there an item in the construction costs of the James Madison Library for an air-conditioning plant?

Mr. WHITE. There is not.

Mr. GRAY. This is the point I was raising a while ago.

We approved the \$90 million building, and until this bill was introduced 30 days ago, I thought the air conditioning was being provided in that \$90 million cost.

That kind of struck me hard, too.

Mr. SCHWENGEL. Mr. Chairman.

Mr. GRAY. The gentleman from Iowa.

Mr. SCHWENGEL. In addition to this question, first I would like to have you answer his question—

Mr. GRAY. My question was how much would it cost to have in-house air conditioning in the James Madison building exclusive of any expansion of the plant downtown?

Mr. SCHWENGEL. Then what percent of the cost of your present plant could you attribute to the James Madison Library? That would mitigate your answer a little bit.

Mr. WHITE. I would like to clarify this, Mr. Chairman. We would not be able to provide it in-house without redesigning the building.

Mr. GRAY. You are going to pipe in the 6,000 tons?

Mr. WHITE. That is correct. It is something like a million or a million and a half dollars to provide a 6,000-ton capacity in this existing plant building which would enable us to provide cooling for the James Madison Memorial building.

Mr. GRAY. I do not follow those figures, are we not talking about a little over twice that for \$17½ million?

Mr. WHITE. No. We are talking about four times that. We are adding 24,000 tons.

I may not have made it clear. We have 13,200, and we are going to add 24,000. We would have 37,000 when we are completed.

Mr. GRAY. But even then I do not follow the figures.

For \$1 million we can get 6,000 tons. It looks like we ought to be able to get four times that for \$4 million instead of \$17½ million. Follow me?

Mr. WHITE. I understand. The problem is that somewhere this existing building stops having the physical and structural capacity to handle additional equipment.

Right at the moment it has enough physical capacity to take care of one machine, and one backup unit. But beyond that, we would have to begin to either add to the building in pieces and patches, or do what our present proposal provides, which is to construct the first module of a long-range plan looking to the year 2000. It may be that I should have stated that in the beginning.

We conducted, at the request of the House Office Building Commission, and through appropriations of \$150,000 granted, I think, in the

1971 Legislative Branch Appropriation Act, a long-range comprehensive engineering study involving what our needs would be in the year 2000, and thereafter insofar as we can predict them.

Our thought was that we ought not do something now which will act as an obstacle leading to greater costs later on when the next requirement comes along.

So we examined all of the possibilities and determined a long-range plan indicating what our heating and cooling capacity might be at that time, and then proposed a short-range plan which would be flexible and compatible with it; so that in the event those assumed needs did not arise, we would not have placed any obstacles in our way for continuing to operate portions of this plant until such time as it became so obsolete that it would need to be replaced because of new technological developments, or for any other reason.

It is a situation comparable to repairing a used car. At some point in time, you ought to buy a new one.

And so we could provide for the library needs in this building right now, but we would be throwing away several million dollars in the sense that for the next smallest increment in capacity that would occur, such as, for example, the page school, we would then have to add to this old 1910 building, alter the piping and the equipment, and replace some of the equipment which is there now as it begins to deteriorate.

So the justification for the modular approach and this expenditure of funds is essentially for the future, rather than for only the James Madison Memorial Building for refrigeration machining, as such.

There is only perhaps \$2 million of the \$17.4 million that is allocable to the James Madison Building.

Mr. GRAY. If I can interrupt you, in that connection, you know if we bring this bill out they are going to say, "What is the need?"

We would have to say that we cannot open the James Madison Building until we have this facility, and invariably some are going to tack an additional \$17 million onto the cost of James Madison Building and make it \$107 million instead of \$90 million. I think that is going to be the end result. That is why we must have pretty hard and cold facts before we can entertain this bill.

Let me yield to the gentleman from California.

Mr. ANDERSON. Why can't each building have its own cooling unit?

Mr. WHITE. There is not anything wrong with it. I do not think it is a question of right or wrong.

At this juncture we do not have a separate heating and cooling system for the Rayburn Building, or for any of the other buildings.

Mr. ANDERSON. We are talking about the Madison Building. If we can put in a cooling unit for a million or a million and a half dollars, what is wrong with doing that at this place in time, and stopping?

Mr. WHITE. To provide a separate unit to take care of that building by itself could be done—

Mr. ANDERSON. For a million or a million and a half?

Mr. WHITE. For something in that order of magnitude for the cost of the refrigeration machines alone.

This becomes a policy decision because to provide for the cooling necessary for buildings now and in the future separately, it will ultimately cost more than providing for it from a separate plant. It will,

however, at this juncture, in the short term, turn out to a lesser expenditure.

We could spend a minimum amount at this point, but the next time we needed additional capacity, we would have to spend substantially more in total in order to provide for it.

Mr. ANDERSON. You raised another point on which I am not clear. Do we not have heating for the Madison Building either?

Mr. WHITE. We have heating capacity.

Mr. ANDERSON. I thought you said you would not be able to use that capacity.

Mr. WHITE. If I said that, I did not mean to do so.

Mr. ANDERSON. You already have the facilities for heating in the Madison Building?

Mr. WHITE. No; not in the building. We have capacity in this central powerplant to heat the building.

Mr. ANDERSON. Then we will have to have another proposal to provide heat?

Mr. WHITE. No.

Mr. GRAY. Let me clear that up.

We have heat out in front in the street. This is a matter of just running it into the building, right?

Mr. WHITE. The heat is provided by steam. This is a steam generating plant, and we run steam through 3 miles of underground tunnels around Capitol Hill. The buildings are fed steam from that distribution system into each building, including this one, for example.

Mr. GRAY. In other words, heating is no problem in the Madison Building?

Mr. WHITE. Heating is not a problem.

Mr. ANDERSON. You talk about the heating and the cooling separately; what if you wanted to have them both together?

Mr. GRAY. You mean from the same plant?

Mr. WHITE. Heating and cooling are being provided from this plant, and I think I attach them together because we will ultimately run out of heating capacity in this plant also as more buildings are built in the future.

What we have provided for is a flexible arrangement so that if we indeed do run out of heating capacity, this long-range plan will enable us to provide additional heating capacity as we need it, and ultimately provide new heating capacity as the existing boilers, which are now quite old, will need to be replaced.

Mr. ANDERSON. How does that tie in with cooling?

Mr. WHITE. It is a separate consideration in terms of the need.

Mr. ANDERSON. But you link them together.

Mr. WHITE. I link them together because they are both coming out of this same central plant.

We have two separate distribution lines.

Mr. ANDERSON. You could have a centralized heating plant that would take care of all heating, but still have separate cooling units, could you not?

Mr. WHITE. Yes.

Mr. ANDERSON. Could you provide figures showing that it is cheaper to have the cooling all in one place rather, than individual units for each building?

Mr. WHITE. I think over the long run it can be shown, yes. This is why central plants are used.

Mr. ANDERSON. They are also used for cooling.

Mr. WHITE. They are also used for cooling.

Mr. GRAY. Mr. Campioli.

Mr. CAMPIOLI. In 1969 when I appeared before this committee in order to obtain additional authorization for the Library, from \$75 to \$90 million, I stated before this committee at that time that the air conditioning for the building was not included in the \$90-million figure, and that a later request would be made for the necessary authorizations, at that time estimated at \$10 million, to provide for the air conditioning of this building from the Capitol Power Plant.

Mr. GRAY. That must have been in the part you submitted for the record, because I sure do not remember that.

Mr. CAMPIOLI. Yes, sir. It was contained in the written statement submitted for the record, as well as in the verbal presentation and that \$10 million due to escalation would now equal about \$14.3 million.

Mr. KLUCZYNSKI. Mr. Chairman, I would like to ask a question.

Mr. GRAY. Were you through, Mr. Anderson?

Mr. ANDERSON. Yes, thank you, Mr. Chairman.

Mr. GRAY. The gentleman from Illinois, Mr. Kluczynski.

Mr. KLUCZYNSKI. Mr. White, has there ever been a situation here on Capitol Hill where there was a shutdown or an overload?

Mr. WHITE. We have—with regard to cooling, you mean, or heating, or any of them?

Mr. KLUCZYNSKI. I think this is good legislation. We really need more power here on the Hill.

I see nothing wrong with this legislation. I would like to do everything possible to see that we have more power. I have had much experience in my own place of business, where you have a power failure, and when your equipment shuts down, you are in bad shape.

I would like to go on the record in support of this legislation, Mr. Chairman.

I want to thank you for bringing it up before this committee.

Mr. SCHWENGEL. It may be helpful if you can give us some additional assurance, which I believe you could, that with the installation and with the adoption of the plan there would be certain economies, I believe, evolved for the total production of energy for cooling. Is that right?

Mr. WHITE. That is true. One of the main features of a central plant, as opposed to individual buildings having their own heating and cooling units, is that it is more efficient and less costly, and also we are able to do a better job of controlling its impact on the environment when it is in a location where equipment can be installed which will minimize that effect.

As the energy sources are spread around into different buildings, it is very much more costly because of the need to provide additional equipment to do the same job that would have to be done in the central plant.

It is also a question of size. With the very small sized units, such as one has in, let us say, an apartment building where each individual suite has its own heating unit or a window cooling unit, efficiency, with individual control, can result.

When one uses the larger sizes, when you begin to need 20,000 tons—in this case we would have, with the James Madison Building, a need

for something more than 20,000 tons of usable air conditioning, and that is a tremendous amount of cooling—the efficiency is much, much greater to provide that with large refrigeration machines, and I think that is probably the major reason for going to central plants anywhere.

Mr. SCHWENDEL. Would there be a savings in all the other areas served by your cooling plant?

Mr. WHITE. There will be.

Mr. SCHWENDEL. With the improvements you are suggesting?

Mr. WHITE. There will be, because one of the improvements we are suggesting is a different temperature of the chilled water used in the distribution system. This is possible as a result of new technology in providing for the exchange of energy in the building at a chilled water temperature higher than we are now using. This will result in a savings throughout the entire system.

Mr. SCHWENDEL. Is there a way to measure this in dollars?

Mr. WHITE. My recollection is that by the year 1980 we would be saving something like \$100,000 a year in generating costs for chilled water through this approach.

Mr. SCHWENDEL. This is a very significant figure, and I am glad I raised the question. I raised it because of the personal experience I have in my home.

We had individual units. We moved into a home where we have twice the cubic footage with a central cooling system. We could heat a house twice as large for the same price.

I know there are certain economies that come from a central system, and I know also with the new developments, new findings, new equipment, it is more efficient than what it used to be, and that is the reason I asked the question.

You estimate at least \$100,000 a year we would save on the total bill?

Mr. WHITE. Yes, on cooling. We are talking about cooling alone.

Mr. SCHWENDEL. I understand that.

Mr. GRAY. The gentleman from California.

Mr. ANDERSON. Just a point of clarification you stated that you could install a 6,000-ton air-conditioning unit that would serve the Madison Library Building for a million or a million and a half dollars.

A few moments later you said it would be 20,000 tons. What would it take to cool the Madison Building?

Mr. WHITE. I said 20,000, because we have an existing capacity of 13,200, and adding the 6,000 to the 13,200 brought me to the 20,000.

I was talking about the amount of cooling we are providing for Capitol Hill. The 6,000 is for the James Madison Memorial Building. There is 13,200 tons existing now. The two of those added together mean a 20,000-ton capacity necessary on the Hill.

Mr. ANDERSON. But 6,000 tons is all you will need for the Madison Building?

Mr. WHITE. That is correct.

Mr. GRAY. The gentleman from California, Mr. Johnson, did you have a question?

Mr. JOHNSON. I just want to get clear in my mind a point. The gentleman stated here when he was before the committee that he previously talked about \$90 million, and that did not include the air conditioning and heating. Then he said for \$14½ million, based upon escalation and today's prices, we could get this for \$14½ million.

Mr. CAMPIOLI. The original statement made in 1969 was for \$10 million. That figure would now escalate to about \$14.3 million.

Mr. GRAY. How do we get to the \$17 million?

Mr. JOHNSON. That all related to the Madison Memorial Library?

Mr. CAMPIOLI. Exactly.

Mr. JOHNSON. You add what to the other increased capacity that is necessary here?

Mr. WHITE. We are proposing to add 24,000 tons rather than 6,000 tons. We believe that it would be a saving even though it is not needed for the Madison Building to add that now, because we believe it will be needed later, and to add it later would cost more.

Mr. JOHNSON. This will bring it up to \$17.5 million instead of \$14 million?

Mr. WHITE. That is correct, but we are providing much more capacity than is necessary for the Madison Building.

Mr. ANDERSON. Does the \$17½ million include heating as well as cooling?

Mr. WHITE. No, it does not. We have existing heating capacity.

Mr. ANDERSON. So there are not any additional costs figured for heating this building or any other proposed buildings planned for in the future?

Mr. WHITE. That is correct.

There are some costs involved in the replacement of valves in the steam system, and extension of the distribution lines to the new building, but there is nothing significant in terms of total cost, and we are not providing additional heating capacity at all.

There is thus some small portion of that \$17.4 million that could be allocated to the steam system, but nothing of any magnitude that would be significant in terms of the total dollar amount.

Mr. TERRY. Mr. Chairman.

Mr. GRAY. The gentleman from New York.

Mr. TERRY. Is an environmental impact statement necessary on a separate unit in providing this additional capacity?

Mr. WHITE. Yes. An environmental impact statement would be necessary no matter what we did, in accordance with the law, and we are preparing that statement. It is in the process of preparation right now.

Mr. TERRY. Second, these figures seem to trouble me.

Internally we could add the necessary 6,000-ton air-conditioning unit had it been provided in the building for between \$1 and \$1½ million.

You are now proposing that we add 24,000 tons, which is four times the capacity needed for the new library.

That would mean that three additional buildings of the size of the library could be added?

Mr. WHITE. Really only two, because we need a spare 6,000-ton machine as a reserve source.

Mr. TERRY. Do you envision the addition of that much space in the next 50 years?

Mr. WHITE. Well, we think it could even be more than that.

Mr. TERRY. Now, if this figure is \$17.4 million, we could add internally in these three other buildings of the same size as this library, even with a tremendous inflationary spiral for a million to a million and a half.

How do the economies work out when it is, let us suppose, \$5 million for the next three buildings, as opposed to a million to a million and a half.

Supposing it doubles to \$3 million at the outset.

How then can that be an economy?

Mr. WHITE. I think it does indeed need to be clarified.

We would be providing refrigeration capacity itself for \$1.5 million which would be placed in this building. There would be no new exterior construction involved.

Mr. TERRY. I think the question put to you, sir, was, if the Memorial Library Building had been designed with an internal air-conditioning unit as questioned by the gentleman from California, Mr. Anderson, then how much would it cost, and the answer given to the best of my knowledge was a million to a million and a half.

We did not talk about adding capacity to the central station.

Mr. WHITE. That was not my understanding. That dollar amount was not intended to be the answer to that question.

Mr. TERRY. I yield to the gentleman from California.

Mr. ANDERSON. Could that air-conditioning unit not be added now to the present building, and do it for a million and a half?

Mr. WHITE. No.

Mr. ANDERSON. I thought you said you could add a 6,000-ton air-conditioning unit that could take care of the Madison Building for a million to a million and a half dollars?

Mr. WHITE. I think that is true for the machine itself, but we were talking about adding it into the central Power Plant building.

Now, we could add it into the James Madison Memorial Building, but it would involve a substantial redesign of that building. A great deal of space would be required in order to be able to install the machines with piping and all the rest of the things that go with it. All of the space in that building has previously been allocated, not that it could not be taken away.

Mr. ANDERSON. Is not the piping and everything else planned in the building already?

Mr. WHITE. No. All that is presently part of the building design is the distribution piping from a central source of chilled water. That is in the present design for the library building.

But there is a lot of piping and electrical energy required to be brought in for the cooling machines themselves. The cooling machine is driven by an electric motor, of 8,000-horsepower capacity, I believe. These are tremendous machines that take a lot of space, and that is one of the reasons that we would run out of space in the existing Power Plant building some time in the future.

It is no longer possible to provide that space in the James Madison building at this time without redesigning the building.

Mr. ANDERSON. How big an area would the air-conditioning unit take?

Mr. WHITE. It would probably require an area about twice the size of this room. Of course, I am just guessing.

Mr. TERRY. Mr. White, can you advise me of why that option was not made available to the committee at the time of the passage by this committee on that funding?

Mr. WHITE. I can only say in response to that that as far back as 1960 to 1962, according to the record, long before I was here, it was

planned that the cooling and the heating be provided from the central plant. I think the reason is basically that as a general philosophy it is always more efficient, for several buildings, to do that, because when you think in terms of one building, you have one set of criteria; but if you have a dozen buildings, you have a different set.

Mr. TERRY. The answer is satisfactory on that point.

Let us get back to my arithmetic, which is the other part of my question.

If you can now put or add in a 6,000-ton air-conditioning unit into the central building for a million to a million and a half, recognizing the additional costs then of the piping from there to the new building, then we are talking about \$17.4 million for 24,000-ton capacity, explain to me the arithmetic or logic of that.

Mr. WHITE. I think that it may be perceptive to look at the million or a million and a half as providing cooling capacity. That is only going to buy the machines.

In addition to that, we are providing for other things when we ask for the \$17.4 million. We are providing, for example, a new header system in the north end of the property to equalize the distribution.

We intend to make other improvements as a part of this \$17.4 million.

Mr. TERRY. You talked about a small portion of it being valve changes.

Mr. WHITE. That is only for steam heating.

Mr. TERRY. Do you think Mr. Anderson's question meant the cost of buying the motor?

We are not here to discuss the minutia of buying motors as opposed to what he was talking about, air-conditioning that building, which I took could be done for a million to a million and a half plus the ductwork which is already provided for in that building.

Mr. WHITE. I asked the question of our consultant, and I understand that the million and a half is for that purpose.

Yes, that is true.

Mr. TERRY. That is for 6,000 tons. Now we are talking about 24,000 tons, 4 times 6, but you go from a million and a half to 17.4.

Mr. WHITE. The reason is that in the \$17.4 million, we are not simply providing for 24,000 tons of cooling but also for additional items.

We can provide 6,000 tons now with some existing electrical supplies that are in the building, with some existing controls that are in this Power Plant building. We could take advantage of a lot of existing items which will enable us to install up to 6,000 tons, together with a reserve unit of comparable size.

But beyond that, say for the next 500 tons, we would have to provide substantial additional equipment, as well as additional construction.

For example, we will have to build a new building or add on to this one at that time. The present proposal in this bill is to provide a new building now which will, among other things, eliminate a present building in which there was an old forge shop and which is now used as a place for employees' locker rooms.

We would provide a new central control building at this point [indicating] which would enable monitoring and control to take place for the efficient operation of additional machinery.

Really, the question and choice is one of whether to spend \$1 to \$2 million for 6,000 tons firm capacity, and then at the next juncture

have to spend a great deal more than \$17.4 million because of having to redo to some extent what has already been done.

Mr. TERRY. I have only been here a brief time and the only history I have before me is the fact that the Speaker, the distinguished Speaker from Oklahoma, asked for an additional House office building, which was turned down, and we are now changing over the Congressional Hotel for office space, which seems to me to indicate that the tone of the Congress is not to expand, at least on this side.

The Senate has two office buildings which appear to be ample for their size. Why are we talking about a 24,000-ton increase when we have no foreseeable need for it in the future?

Mr. WHITE. In response to that, let me say that our conclusions have resulted from some long-range planning.

A building that we have in sight in the immediate future is one that I mentioned; namely, the page school and dormitory building.

Mr. GRAY. On that subject, how much capacity would be required for the page school?

Mr. WHITE. My recollection is about 700 tons.

Mr. GRAY. And we need 6,000 here?

Mr. WHITE. We do not have a building yet; so we are guessing about what capacity a building for a school and residence for 100 students might require.

We could be incorrect to some degree.

Mr. GRAY. We do not supply the Congressional Hotel, do we?

Mr. WHITE. No; we do not.

Mr. GRAY. Do you anticipate that we will?

Mr. WHITE. We might have to supply the heating. We do not anticipate supplying the cooling because it would cost more than the building is worth to convert it.

Mr. GRAY. To answer the gentleman from New York's question, our immediate foreseeable needs would aggregate about 7,000 tons?

Mr. WHITE. I just began to indicate the list. It would be 700 tons for the page school—

Mr. GRAY. I was figuring a thousand for that, a full thousand, and 6,000 for the Madison, which will be a 7,000 total.

Mr. WHITE. We have in a presently proposed bill an addition to complete the New Senate Office Building since it was only half constructed in accordance with its basic plans, as I think you may recall.

The Senate has proposed that bill.

In addition to that, they have proposed a bill for an underground garage which would not require cooling, but which would require some heating.

Mr. GRAY. How much capacity would be required if they completed the Senate Office Building?

Mr. WHITE. I believe 1,500 tons.

Mr. GRAY. Let us add another 2,000. That takes it up to 9,000 now.

Mr. WHITE. We have the possibility—we have the need and, therefore, the possibility of some kind of police academy building. We have gone from a 600-man police force to a 1,000-man police force. We have not had enough room for the 600.

In one instance, we have locker rooms in the machinery and equipment area above the Rayburn tunnel, between the tunnel and the surface of the ground. This is an undesirable condition. We have simply no room in which to house the police force.

We have some of the police officers in a portion of the Plaza Hotel over on the Senate side.

Looking into the future, it appears that we are going to need some kind of capacity for them.

So, there is another building, and I have no immediate idea of what that capacity might take.

I have no clear idea regarding the size of the building, but certainly more tonnage is going to be necessary.

It may well be that we will also have to provide an additional legislative office building. It may be that we will not, but in looking into the future, we thought in terms of having the capacity in the central plant so that we would not have to again add on to the equipment in order to provide for heating and cooling that facility.

Mr. GRAY. We are estimated to have a population of 300 million by the year 2000, and that is only some 28 years away.

Mr. WHITE. In addition to that, Mr. Chairman, there is another factor which needs to be taken into account. That is the matter of increased loads in existing buildings.

As we add more electrical equipment, as we add more lighting, more people, the cooling loads rise.

For example, this very building was designed, not only in terms of space but in terms of cooling capacity, to handle staffs of six or seven people per Congressman in each three-room suite.

As you know, authority is now available for 15 or 16 staff members.

Now, they are not necessarily all here, but the rooms are nevertheless crowded. There are more people in this building than it was designed for. So, the cooling load goes up and more of it is provided from the central plant. And that has been happening over the years. And so we have a factor in here for that, too; that is, for additional capacity required by existing buildings.

Mr. GRAY. Is it not a fact that you spent \$150,000 for a study? These are not just figures grabbed out of the air? This comes well documented?

Mr. WHITE. We spent \$150,000, Mr. Chairman.

I have this three-volume report which is the result of that study, and which is, of course, available to you. We can get copies if your committee would like to have them.

Mr. GRAY. So the recommendations that you are making came after long and detailed studies by outside experts?

Mr. WHITE. That is correct.

Mr. GRAY. The gentleman from New York.

Mr. TERRY. Do the figures you presented represent a synopsis of those three volumes?

Mr. WHITE. Yes.

Mr. TERRY. So what we are talking about, from what you said to us, is a 700-ton requirement for a page school and dormitory of 100 students; 1,500-ton capacity for the doubling of the Senate Office Building, which is quite questionable in the foreseeable future, according to the Senate Public Works Committee's testimony with respect to additions.

We are talking about a police academy. Suppose we have 200 capacity in that facility. It does not require dormitories because most of the men are married.

If you doubled that, that is a 1,400-ton capacity. Given the possibility, which is quite remote under the existing thoughts of the Congress for an additional legislative office building and, say, that it is as big as the library, which it will not be, but I realize that more tons are necessary because of small rooms and so forth, say, 6,000 tons, that adds up to 9,600 tons.

You are talking about adding 18,000 tons.

But the suppositions you are giving us of additional legislative office buildings are way in the future since we are spending money converting the Congressional Hotel.

The Police Training Academy may well not be on the Capitol Grounds because it would be a rather expensive use of Capitol Hill space to have it here.

The addition of the Senate Office Building being quite speculative and the page school and dormitory being a real possibility, as I see it, in the foreseeable future, we have an actual potential of perhaps 700 tons and a very remote possibility of 8,900 tons, yet the request is for additional capacity over and above the existing capacity of this building of 18,000.

Do you see anything wrong with my logic?

Mr. WHITE. Unless I am mistaken, the additional legislative office building may not have been included in your calculation.

Mr. TERRY. I included the same capacity.

Mr. GRAY. 6,000 tons.

Mr. TERRY. And I said the building would probably be smaller in cubic feet, but I am compensating for the fact that you have got to air-condition more rooms because library space is wide open space, easier to air-condition than a room of this size, plus Mr. Kluczynski's office.

So, I am saying one factor would offset the other.

Mr. WHITE. We have two other factors which I believe are not in there, really three factors, because your 9,000 does not include the 6,000 for the James Madison Building.

Mr. TERRY. Yes, it does. I said to you in response that 18,000 was the figure that I used of additional capacity. So I am subtracting the 6,000 from the 24,000 you are proposing to add.

Mr. WHITE. I see. I misunderstood, and thought that you had not subtracted it.

We have two additional factors which were included in this long-range study which was made last year. One of them is the possibility of expansion of the Capitol Building itself which would require 1,500 and 1,200 tons for load growth in existing buildings, the factor which I mentioned to you before.

Mr. TERRY. Except that I, as a first-term Member of Congress, have about as many people as you can get in the existing space within the Longworth Building. My colleague, Mr. Miller, is in the Cannon Building, and my colleague, Mr. Kluczynski, is in the Rayburn Building.

I asked an open question to them of whether or not they had any problem in their staff rooms as far as the cooling at the present time, and I stated that we are comfortable in the warmest day in summer within the Longworth Building, even though I have seven people in one room.

Mr. WHITE. Maybe I did not explain very well what I meant by increased loading in buildings. We have taken the past history of increased loads in the buildings and projected them as more and more people, lighting, machinery of various kinds—

Mr. TERRY. You cannot do that because we now have the latest technology available. We have automatic typewriters. We have the MTST, et cetera. We have available to us every known technological advance, as I see it, for the next 5 or 6 years. We are ahead of the business world because of the need to have reproductive capacity.

We have a staff load which may increase, but supposing it increased to 20, we would not be able to keep the people within the rooms because, in my space, I cannot put any more than seven or eight people.

So we have arrived at that ceiling.

You are taking out of the air a figure of 1,200 for load growth, and I cannot give you much credit for that one.

Mr. WHITE. Let me explain a little further, in that there are a great many areas within the Longworth Building and the Cannon Building that are not air conditioned at the present time.

For example, the Congress just gave us approximately \$25,000 to provide some additional cooling units in one of the areas where there are some books stored in the basement of the Longworth or the Cannon Building in order to air condition that area. The books were drying out, and the General Accounting Office was critical of the fact that rare books are stored there and are drying out.

We recently added an enclosure over a moat in the Senate Office Building for additional capacity in the basement area for their photographic studio, as I recall, and that requires air cooling.

In other words, increased loads come about in a number of ways, such as the kind that I mentioned.

There is no question but that it is an estimate, and really I think what this discussion indicates is a question of philosophy.

If we could say that there will never be a time when we need very much more additional heating or cooling, then there is not much question that installing a single machine would solve the problem.

We think, however, that all of the indications are that there will be some kind of additional need in some form; and if that is true, then it seemed to us that to proceed minimally now would be an unfortunate expenditure of funds which would have to be respent many times over as the additional capacity is required.

For example, let us look at the existing power plant building. The place where we have the space in which to place the machinery that we are discussing, is an area that remained after the removal of the electric generators some years ago. It is not a desirable kind of space—we will thus have to make some structural alterations to this building to provide for this and for future machinery, and we would be engaging in an activity similar to that of patching a used car.

It is a philosophical question. We have presumed that we would need additional capacity in the future.

If that is a bad presumption, then, of course, the other direction is the way to go.

Mr. TERRY. Let us go back 20 years.

If, at that time, you wanted to produce 24,000-ton capacity of cooling, how much space would we have needed then as compared to 24,000-ton capacity today?

Mr. WHITE. I cannot answer that accurately. I assume that you are talking about the volume of the envelope to enclose the space?

Mr. TERRY. Volume.

Mr. WHITE. It would be more.

Mr. TERRY. Three times as much, right, because of the efficiencies, the modern technology with respect to the machines we use today as opposed to 20 years ago?

Mr. WHITE. It would be more. We do not know how much more. It would be hard to say, but certainly more.

Mr. TERRY. I am a layman. I am a lawyer. But I have a background in real estate, et cetera.

Would it not have been three times as much?

Mr. WHITE. It would certainly have been more.

Mr. TERRY. Is not that possibility there?

You look to me like you are providing for the next 50 years with the 24,000-ton capacity based on the philosophy which, admittedly, will change some with the possibility of a hundred Congressmen changing here. I think we are still going to represent our constituents, and I think that is where the problem exists on adding office space.

I say that seven people in my present staff room is perhaps too much, but I am willing to get along with it because of the overall concern in Congress over building another building.

Mr. MILLER. Mr. Chairman.

Mr. GRAY. The gentleman from Ohio, Mr. Miller.

Mr. MILLER. Mr. White, I understood you to say you had 13,200-ton capacity existing, and the bill says we have 15,400-ton capacity.

Is the bill correct?

Mr. WHITE. Yes.

The bill is correct. The reason is that we have 15,400 total capacity, but only 13,200 firm capacity, because we can only count our firm capacity based upon one machine being out of service.

So you have an extra machine, in effect.

Mr. MILLER. That explains that. One other point you made. You speak of having modular-type units, and you would have four 6,000-ton capacity units.

If you installed the necessary piping, the header system, and maybe even the foundations, if necessary, would it not be wise to only purchase the amount of 8,000 horsepower electric motors and the necessary centrifugal compressors to expand now to our current needs and then expand beyond that and purchase other equipment when necessary?

Mr. WHITE. Yes; that is a possibility.

We have in this study, which we presented to the House Office Building Commission, provided for the possibility of accomplishing the work in two phases.

Phase 1 would provide only the amount of capacity we needed now in the new building which would be two 6,000-ton machines.

We have to have an extra machine as a standby in the event of a failure of the largest machine in service.

Now, if we were to do that and provide only that much capacity, the cost would be \$11,730,000 plus the contingencies.

Let me state it another way.

The total program is \$18,600,000. We have already received \$1,200,000 of that for the design, which is why this bill asks for only \$17.4 million.

Using that starting point the \$14.3 million is what it would cost to do phase 1, such as you suggest; namely, to provide two 6,000-ton machines in the initial module and to go only that far.

If we were then to provide in 1976 or 1977, for phase 2, the additional two 6,000-ton machines, which we do not need right now, it would cost \$6,500,000.

We are projecting escalation in that also. In other words, a total of \$20,800,000 for what is presently going to cost \$18,600,000.

We felt it would be a savings to spend the money now because of the increased costs in the future. That was our recommendation.

It could be done for a lesser expenditure now by only installing two machines instead of four machines.

Mr. MILLER. Are you talking about installing the two machines plus the header system and the controls for four units?

That would be over the two electric motors and compressors and all of the necessary monitoring equipment for four units would be purchased at that time.

Mr. WHITE. It would be purchased initially, and that would be an additional expenditure in the \$5.2 million, an additional expenditure of \$40,000 for controls and the installation of two additional machines later on.

But all of the distribution system changes, the operations building that I mentioned, the noise abatement and air pollution control would all be done initially. That amounts to quite a bit of these funds, incidentally, and there would be only the additional control work, and I refer here to electrical controls primarily, for the installation of the additional two 6,000-ton machines.

We would want to install two 6,000-ton machines now. We need 6,000 tons, and maybe this is something that was not mentioned clearly enough.

We need 6,000 tons for the building, but we need another 6,000-ton standby machine to provide reserve capacity if something should occur to cause the shut down of that 6,000-ton machine.

Mr. MILLER. You are going to have three 6,000 ton standby?

Mr. WHITE. That is correct. We will have two machines that we will not need at this time. They will be useful, however, in the following way.

The existing refrigeration machines are old and their life, we think, is perhaps another 10 years.

We can use these two new machines to relieve the load on the existing machines and thus stretch their life. There will be that use for them, but they are not truly necessary at this time.

Mr. TERRY. Mr. Chairman.

Mr. GRAY. The gentleman from New York.

Mr. TERRY. I wonder if the distinguished Architect of the Capitol can tell me the standby capacity of the air-conditioning equipment in the World Trade Center?

Mr. WHITE. I do not know what it is in fact, but I know that it will be a machine large enough to stand by for the largest single machine that they have.

Mr. TERRY. That is correct. They have eight machines, is that right, that make up their total equipment, that are spread throughout that subbasement, the third subbasement?

Mr. WHITE. That may be. I am not fully familiar with that design.

Mr. TERRY. We are talking about one machine for eight, meaning the largest individual unit.

You are absolutely correct.

Now, you are talking here, as I see it, unless I have missed something, about one for one and, as Mr. Miller points out, three for one, or do we have any standby capacity now?

Mr. WHITE. We have standby capacity now.

When we add a 6,000-ton machine, we must have some additional standby capacity. We will not have enough with our present capacity.

Mr. TERRY. But nobody puts in a hundred percent standby capacity when you already have and, in fact, 300 percent when—

Mr. WHITE. That is correct.

There is no question but that two of those are unnecessary at this time.

Mr. TERRY. In fact, almost three of them, because you have some standby capacity already.

Mr. WHITE. Almost three of them, and the question is one of efficiency in buying a smaller than 6,000-ton machine.

If that 6,000-ton machine we buy goes out of commission, we have to have something to take its place.

Now, on the assumption that we have two 6,000-ton machines, as that capacity of the second machine becomes used for other purposes, we still have two machines, one of which could take the place of the other.

We have additional refrigeration machines of smaller capacity that could handle additional loading in the event that one of those went out.

So, the capacity, while it is standby, is also usable because we will have it available in smaller machines spread throughout the plant and which are now in existence. I think we have four machines in the plant now, supplying the 13,200 tons.

Mr. TERRY. Those three volumes I have never seen before, if I read them, would I be convinced we need 24,000 tons at this time?

Mr. WHITE. No; you do not need 24,000 tons.

We present that on the basis of the economics, that we think you will need 24,000 tons later, and we think it will be cheaper to buy it now.

Mr. TERRY. Does that study arrive at that conclusion?

Mr. WHITE. Yes.

Mr. TERRY. I asked you the question, would I be convinced after reading that report that we should have 24,000 tons.

Mr. WHITE. I misunderstood. Yes.

Mr. TERRY. What question were you answering?

Mr. WHITE. I thought you said, was this presentation supposed to persuade you we needed 24,000 tons.

Mr. TERRY. I am talking about that report.

Mr. SCHWENDEL. Mr. Chairman, let me ask several questions so that we maybe can confirm if we go ahead with the full program and may not need it, what is wrong with us entering into economically advisable contracts with the Park Service to take over the air conditioning of the new Visitors Center.

Mr. WHITE. Well, the new Visitors Center is not being supplied with air conditioning from this building.

Mr. SCHWENGEL. I know that, but there are plans for air conditioning. I have seen those plans. And it might be after we have this installed that we could determine that it would be cheaper to sell them air-conditioning capacity than what they are now getting.

In other words, would it be impossible for us to farm out this surplus?

Mr. WHITE. It would not be impossible. I think it would involve some changes in the distribution lines. I do not think our present loop goes over that far.

Mr. SCHWENGEL. I understand that, but the point is, if we do not build this other building, as the gentleman from New York thinks we might not, we could use this capacity by sharing our capacity with some others that have the need?

Mr. WHITE. That is a possibility, of course.

Mr. SCHWENGEL. Can you document quite well for the Congress the fact that we can save \$100,000 a year as you have told the committee? Can that be well documented?

Mr. WHITE. Yes.

Mr. SCHWENGEL. If we do that, in 10 years we would be saving a million dollars.

Mr. WHITE. Yes.

Mr. SCHWENGEL. I think that is an important factor for our part of the testimony.

What are the plans and what would be the cost for installing the new equipment for what you say is wearing out?

Mr. WHITE. Well, I cannot answer that, because the question of when you install it is going to determine how much it is going to cost.

This plan which we showed here as ultimate for the year 2000 takes into consideration the replacement at some future time of the existing equipment which is in this building now. And, as a matter of fact, one of the things that was done in this modular approach was to place the first building on the site in such a way as to eliminate only this locker room building which is what we would be replacing with the new operations building.

Nothing else would be disturbed.

So this coal pile at this location would remain. It would not be disturbed until such time as it would be necessary or desirable to change in the future.

We would have not placed any obstacles in the path of our being able to continue to operate as we are now in the event that the future were to show that there was no need for additional capacity.

Now, it is a real question, and it is a valid one, that our predictions for future needs for power may be more than will be needed. If that is true, then what ought to be done is to only install two machines in this building instead of the four, instead of 24,000 tons, and to later on spend the additional moneys, whatever that may be, because it is possible, of course, you would not have to spend any of it.

These are engineering estimates as to what the future will hold based upon the past and what appears to be the possibilities for the future.

We felt that it would be inappropriate for us to say that there will be no need for power in the future. We have to try to provide advice

and information in order for you gentlemen to decide whether we are going to need that capacity and, therefore, whether we should have it.

Mr. ANDERSON. Mr. Chairman.

Mr. GRAY. The gentleman from California.

Mr. ANDERSON

Mr. ANDERSON. Just a point of clarification.

A while ago, you said two 6,000-ton machines plus the module would cost \$14.3 million.

Could you break that down so we know how much each of the 6,000-ton machines would cost and how much you are allotting for the module?

How much does each of those 6,000-ton machines cost?

Mr. WHITE. Each machine, including its attendant controls, is estimated at \$1.8 million.

Mr. ANDERSON. \$1.8 million?

Mr. WHITE. Yes.

Mr. ANDERSON. So that would be \$3.6 million, and then the cost of the building then would be—

Mr. WHITE. Excuse me. I am sorry, Mr. Anderson. That was incorrect.

The \$1.8 million is for the cost of the bare four machines, the 6,000-ton machines; that is the amount required just to buy the machines and have them delivered to the site.

Mr. ANDERSON. So the two machines you are talking about are \$3.6 million delivered to the site, and the building and the place to put these machines would be the difference between that and the \$14.3 million.

So you are spending what—\$10.5 million for the module?

Mr. WHITE. Let me break it down in detail and then perhaps it will become clearer.

I think that is not a proper interpretation.

Mr. ANDERSON. You just said a moment ago that if you put the two machines in, the two units in, and the module, at this time it would cost \$14.3 million.

We were only talking about two machines then.

Mr. WHITE. That is correct.

Merely to buy the two machines and have them delivered to the site, would cost just under a million dollars.

Mr. ANDERSON. Each unit?

Mr. WHITE. For both units.

Mr. ANDERSON. You have lost me. You can get both of these 6,000-ton unit machines delivered for a million dollars?

Mr. WHITE. Yes, sir.

Mr. ANDERSON. So the module, and the equipment to set those machines on, is costing us \$13 million?

Mr. WHITE. Yes. That is basically true.

Let me break that down.

The cooling towers are \$900,000. The top of this module contains cooling towers.

The main substation, the main electric substation to provide electricity for these machines, would be \$1,450,000.

The pumping equipment is \$250,000.

Site work, including demolition, temporary facilities—

Mr. TERRY. A little slower.

Pumping equipment is what?

Mr. WHITE. \$250,000.

Site work, which I will total as demolition, temporary facilities and building foundations, amounts to \$450,000.

The north header, which is the piping header running across the north end of the property, underground and connecting all the machinery into the circulating loop, costs \$1.5 million.

The refrigeration plant itself, that is to say the building will amount to \$1,600,000.

The mechanical portions of the building will amount to \$3,900,000.

The heating, ventilating and air conditioning of the building itself is \$125,000.

The electrical work in the building for the building itself, is \$720,000.

The operations building, which is a separate building, would take the place of the existing buildings which we would remove.

Mr. TERRY. May I interrupt?

Mr. GRAY. The gentleman from New York.

Mr. TERRY. The operations building, is that controls and offices?

Mr. WHITE. Controls and offices and locker rooms for the men and toilet areas, and so on.

Mr. TERRY. Does that include that dormitory or whatever the other building is you have got?

Mr. WHITE. Yes.

Mr. TERRY. That is all the operations building?

Mr. WHITE. Except it does not contain the controls.

Mr. TERRY. You talked about two different buildings.

Mr. WHITE. This is the operations building.

Mr. TERRY. What is the other one called?

Mr. WHITE. I think we call it an annex building. That is existing.

Mr. TERRY. That needs to be removed?

Mr. WHITE. That is right.

This operations building has a cost of \$250,000.

Dust collecting equipment—and that means particulate matter for environmental control—\$500,000.

Central control system, \$315,000.

Mr. MILLER. Dust collecting system, that is in conjunction with the heating system; is it not?

Mr. WHITE. Yes, that is correct. But, it is part of our total estimate.

I am reading from the list of the original total estimate amounting to \$18.6 million, of which \$1.2 million has been appropriated and of which we are now asking for \$17.4 million.

Mr. TERRY. Mr. White, the dust collecting equipment, that is EPA regulations with respect to the heating, not the air conditioning?

Mr. WHITE. That is correct.

But what we are asking for in this \$17.4 million is all of these items.

Mr. TERRY. I am aware of that, but that was not brought out in answer to the gentleman for California's question, which was, was there anything else in here.

You are now putting in half a billion dollars completely unrelated to air conditioning, which is the subject of this bill.

Mr. WHITE. Well, the subject of the bill is to provide additional Power Plant facilities and also to take care of the environmental—

Mr. TERRY. The explanation did not include anything about it.

Mr. WHITE. It is a rather complicated set of circumstances, and we will try to get it all out to you as best we can.

The central control is \$315,000.

The noise abatement system, \$500,000.

Distribution systems—means alterations to the existing distribution systems which are also included in this bill. There is one area in the Senate tunnel that requires a 20-inch main to replace two 12-inch mains that are in there now. That is the one weak link in the entire loop. That amounts to \$1 million.

You will find all of those numbers, if I read them correctly, total \$15,260,000.

Added to that is an item for contingencies, design, and administration of \$3,340,000, which totals \$18,600,000.

Mr. TERRY. Contingencies, design and what?

Mr. WHITE. Administration.

Mr. TERRY. But that word "administration" does not include the operation of your office?

Mr. WHITE. It does not include our regular staff personnel but it includes whatever people we hire and assign specifically to that project. They will be paid out of this appropriation, not out of our regular appropriations fund. They will be people employed for this purpose.

Mr. MILLER. You speak of the mechanical as being \$3.9 million.

That is the refrigerating equipment?

Mr. WHITE. No. That is the mechanical installation within the plant. That does not include the cost of the refrigeration units.

It is the piping to connect the units and all the rest of the mechanical needs to make it operable.

Mr. TERRY. Are any design costs in that \$3.9 million?

Mr. WHITE. No. The design costs are all in the \$3,340,000, the last figure I gave you.

Mr. TERRY. So that \$3.9 million is strictly for the purchase of equipment?

Mr. WHITE. And installation, the labor and cost of piping and all the rest of the mechanical things that go together to connect the machines.

Mr. GRAY. Mr. Architect, I notice here you have already spent from the Supplemental Appropriations Act of 1972, \$1,200,000 for engineering and other services.

If we do not report out this bill, would this money be lost?

Mr. WHITE. That will be lost. At least, we would lose virtually all of it because some of that includes administration, but the design contract is for just under a million dollars, and that is in process.

Mr. GRAY. When you say for the design, you are talking about the design for the total expansion? \$19.4 million.

Mr. WHITE. Yes. The design for this first step which is this proposed module and the operations building.

Mr. GRAY. That is the total package of \$18.6 million?

Mr. WHITE. It was in the \$18.6 and \$1.2 million from that \$18.6 million leaves the \$17.4 million which is requested in this bill.

Mr. GRAY. I realize that, but out of the \$1.2 million you have already received, have you actually expended all of that to draw up plans for this entire expansion?

Mr. WHITE. Yes. I can tell you exactly how much of that has been expended up to now.

Mr. GRAY. Is that not a little presumptuous, not having had authorization for a project, to go ahead and have it designed?

Mr. WHITE. It is a valid question. Last December it became apparent to us that we have a very stringent time schedule. The James Madison Building will be completed in 1975, in late summer or early fall. That is the present schedule.

In order for us to provide some cooling capacity for that building at that time, we need to begin now. We were unable to have hearings at that time, because it was so late in the year. This long-range report was not made available to us, because of the way that the circumstances developed, until October 1, 1971.

By the time we examined it, absorbed it, and altered to our satisfaction whatever recommendations that it might have made, it was late in November and, therefore, we had to ask and did ask both the House Office Building Commission and the Library Coordinating Committee for permission to request the funds from the supplemental bill at that time for the design work.

Had we not begun the design at that time, we would simply not have been able to provide cooling capacity. We would have the James Madison Memorial Building without cooling in 1975.

That same thing is, incidentally, true now, which is why, as you know, Mr. Chairman, I have been asking for these hearings to be held as soon as possible. We need to take action as soon as possible.

Mr. GRAY. You will have the James Madison Building completed in 1975.

How long will it take to install this entire proposal?

Mr. WHITE. The plan is to have it on the line and tested by the summer of 1975.

Mr. GRAY. What I am getting at, if we put this over until the beginning of a new Congress, when the temperament of the House is a little better, when we hope the Vietnam war will be over, let us say this was authorized in January or February of next year, and you got the money in the fiscal 1974 appropriation.

Would you be able to make all these improvements and have them ready?

Mr. WHITE. It would be impossible, Mr. Chairman. We have a time schedule sheet here which you are welcome to have, of course.

Let me just read some of the things that it indicates.

A critical item is the delivery of the refrigeration units, and probably the limiting factor there is the delivery time of the electric motors to drive them; this has been corroborated by the manufacturers. If we order those by October of this year, we will have them delivered by February of 1974 with their initial testing possible by October 1974 and the performance testing available by the summer of 1975.

The cooling towers are in a similar category. We need to order them in accordance with this projected time schedule by December of this year.

Mr. GRAY. The gentleman from California.

Mr. ANDERSON. Mr. White a moment ago you gave the figure of \$1,200,000 as the amount that had been appropriated or actually spent to date.

Mr. WHITE. We have signed a contract with the design consulting engineers for \$985,000, and we have, in addition to that, expended another \$8,700 for various administrative expenses.

Mr. ANDERSON. The \$900,000 is the amount, approximately, you could not get back?

Mr. WHITE. We have obligated \$993,707.74 as of May 31.

Mr. ANDERSON. The second question is, if it were decided by this committee not to go ahead with this as planned, but to have installed the individual air-conditioning unit in the Madison Building, how much would that cost?

Mr. WHITE. I have to answer that first by saying that it would involve more than the cost of the refrigeration capacity above. We would have to change the design of the building.

Mr. ANDERSON. I realize that you would have to take a look at the present plans, and see how you could redesign it to work in the unit. How much would that cost?

Mr. WHITE. I would have to just make an offhand guess, because the building, as you know, is under construction. We have entered into contracts for both phase 1 and phase 2 of that building. So changes now would involve a tremendous amount of cost.

But just guessing, I believe that it could cost several million dollars. I cannot say without taking the time to analyze it just how much it might be. We will, however, insert a comparative cost computation in the record which include that and other alternatives.

(Material referred to follows:)

CAPITOL POWER PLANT, ANALYSIS OF COSTS ALLOCABLE TO MADISON MEMORIAL LIBRARY

Alternative	CPP total cost	CPP cost per ton	Cost allocable to JMMB	Allocable cost per ton
I. (a) Complete short-range program at CPP (add 24,000 tons).....	\$18,600,000	\$775	\$5,530,000	\$460
(b) Phase I short-range program at CPP (add 12,000 tons).....	14,300,000	1,190	7,693,000	640
(c) Phase II short-range (later) (add 12,000 tons).....	6,500,000	867	6,936,000	867
Completed short-range program phase I and II (24,000 tons).....	20,800,000			
II. (a) Add 6,000 ton machs. in existing old building at CPP (add 12,000 tons).....	10,660,000	890	7,991,000	665
(b) Later add 2-6,000 ton in new building at CPP (12,000).....	8,315,000	790	6,320,000	790
Total (24,000 tons).....	18,975,000			
III. Install 6,000 firm tons in Madison Building as of 1972 (8,000 tons).....			113,600,000	2 1,700
IV. Include 6,000 firm tons in Madison as part of original concept (8,000 tons).....			111,300,000	2 1,410

<sup>1</sup> Total "in house" JMMB cost.

<sup>2</sup> JMMB cost per ton.

Mr. ANDERSON. Did you ever think of it say, at the time the building was being designed?

Mr. WHITE. The building was being designed long before I arrived here, but my understanding is that this was considered back in 1960 and 1962. It was considered with regard to whether a continuation of

use should be made of the Capitol Power Plant, or whether individual cooling and heating should be provided within the building.

The building was a fait accompli when I arrived on the scene, which was a year ago last January.

Mr. HENLOCK. The authorization for the Library of Congress James Madison Memorial Building requires connection to be made to the Capitol Power Plant. When the bill was authorized, it required whatever service needed be from the plant, and that is in the history of the project, as Mr. White said. It was brought out before this committee, in discussions on the floor, and in the Appropriations Committee that there would be \$10 million or more required for expansion of the plant.

Might I add, we did originally have a separate plant for the Annex Library of Congress that was completed in 1938 and the Supreme Court Building that was completed in 1934. They were not found to be practical or economical arrangements.

So, when your committee in 1969 authorized the last big expansion program, you had us do away with those individual systems and integrate them with the Capitol Power Plant system.

Mr. GRAY. Is the gentleman from California finished?

Mr. ANDERSON. Yes, thank you, Mr. Chairman.

Mr. GRAY. Let me ask this hard question.

How many thousand tons of cooling can we get into this existing building?

You said a moment ago it would accommodate the 6,000-ton machine.

How much more than 6,000 would it accommodate?

Could we get 10,000 tons in there?

Mr. WHITE. To provide 10,000 tons of firm capacity would require an addition to the existing structure.

Mr. GRAY. On this \$900,000 engineering contract, how far are they on the plans?

Could they switch over to drawing up a plan for a 10,000-ton capacity in this existing building without too much difficulty?

Mr. WHITE. It can be done. I am not sure at this point just what previously completed work would have to be discarded.

We would have to examine the status of the design work.

Mr. GRAY. I am sure I speak for every member of the committee when I say we want to cooperate fully, but I would be less than frank if I did not tell you that we could run into very serious problems with an \$18 million bill on the House floor now.

Mr. WHITE. In that regard, Mr. Chairman, there is a substantial question that ought to be kept in mind relating to the environmental problems at the plant and our requirement to meet those.

I am not at all certain that we could meet those requirements in the existing plant as the capacity grows.

Mr. GRAY. Your consultant, would he want to give us an estimate as to whether we could put 10,000 tons in the existing building instead of the full \$18 million for the entire package?

I realize you have not had time to study that, but could you give us some idea?

Mr. JONES. My name is Robert Jones and I represent the engineers. May I just make one statement?

Mr. GRAY. Yes; you may proceed.

Mr. JONES. These two blocks here represent cooling towers that serve this existing plant whose capacity has been indicated to be around 13,000 tons refrigeration, served by these towers.

If more capacity is placed in this plant, there would have to be more cooling towers placed here.

This is a very marginal situation right now. A lot of people would like to have these cooling towers out of here. They provide a noise situation as not compatible with the community.

Mr. GRAY. Are there residences in that area?

Mr. JONES. There are residences over here within 100 feet facing these cooling towers. These cooling towers are objectionable right now and will not meet all the current and the proposed noise criteria.

Mr. GRAY. Would they be removed if you went forward with your expansion plan?

Mr. JONES. They are not removed in the first phase because they are still serving these old units here and they have about 10 to 15 years of life remaining.

I presume there will be pressure put on to get these removed, and it may be, at some point in time, that the phasing of this whole project may have to be accelerated in order to get these out of here. That is why we have maintained—

Mr. GRAY. This \$18 million expansion, it does not propose to remove those towers?

Mr. JONES. Not at this time.

It proposes to put enough capacity in here so that we can operate as much as 90 percent of the year without using these existing towers if this is desirable.

Mr. GRAY. If the expansion goes through?

Mr. JONES. Yes, sir. And it is also planned that we have the flexibility of using these existing towers during daylight hours when the ambient noise from the freeway and the railroads is enough to mask them, and they are not too objectionable. But, then, at night, after 10 o'clock, it would be possible to swing over to the proposed, completely and shut down the existing towers. As Mr. White mentioned, it is one of the important advantages. The proposed new plant can be used to extend the life of the old one until further down the line, 5 or 10 years, we find out whether this expansion that we have provided for is, in fact, real or if it is not real.

Mr. GRAY. Let me follow you here.

If you put in 10,000 tons in the existing building, you are saying you would have to put the towers in close proximity to the two existing towers?

Or could they be located where you planned to put them if you build the building?

Mr. JONES. Yes, sir; but we must also consider the impact on the esthetics of this neighborhood, and this is one of the most serious ones we have had to face.

Mr. GRAY. If the full expansion goes through, do you plan to house or cover up these towers in any way?

Mr. JONES. Yes, sir. The towers will be contained within the new structure, and we intend to treat them so they are not visual pollution, noise pollution, or any other kind of pollution.

We can do that with the new towers but the existing towers have been here a long time. They are conventional towers. They are better

than most, but they do not meet today's requirements which is to be a good neighbor in this community. And the pressures are growing to be a good neighbor.

Mr. GRAY. You are telling this committee that you do not see any practical way of cutting down the size and the scope of this either by costs or by size?

Mr. JONES. There are ways of cutting it down, sir, in the overall report, and it is unfortunate that you cannot get it all in one bundle and have it before you so you could evaluate it. This was considered, this piecemeal replacement, both of putting a machine in this plant, putting two machines in this plant, and then going at it piecemeal in the proposed new plant. All of these are in the report, evaluated, with the advantages, the disadvantages considered, and then a recommendation made to the Architect of the Capitol.

There were three criteria that were given at the time, and we think they are very important. They were given to us in a certain sequence. One is to provide for reliability and continuity of service. They said this is the most important thing. This plant has never failed. We do not want it to fail.

Second, you must provide for environmental impact. We are determined to be a good neighbor here, a very good neighbor, and we want to meet all the requirements and exceed all the requirements. Make it a demonstration model of what a plant can do in the intercity.

The third thing was to come up with the most economical solution to this and to extend our planning to the year 2000, but make the plant such that the increment you build is needed right now and can be justified. Furthermore it should be compatible with long-range expansion and you should not do anything here to cut down your options, particularly in regard to fuel and energy. We do not know whether gas will be available or not but we are keeping that option open to us. Whether we may have to burn coal, liquefied, or some other fluidized fuel, we are keeping that option open.

Whether oil will be the solution—even nuclear power for heating was investigated. All these options are open.

We can get started with this to take care of the Madison Library and give us some breathing room on cooling capacity so that gradually the existing plant and cooling towers can be phased out as the need develops in the years to come due to their own obsolescence and due to community demand.

Mr. GRAY. Considering various alternatives, did you consider a more expensive plan than this one, or is this about the largest?

Mr. JONES. A more expensive plan? No; let us say we were striving all the time to keep it within economical bounds. I do not know that—

Mr. GRAY. What I am trying to get at is this. If some colleague asked did you consider various alternatives, did you try to save the taxpayers money, did you try to get by with the minimum or the maximum, can we say this is the largest or the smallest? I know it is not the smallest plan of improvement?

Mr. JONES. We do have alternatives. We think this plant here is probably as little as you can do for the next 5 or 10 years; and if you do not do it, you probably will be in trouble at the end of 10 years.

We think conceivably—and we were asked, what is the biggest plant you can put on this site, just what could you conceivably do.

We think that the long-range planning considered this probably the biggest plant that could be put on this site.

Mr. GRAY. What would be the cost of that?

Mr. JONES. And which would meet your total requirements?

I would guess the total is \$70 million.

Mr. GRAY. So, to answer my question, there were other plans considered that would be considerably more money, and you think this is the most reasonable approach to the problem?

Mr. JONES. This was done just to assume this Capital City grew out of bounds and what is the most you could ever do here and what you could accommodate.

Then we put forth this short-range plan and said this is the reasonable first growth. We could get to the ultimate size plant if there was ever a need, but this would be for the year 2000 and with future growth and everything considered we cannot guess more accurately.

Mr. GRAY. What would it cost to put—and I am like the gentleman from New York. I think 10,000 additional capacity would meet the foreseeable future demands.

When I say foreseeable, I am talking about 10 or 20 years.

What would it cost to relocate the two towers with, say, 10,000 capacity to meet our foreseeable and future needs? Would this cut it down considerably, or are we not really saving a lot of money?

Mr. JONES. I think there are two things which are pretty obvious, and this is part of the technology we are trying to reflect in this plant.

We are not trying to build you a plant that has 1960 or 1970 technology.

This plant here, this little module or this block, represents a total of 24,000 tons of refrigeration. These two blocks here by themselves represent only half that much capacity for the existing cooling towers.

Mr. GRAY. Those are actual sizes?

Mr. JONES. Yes sir. What we are saying is providing we are permitted to go to this, we can get this plant down on this site within finite dimensions. We were asked to look very seriously into moving this plant out of here.

There are people who would like us not to have it in this area, and the alternatives were considered—remove the plant completely, put it in another site, or look for another source of cooling and heating.

Mr. GRAY. What would that cost if you moved the entire operation?

Mr. JONES. We got up to dollar signs that were just unbelievable, and it just seemed to be totally unreasonable. This is reflected in the environmental impact statement. These are the alternatives that were considered, a plant on this site, an expanded plant on this site, a plant on another site in the general area, or some other solution.

Mr. GRAY. Do you believe this is the only plant that would meet an environmental impact study?

Mr. JONES. I believe this plant meets it best. This is our best judgment. I believe this answers the environmental impact problem.

For a given number of dollars, this is your best bargain today.

Mr. GRAY. Do you think a 6,000-ton addition to the existing building with an additional tower would pass an environmental impact study?

Mr. JONES. Yes, sir. It could be designed to, but the cost would probably be very close to what you are going to have here.

Mr. GRAY. It could not be done for the million dollars we are talking about here?

Mr. JONES. That million dollar number was a cost of putting refrigeration machines only in that building.

Obviously, it did not include the cost of carving out the space in the building and other related costs.

Mr. GRAY. Tell us what it does cover.

Does it just supply the Madison Building if we had to go to the one tower?

If we just said today what would it cost to do everything required and meet all the environmental impact studies, and provide 6,000 tons of cooling capacity for the James Madison Building, what are we talking about in the way of numbers?

Mr. JONES. In that question, when you asked Mr. White, he said he could not do it without some thought, but thought it would be several million dollars.

I was trying as hard as I could, while I was listening, to think should I say \$5 or \$10 million if I am asked. I think it would be in that range.

Mr. GRAY. \$5 to \$10 million?

Mr. JONES. I would guess at this point in time to put that refrigeration plant in the Madison Library, it would cost \$5 to \$10 million.

Mr. GRAY. That would be for 6,000 tons, and you are saying we can get four times that much for an additional \$8 million or so?

Mr. JONES. Yes, sir.

Mr. GRAY. Mr. Terry?

Mr. TERRY. I just wanted to ask one question for the record.

Do you or any of your partners own, lease, or have any interest in real property in the proximity to this proposed plant?

Mr. JONES. Not within the District of Columbia, sir.

Mr. GRAY. The gentleman from Iowa.

Mr. SCHWENGEL. As I listen here, some things impress me.

One is that we are looking to the year 2000, our needs then.

You are saying to us that if we have needs, as you predict them, that this is the most economical way to do it and meet all the environmental requirements and all the rest?

Mr. JONES. Yes, sir.

Mr. SCHWENGEL. Mr. Chairman, I would like to make this observation.

I have been on this committee 16 years and I have seen some things happen in the GSA and the Post Office Department.

We built post offices in my district looking 10 and 15 years ahead, and they missed it completely.

In my hometown, they are going to have to have twice the capacity that they imagined they would have to have. It is my judgment that we had better think a little bigger than some of us may be indicating when they are thinking about wanting to cut down on the costs.

Lots of times, cutting down the costs, postponing something that may be obvious could cost us a lot of money.

So I am one who believes that probably we have a good plan before this committee, that we ought to present it, that we ought to act and

present to Congress this plan; and from the colloquy I have heard here, we have seen reflected what would be the anticipated questions if we go to the floor, the questions that need answering.

So I think what we need to do is fortify ourselves well before we go to the floor with this plan. I am convinced that this is probably what we should do.

I am going to do what I can to help it happen because I think we will save more money by doing this than we would by trying to save money in postponing the inevitable, especially when you assure us that if we overbuild, there will be places where we can use this energy or this capacity by farming it out.

Mr. GRAY. I thank my friend from Iowa.

I wanted to ask one additional question.

You mentioned the General Accounting Office, I believe, or was it the GPO that we supply steam and possibly air conditioning to?

Mr. WHITE. We supply steam to the Government Printing Office. We do not supply any cooling.

Mr. GRAY. So this printing plant would not be affected.

I thought possibly they might find another source and we might have that capacity, but that would not be possible since they are not getting any cooling from us.

Mr. WHITE. That is correct.

Mr. GRAY. There is no other outside source off of Capitol Hill that we are now supplying; so there is no way of recouping any other capacity?

Mr. WHITE. That is correct. We do not supply cooling to outside agencies.

Mr. GRAY. If the question were asked of us, are we utilizing all of our own capacity for our own services, the answer is that we are?

Mr. WHITE. That is correct.

Mr. GRAY. The only way we can get additional capacity is to build it?

Mr. WHITE. That is correct.

Mr. GRAY. Any other questions?

Mr. MILLER. Yes, Mr. Chairman.

Mr. GRAY. The gentleman from Ohio.

Mr. MILLER. We see the two cooling towers are creating a problem in the area.

What do we have in the way of capacity in the two cooling towers? What would it take in cooling tonnage to accomplish the same as those two cooling towers accomplish?

Mr. JONES. These towers serve your present plant capacity, which is 15,200 tons of refrigeration, of which 13,200 is your firm capacity. This is represented right here.

Mr. MILLER. But we are talking about cooling.

These towers represent that much in cooling, but not necessarily with the B.t.u. exchange would it be that tonnage; is that correct?

Mr. JONES. They provide heat rejection that the refrigeration machines, totaling 13,200 tons, take out of the chilled water system and put it into these towers. There is actually about a 10- or 15-percent differential?

Mr. MILLER. With a 10- or 15-percent differential?

Mr. JONES. Yes, sir.

Mr. MILLER. Are they redwood cooling towers?

Mr. JONES. Yes, sir. They are so-called nonpermanent towers.

Mr. MILLER. You have water that would be dropping over baffles?

Mr. JONES. Water dropping down. Air pulling up.

Mr. MILLER. And putting heat into the atmosphere?

Mr. JONES. It is put in the atmosphere by evaporation.

Mr. MILLER. That exchange share would be the equal to the tonnage of this old plant within 10 or 14 percent?

Mr. JONES. Yes, sir.

Mr. MILLER. In reverse?

Mr. JONES. Yes, sir. This is about 10 or 15 percent more than that tonnage of 13,200 tons.

If the plant is operating at 13,200, these will be rejecting at about the rate of 14,500, something like that, into the atmosphere.

Within the plant itself, there is a lot of pickup of heat due to the huge refrigeration machines that generate a tremendous amount of heat right in themselves, so the difference between the net sent out to the building, which is 13,200, and the net heat rejected at this point might be 14,500.

Mr. GRAY. Any other questions from my colleagues?

Mr. KLUCZYNSKI. Yes, Mr. Chairman.

Mr. GRAY. Mr. Kluczynski.

Mr. KLUCZYNSKI. Mr. Chairman, I have attended many hearings in my long legislative service. However, I have enjoyed this morning's hearing most of all.

The testimony and answers in reply to members' questions were of utmost perfection. No stone was left unturned.

I want to compliment our Architect, Mr. White, Mr. Campioli, Mr. Roof, and your staff of experts for a job well done. It is obvious that additional power is needed now.

I believe we would save more money by implementing this system rather than correcting the plant now in existence.

Keep up your good work. We are proud of you.

Mr. Chairman, I support H.R. 14475, wholeheartedly.

Mr. GRAY. Gentlemen, let me compliment all of you for being tremendously good witnesses, very knowledgeable on the subject. I just wish we had as many answers as you do on how to best get this bill passed, because it is a sizable amount.

If there are no further questions or comments, the subcommittee will stand adjourned.

(Whereupon, at 12:54 p.m., the subcommittee adjourned.)

