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# HEATING PLANT RENOVATION AND UPGRADING

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## HEARING

BEFORE THE

COMMITTEE ON BUILDINGS AND GROUNDS

OF THE

COMMITTEE ON PUBLIC WORKS

### UNITED STATES SENATE

NINETY-FOURTH CONGRESS

SECOND SESSION

ON

A PROPOSAL TO RENOVATE AND UPGRADE TWO GSA  
HEATING PLANTS

JUNE 18, 1976

SERIAL NO. 94-H47

Printed for the use of the Committee on Public Works



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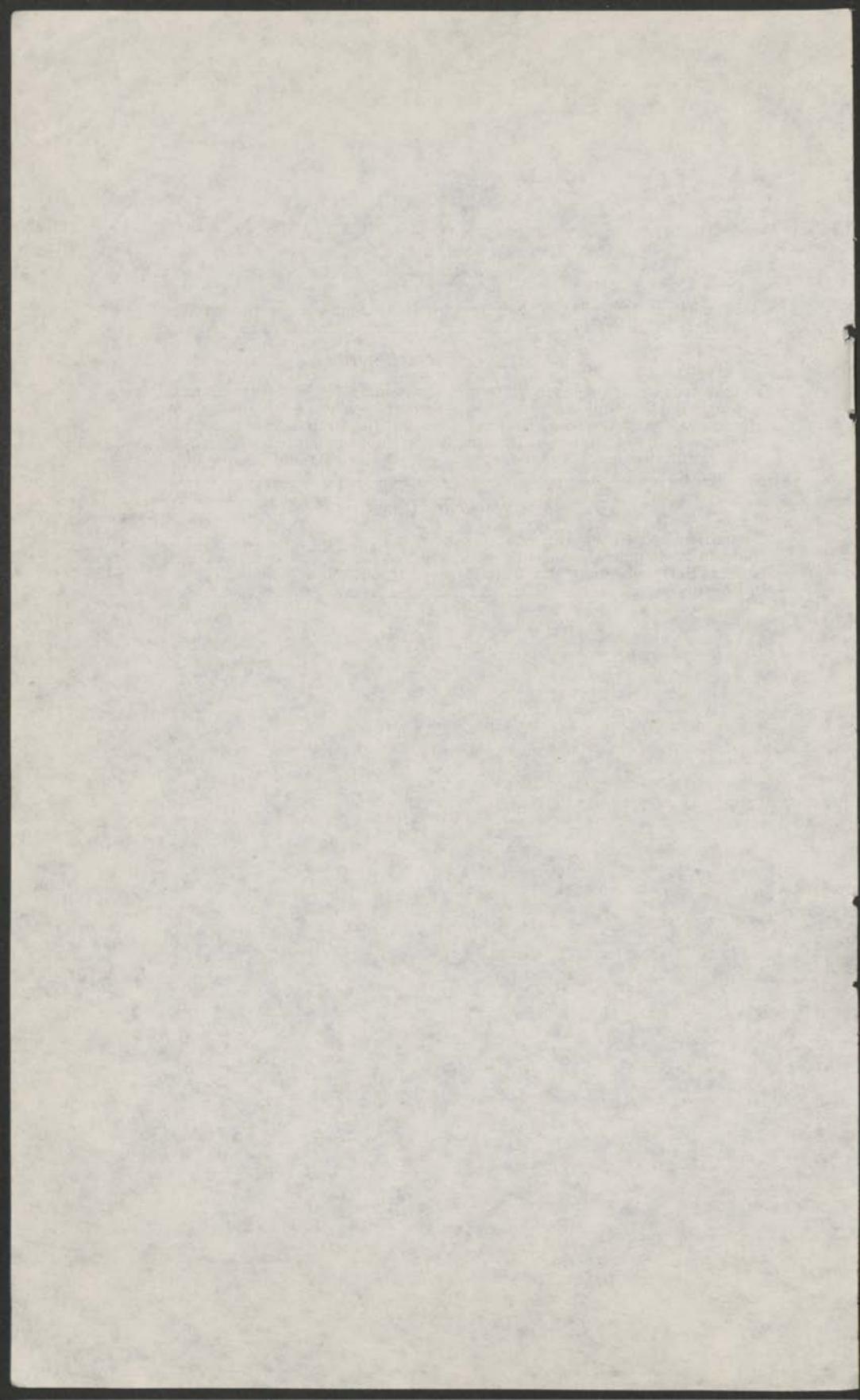
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## HEATING PLANT RENOVATION AND UPGRADING

FRIDAY, JUNE 18, 1976

UNITED STATES SENATE,  
COMMITTEE ON PUBLIC WORKS,  
SUBCOMMITTEE ON BUILDINGS AND GROUNDS,  
*Washington, D.C.*

The subcommittee met at 9:08 a.m., pursuant to call, in room 1114, Dirksen Senate Office Building, Hon. Robert Morgan (chairman of the subcommittee) presiding.

Present: Senators Morgan and Gravel.

### OPENING STATEMENT OF HON. ROBERT MORGAN, U.S. SENATOR FROM THE STATE OF NORTH CAROLINA

Senator MORGAN. We will call the meeting to order.

For the record, we are meeting today to discuss GSA's proposal to renovate and upgrade their two heating plants downtown which furnish the steam for most of the Government buildings.

We are advised that the District has filed a lawsuit against GSA because of the fact that the two plants are violating—according to their allegations—air and water pollution laws and regulations.

In recent weeks the Congress has been severely criticized by the press and even the courts because GSA has told them that the problem cannot be corrected unless we authorize more money. GSA is asking for \$23.4 million.

Both the District Government and General Accounting Office contend this amount is not necessary, and that work required to eliminate pollution and comply with the law would cost less than half a million dollars, which GSA could spend without approval.

I just wanted this to be a matter of record before we proceed, and some of my questions will be addressed along this line.

[The prospectuses being discussed follow:]

PROSPECTUS NUMBER: PDC00023  
 BUILDING NUMBER : DC0002ZZ

PROSPECTUS FOR PROPOSED ALTERATION  
 UNDER THE PUBLIC BUILDINGS ACT OF 1959, AS AMENDED

WEST HEATING PLANT

WASHINGTON, DC

1. SUMMARY OF PROPOSED PROJECT:

This prospectus provides for repairs and alterations which should be undertaken at this facility for its continued use in providing adequate heating and hot water services to the Federal agencies in the Washington, DC, area utilizing the optimum fuel for energy and complying with the local and Federal environmental requirements. Major items of work include the conversion of two boilers from oil only to multi-fuel including coal capability; installation of a new dry ash removal system; installation of three additional precipitators; and replacement of a manual elevator with a new automatic elevator. The above items will be programmed to be completed within five years after approval of this prospectus. This project does not include (1) the day-to-day preventative maintenance and recurring maintenance repairs, including painting and pointing, which must be undertaken annually to keep the plant in operating condition, and (2) repairs and improvements which may be occasioned by an emergency or breakdown which interrupts use of the plant.

2. ESTIMATED MAXIMUM COST:

Authorization requested.....\$3,100,000

3. DESCRIPTION AND JUSTIFICATION OF WORK:

At the present time, two of the five operational boilers at this plant are oil-fired. These two boilers (i.e. #3 and #5) will be converted to multi-fuel capability in order to utilize coal as a fuel.

The new dry ash-handling system will be capable of removing all particulate matter and conform to the District of Columbia anti-pollution codes.

The installation of three additional precipitators for removal of particulates from the flue gases will bring this plant into conformance with the Federal and District Clean Air Requirements. This will provide one precipitator per boiler, in lieu of one precipitator per two boilers.

The freight elevator is hazardous for both personnel and equipment, and cannot be repaired to acceptable safety standards. This project will replace the existing manual elevator with a new automatic elevator.

PROSPECTUS NUMBER: PDC00023  
 BUILDING NUMBER : DC0002ZZ

The West Heating Plant in conjunction with the Central Heating Plant provides steam for heating and hot water to Government buildings in the downtown area of Washington, DC. This plant is structurally sound and is essential to providing these services to 112 present locations and all future Federal buildings to be located in this area of the city. It has an occupiable area of 109,000 square feet and houses 80 General Services Administration employees.

4. DISCUSSION OF ALTERNATIVES:

- a. Replace the facility with a new modern structure.

The present value cost of constructing and maintaining an equivalent building for a comparative period is \$68,095,300. The present value cost of altering and maintaining the present building is \$34,978,000. The cost effectiveness ratio of constructing to altering is:

$$\frac{\$68,095,300}{\$34,978,000} = 1.95 \quad (\text{Constructing})$$

- b. Provide a similar amount of space in a modern leased facility.

There is no leased space in the Washington, DC, area comparable to the West Heating Plant facility. The cost ratio of this alternative is not available or applicable.

- c. Proceed with the repair and alteration project.

Because of the above construction cost ratio, it is more economical to proceed with the proposed alteration project.

5. CURRENT HOUSING COST:

	<u>Occupiable Area</u>	<u>Annual Cost</u>
Operation, Maintenance and Upkeep Costs	109,000 sq.ft.	*\$3,318,700

\*This cost is apportioned among 112 buildings served by this system.

6. COMPREHENSIVE HOUSING PLAN:

This is basically a repair and alteration project and will not affect the housing of Federal agencies in Washington, DC; therefore, the comprehensive housing plan only reflects the housing plan for this building.

PROSPECTUS NUMBER: PDC00023  
BUILDING NUMBER : DC0002ZZ

See attached Exhibit B.

7. ENVIRONMENTAL DATA

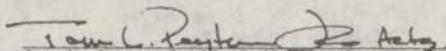
In the development of this project, studies were made to determine that the project would be accomplished in strict compliance with the purposes and intent of Executive Order 11514 "Protection and Enhancement of Environmental Quality" and would comply with the requirements of Section 102(2)(c) of the National Environmental Policy Act of 1969 (P.L. 91-190), as amended, and the guidelines prescribed by the Council on Environmental Quality.

8. STATEMENT OF NEED:

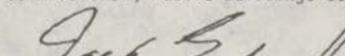
It has been determined that the implementation of this project will provide necessary heating for the Federal buildings from a central source at maximum efficiency, thereby, conserving valuable energy resources and effecting substantial cost savings to the Government. It has been further determined that it is in the best interest of the Government to retain this plant to provide this service.

Submitted at Washington, DC, on MAR 19 1976

Recommended:

  
Commissioner, Public Buildings Service

Approved :

  
Administrator of General Services

PROSPECTUS NUMBER: PDC00023  
 BUILDING NUMBER : DC0002ZZ

SUPPLEMENTAL DATA

PROSPECTUS FOR PROPOSED ALTERATION

PROJECT UNDER THE PUBLIC BUILDINGS ACT OF 1959, AS AMENDED

WEST HEATING PLANT

WASHINGTON, DC

1. Facility Statistical Information:

Date Built:	1948
Site Area:	91,000 sq. ft.
Facility Area Gross:	109,000 sq. ft.
Occupiable Area:	109,000 sq. ft.
Parking Spaces:	45
Acquisition Cost of Land and Building:	\$ 8,634,000
Replacement Cost:	
Construction	\$44,690,000
Site and Expenses	\$11,007,900
Number of Employees in Building:	80
Annual Cost of Operation, Maintenance, and Repair:	\$ 3,318,700
Useful Life, Renovated Building:	30 years
Useful Life, New Building:	50 years

2. Cost Data:

Authorization requested	\$3,100,000
Cost of this project - $\frac{\$3,100,000}{109,000}$	= \$28.44/OSF

Cost Effectiveness Ratio

$\frac{\text{Leased Space}}{\text{Altered Space}}$	=	N/A	=	(Leasing)
$\frac{\text{Construction}}{\text{Altered Space}}$	=	$\frac{\$68,095,300}{\$34,978,000}$	=	1.95 (Construction)







PROSPECTUS NUMBER: PDC00013  
 BUILDING NUMBER : DC00012Z

PROSPECTUS FOR PROPOSED ALTERATION  
 UNDER THE PUBLIC BUILDINGS ACT OF 1959, AS AMENDED

CENTRAL HEATING PLANT

WASHINGTON, DC

1. SUMMARY OF PROPOSED PROJECT:

This prospectus provides for repairs and alterations which should be undertaken at this facility in order that it may continue to provide adequate heating and hot water services to the Federal agencies in the Washington, D.C., area. This project proposes the replacement of two (2) obsolete boilers, and ash handling equipment; new facilities for coal pulverizing, feedwater treatment and handling of coal; equipment for removal of particulates from the flue gases; and replacement of feedwater pumps. The work covered by this project includes all of the major items that are mandatory for continued operations in the immediate future. The above items are programed to be completed within 5 years after approval of the prospectus. It does not include (1) the day-to-day preventive maintenance and recurring repairs including painting and pointing, which must be undertaken annually to keep the plant in operating condition, and (2) repairs and alterations which may be occasioned by an emergency or breakdown which interrupts use of the plant.

2. ESTIMATED MAXIMUM COST:

Authorization requested . . . . . \$20,300,000.

3. DESCRIPTION AND JUSTIFICATION OF WORK:

At the present time, two of the six boilers at this building have been replaced by oil-fired boilers under the authority of a previously approved prospectus. The four remaining boilers are over 40 years old, inefficient, and able to operate at less than 70 percent of their rated capacity and are, in addition, no longer considered reliable. Two (2) new energy efficient, multi-fuel boilers will replace two (2) existing, badly deteriorated boilers.

PROSPECTUS NUMBER: PD00013  
 BUILDING NUMBER : DC0001ZZ

The new boilers will have multi-fuel capability and will use pulverized coal as the primary fuel since this is presently the most abundant fuel available. Additional coal handling equipment is proposed to permit the simultaneous unloading of two railroad cars of coal.

The new dry ash handling equipment will be capable of containing particulate matter from the bottom ash in conformance with District of Columbia anti-pollution codes.

The installation of a new feedwater treatment system will remove boiler scale causing materials from the water used in the production of steam. New fuel handling equipment, including conveyors and hoppers, will be installed so that the various types of fuel can be efficiently handled. The installation of equipment for the removal of particulates from the flue gases is to be provided in order to conform with the Clean Air Act. The present feedwater pumps which are obsolete, worn and inefficient, and lack the capacity to provide sufficient water service to the boilers will be replaced.

The Central Heating Plant was specifically constructed to supply steam for heating and hot water in Government buildings in the downtown area of Washington, D.C. The building is structurally sound and the plant is essential to provide these services to 112 present locations and all future Federal buildings to be located in this area of the city. It has an occupiable area of 139,300 square feet and houses 90 General Services Administration employees. There are no special OSHA requirements for this project.

#### 4. DISCUSSION OF ALTERNATIVES:

- a. Replace the facility with a new modern structure.

It is estimated that it would cost \$69,569,000 to replace the building if construction were to start in fiscal year 1976. The cost ratio of this alternative to altered space is 1.75 to 1.00.

- b. Provide a similar amount of space in a modern leased facility.

There is no leased space in the Washington, D.C., area comparable to the Central Heating Plant facility. The cost ratio of this alternative is not available or applicable.

PROSPECTUS NUMBER: PDC00013  
 BUILDING NUMBER : DC000122

4. DISCUSSION OF ALTERNATIVES: (Cont'd)

- c. Proceed with the repair and alteration project.

Because of the above construction cost ratio, it is more economical to proceed with the proposed repair and alteration project.

5. CURRENT HOUSING COST:

	<u>Occupiable Area</u>	<u>Annual Cost</u>
Operation, Maintenance and Upkeep Costs	139,300 sq. ft.	*\$3,162,110

\*This cost is apportioned among the 112 buildings served by this facility.

6. COMPREHENSIVE HOUSING PLAN:

This project is basically a repair and alteration project. There will be no relocation of personnel in this building.

See attached Exhibit B. \*

7. ENVIRONMENTAL DATA:

In the development of this project, studies were made to determine that the project would be accomplished in strict compliance with the purposes and intent of Executive Order 11514 "Protection and Enhancement of Environmental Quality" and would comply with the requirements of Section 102(2)(c) of the National Environmental Policy Act of 1969 (P.L. 91-190), as amended and the guidelines prescribed by the Council on Environmental Quality.

A draft environmental statement has been prepared and will be submitted with the prospectus. Completion of this project will be a step toward bringing a major nonconforming facility into conformance with required air and water quality standards and will decrease the requirements for dredging of the coal and ash sediment from the Washington channel.

8. STATEMENT OF NEED:

It has been determined that the accomplishment of this project will provide necessary heating for the Federal building from a central

PROSPECTUS NUMBER: PDC00013  
BUILDING NUMBER : DC00012Z

8. STATEMENT OF NEED: (Cont'd)

source using a domestically abundant energy resource, and ensure compliance with existing environmental legislative acts. It has been further determined that it is in the best interest of the Government to retain this plant to provide this service.

Submitted at Washington, DC on MAR 17 1976

Recommended:

Nicholas D. Panzer FEB 12 1976  
Commissioner, Public Buildings Service

Approved:

James E. Howard  
Administrator of General Services

PROSPECTUS NUMBER: PDC00013  
 BUILDING NUMBER : DC0001ZZ

SUPPLEMENTAL DATA

PROSPECTUS FOR PROPOSED ALTERATION

PROJECT UNDER THE PUBLIC BUILDINGS ACT OF 1959, AS AMENDED

CENTRAL HEATING PLANT

WASHINGTON, DC

1. Facility Statistical Information:

Date Built:	1934
Site Area:	95,832 sq. ft.
Facility Area Gross:	175,000 sq. ft.
Occupiable Area:	139,300 sq. ft.
Parking Spaces:	None
Acquisition Cost of Land and Building:	\$7,502,218
Replacement Cost:	
Construction	\$57,113,000
Sites and Expenses	\$12,456,000
Number of Employees in Building:	90
Annual Cost of Operation, Maintenance, and Repair:	\$3,162,110
Useful Life, Renovated Building:	40 years
Useful Life, New Building:	50 years

2. Cost Data

Cost of This Project -  $\$145.72/OSF = \frac{(\$20,300,000)}{139,300}$

Cost Effectiveness Ratio

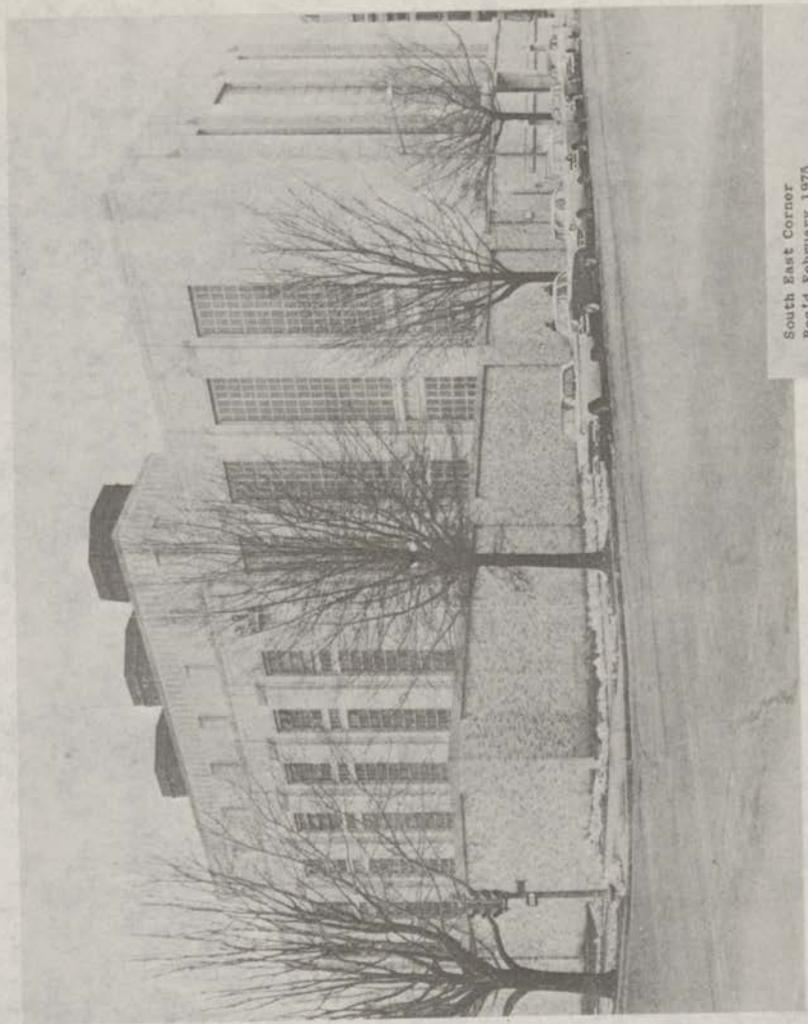
<u>Leased Space</u>	=	N/A	= N/A (Leasing)
<u>Altered Space</u>			
<u>Construction</u>	=	$\frac{\$104,242,000}{\$59,661,000}$	= 1.75 (Construction)
<u>Altered Space</u>			

EXHIBIT A Sheet 1 of 2 sheets.

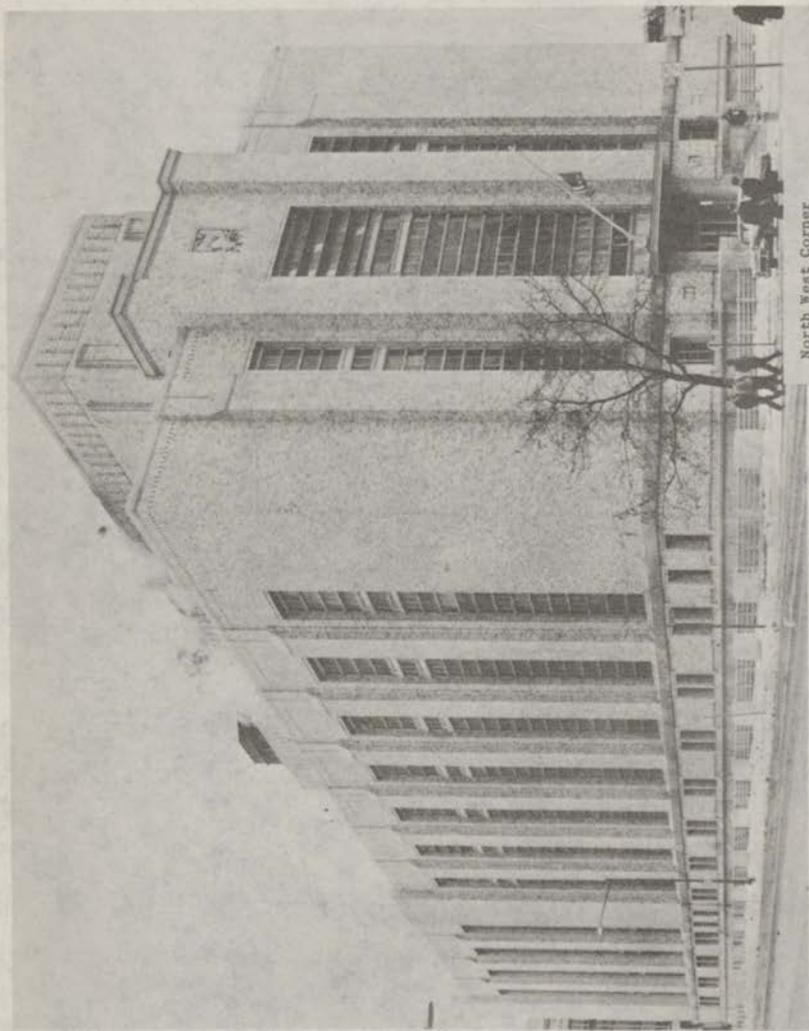
BUILDING NAME CENTRAL HEATING PLANT	ADDRESS WASHINGTON, D.C.	NUMBER DC 88013 DC0001 ZZ
DESCRIPTION OF WORK		PROPOSED PROSPECTUS (CURRENT ESTIMATE)
<p>INSTALL TWO (2) MULTI-FUEL BOILERS designed for maximum energy conservation. They will be built to use either pulverized coal or oil with the capability of being converted for burnable trash. The boilers, constructed of forged steel, are approximately 70 feet high with a 20 X 20 foot base, and will fit in the same area as the existing boilers. There will be no change in the building structure required. Because of the boiler size it may be necessary to locate the precipitators on the roof. These boilers generate supersaturated 405°F(207°C) steam at 250 pounds per square inch pressure at an output rate of 220,000 pounds of steam per hour.</p>		\$16,161,000.
<p>INSTALL ELECTRONIC PRECIPITATORS. The particles in the flue are ionized by a high voltage (90,000 volts) and then collected on electrically charged plates, thus preventing particulate matter from polluting the atmosphere. Physically, they are about 28 feet square and about 30 feet high with an 11 foot high collector beneath the unit. Every effort will be made to erect these units within the flues inside the top floor of the building.</p>		1,082,000
<p>INSTALL FEEDWATER SYSTEMS for two (2) new boilers. This system will treat both new water into the system and condensate water returning from the steam system. This consists of pumps, deaerating tanks and the chemical (zeolite) water softening system to prevent the buildup of scale, which clogs the boiler tubes and rapidly degrades efficiency of the boilers. This system must handle 1,680,000 pounds of water per hour. Physically, this system requires 8 tanks of 8 foot diameter by 10 foot height with the associated pipe, pumps and valving, using approximately 2,000 square feet of floor space.</p>		1,832,000
<p>INSTALL A "DRY" ASH SYSTEM for the removal of the bottom ash from these new boilers. This system will consist of at least two exhauster pumps driven by 125 horsepower electric motors, using steel piping and connectors of approximately 18 inch diameter. This system will collect the coal ash from the boiler base as it is generated from the fire and then piped by vacuum to the collection silos. Three (3) ash collecting silos of 30 foot height by 16 foot diameter will be installed to collect the ash and provide a totally enclosed disposal system, thereby complying with the environmental requirements.</p>		1,050,000

BUILDING NAME Central Heating Plant	ADDRESS Washington, DC	NUMBER DC000122
DESCRIPTION OF WORK		PROPOSED PROSPECTUS (CURRENT ESTIMATE)
INSTALL A TEMPORARY WASTE WATER ASH SYSTEM. This system must be installed to handle the bottom ash from the boilers operating during the demolition and erection period of approximately three years. This system will require installation of two (2) 20 foot high x 20 foot diameter tanks, coupled with pumps and 18 inch pipe from the operating boilers. This system will prevent any increase in pollution during this period.		175,000
Total		\$20,300,000*
<small>USA DC 76-7492</small>		* Total Cost includes \$1,989,400 for design and supervision. This design and supervision cost has been pro-rated into the costs shown for each of the work items.





South East Corner  
Rec'd February 1975  
Central Heating Plant, Washington, DC



North West Corner  
Rec'd February 1975  
Central Heating Plant, Washington, DC



Senator MORGAN. Who is going to present the case this morning?

Mr. WENDEHACK. I am, sir.

Senator MORGAN. If you would, for the record, please identify yourself by name and position, and also those with you. I think that would be the better way to proceed.

**STATEMENT OF FRED WENDEHACK, DEPUTY ASSISTANT COMMISSIONER FOR BUILDINGS MANAGEMENT, PUBLIC BUILDINGS SERVICE, GENERAL SERVICES ADMINISTRATION; ACCOMPANIED BY WOLFGANG ZOELLNER, DIRECTOR, REPAIR AND ALTERATION DIVISION; KEN WARD, MANAGER, HEATING, OPERATION, AND TRANSMISSION; JOHN GALUARDI, REGIONAL ADMINISTRATOR, REGION 3; AND ARNOLD HESPE, LEGAL COUNSEL, REGION 3**

Mr. WENDEHACK. My name is Fred Wendehack. I am Deputy Assistant Commissioner for Buildings Management. On my left is Mr. Wolfgang Zoellner, Director of the Repair and Alteration Division, Central Office. On my direct right is Mr. Ken Ward who is the Chief of the Plants in the Washington, D.C., area. On his right is Mr. John Galuardi who is Regional Administrator for region 3 and who has the responsibility for the entire Washington area and surrounding territory. On his right is Mr. Arnold Hesse who is the Legal Counsel for region 3, in case there are any legal questions that come up.

Senator MORGAN. Are you going by a prepared statement?

Mr. WENDEHACK. I could make a few opening remarks as to what the projects entail, if you would like, sir.

Senator MORGAN. All right; if you would.

Mr. WENDEHACK. Would you like me to address both plants or just the central plant at this time? They are tied together. I could address both of them at the same time.

Senator MORGAN. Why don't you do that.

Mr. WENDEHACK. The prospectus for the central heating plant, as we mentioned, requested authorization to replace two 42-year-old coal-fired boilers that we can no longer depend on with two multifuel boilers designed to burn either pulverized coal or oil, or possibly in the future any energy source that might be developed to meet the emergencies of the period.

The replacement of the boilers is necessary, first, to meet the steam load requirements of the 112 buildings in the Washington, D.C., area and to maximize the use of coal-burning capacity, the most readily available fuel that we have at this time.

In addition, electronic precipitators will be installed to remove pollutants from the smokestacks, and a dry ash system to collect the ashes from the boilers will be installed. This is to prevent the Potomac from being polluted.

Both of the latter pieces of equipment are necessary to bring the plants in compliance with the Clean Air Act and Water Act of 1970.

The prospectus for the west heating plant requests authority to convert the two oil-fired boilers to multifuel, so that we will be able to burn more abundant fuel. Also, three additional precipitators and a dry ash system will be installed to bring it into compliance with the Clean Air Act and Water Act.

The two plants combined are connected by a 6-mile steam route that connects the two plants together and provides steam to 112 buildings in the Washington, D.C., area.

The central heating plant has been in operation since 1934, and the west heating plant since 1948.

Senator MORGAN. Where are they located?

Mr. WENDEHACK. The central plant is located right beside the Agriculture Building on 12th and D. The west plant is over in the Georgetown area, along the Rock Creek area.

Senator MORGAN. You say they are tied together by 6 miles of line?

Mr. WENDEHACK. There is 6 miles of steam tunnel that ties the plants together and ties into the 112 buildings.

Senator MORGAN. The 6 miles include the tunnels going to the buildings?

Mr. WENDEHACK. That is correct.

Senator MORGAN. Can you give us details of the D.C. Government's lawsuit against GSA resulting from alleged air and water pollution by these plants?

Mr. WENDEHACK. On June 5, 1975, a lawsuit was brought against GSA by the District for failure to meet the Clean Air Act standards. We are in noncompliance with those acts.

Senator MORGAN. In what way?

Mr. WENDEHACK. In terms of the particulate matters that are going into the atmosphere and in terms of the bottom ash that is going into the Potomac.

Senator MORGAN. What have you done in recent years to improve the pollution emissions?

Mr. WENDEHACK. We have gone through a long series of steps on these plants. Actually, back in 1968 we got started on trying to do something on two aspects.

One was to try to take care of the fact that four of our boilers were reaching the end of their useful life. These are four old coal-fired boilers, stoker-fired burners, which are extremely dirty, and the precipitators do not take care of the pollution into the air.

Second, we are aiming at, as I say, getting rid of the pollution. The Clean Air Act of 1970, of course, was passed, and this expedited our efforts to try to take care of the two problems.

As a result, in 1970 a prospectus for conversion to oil and gas was approved by the Congress. At this time, of course, we were primarily aiming at trying to clean up—by using the oil—clean up the atmosphere and also the pollution to the Potomac.

In 1971, Congress appropriated the first money for this conversion.

Senator MORGAN. How much was that?

Mr. WENDEHACK. For the central plant, \$11.4 million, the total of two prospectuses. And the west plant was \$8.6 million.

In July of 1972, a contract was awarded for the bulk of the work necessary in the central and west plants to take care of the environmental requirements and also to take care of our needs for the capacity of the plant.

We estimated at that time, by 1976, June of this year, that we would be in compliance with the Clean Air Act and also have the necessary capacity that we needed.

Unfortunately, in 1973, our conversion project, like many of the projects across the country, was interrupted because of the fact that the oil embargo was on and there was heavy emphasis placed on the country to conserve oil.

As a result, we stopped the conversion, at a point two-thirds of the way through the project, we stopped the conversion to oil.

Initially under these prospectuses, at the central plant we were going to install six 200,000-pound boilers—a total of 1,200,000 pounds. That was approved by that prospectus.

During the design phase, it was determined it would be more efficient and better operationally if we installed three 400,000-pound boilers—again a total of 1,200,000 pounds.

Since we stopped the project two-thirds of the way through, we only installed two 400,000-pound boilers. That left us short in capacity by 400,000 pounds. Of these two boilers, one came on line in December of 1975—

Senator MORGAN. Is that burning oil?

Mr. WENDEHACK. It is burning oil. The second one is in the process of being finally accepted by the Government. The contractor has not yet turned it over to us. That one will also burn oil.

At the west plant, two of the boilers there were converted to oil.

Senator MORGAN. How many boilers do you have at the central plant?

Mr. WENDEHACK. We have six boilers at the central plant. Four of them are 42 years old; the old stoker-fired boilers.

At the west plant there are five boilers; two are oil and three are coal.

Senator MORGAN. What exactly do you propose to do that is covered by this prospectus?

Mr. WENDEHACK. At the central plant we will be installing two new multifuel boilers which, as I mentioned, will give us a capability to burn whatever fuel is most economic in value to the country.

Senator MORGAN. Including coal?

Mr. WENDEHACK. Including coal. It will be blown-in coal. The coal will be crushed and blown in. It will be a lot more efficient boiler. The oil could also be used if we had to. The boilers eventually could be used for burning trash, if we had to, or possibly other fuel, such as alcohol, or whatever became available on the market. So we have a wide range of latitude as to what types of fuel we can use depending on the needs for the country at the time.

We intend to burn coal because, it is cheaper; particularly the fact we can go to the pulverized coal now, which is cheaper than the stoker coal. Of course, it will save the oil.

We anticipate that by maximizing the use of these multifuel boilers and the coals that are at the west plant we should be able to save in the neighborhood of about 27 million gallons of oil per year in lieu of burning oil full time.

Senator MORGAN. What is going to happen to the other two boilers that are 42-years old?

Mr. WENDEHACK. They will remain in place. They, as I mentioned, have reached the end of their useful life. We can't plan on their reliability beyond another 5 years. They will remain in place. They will be put into standby. However, they do not meet the pollution requirements either, and their use would just be in an extreme emergency.

Senator MORGAN. What are you going to do at the west plant?

Mr. WENDEHACK. At the west plant, we are converting the two oils to dual fuel, again, so that we have the capability of burning coal. We will be putting in three additional precipitators.

Those three additional precipitators will be placed on the three coals that are in existence now to meet the Clean Air Act standards.

We will also be installing a dry ash handling system so that we do not pollute the Potomac. Those are the prime projects.

Senator MORGAN. Let's go back to the lawsuit a minute. What specifically does the District of Columbia allege in their lawsuit? What did they say you were not doing?

Mr. WENDEHACK. I would like to ask Mr. Hespe to answer since he is thoroughly involved in this.

Mr. HESPE. Actually, there are three counts in the lawsuit. The first count is we are polluting the air by the particulates going into the air. That is the first count.

The second count is that we have our coal stored outside; and with the rain and water coming down on the coal, certain acids or minerals go into the water and that pollutes the water.

The other complaint is that the wet-ash system that we use, the water sloughs go from the plant into the Potomac.

So we are polluting under three counts. Actually, we have to admit that.

Senator MORGAN. How much coal do you burn a day?

Mr. WENDEHACK. I beg your pardon?

Senator MORGAN. How much coal do you burn a day; how many tons?

Mr. WENDEHACK. Mr. Ward?

Mr. WARD. It depends really on the weather conditions and how cold a winter it is. We have burned as much as 209,000 tons per year. During the past year—we were burning oil besides coal therefore the figure was drastically reduced.

Senator MORGAN. What are your plans for sheltering the coal you burn once you complete this work?

Mr. WENDEHACK. That is part of the prospectus, to cover the coal, so we don't have that problem.

Senator MORGAN. That would be a relatively inexpensive job, would it not?

Mr. WENDEHACK. Yes, sir. I am not sure of the exact cost, but we can provide the exact cost for the record.

[The information referred to follows:]

Further review of the problem reveals that a more practical method for handling the small amount of acid run off from the coal is to divert this run off to the plant water sump system where the acid will be neutralized. This can be done for approximately \$7,500.

Senator MORGAN. Let's assume you did not have an environmental problem. What would be the condition of the six boilers? I believe you said there are six at the central plant.

Mr. WENDEHACK. Six at the central plant.

Senator MORGAN. Four of them you say are extremely old, 42 years old?

Mr. WENDEHACK. That is right.

Senator MORGAN. Are the other two new?

Mr. WENDEHACK. Yes, sir, they are.

Senator MORGAN. You are just going to bring two new ones on line?

Mr. WENDEHACK. That is right. The two new ones that will be coming on line will be 220,000 pounds per hour of steam, a total of 440,000 pounds of steam. This will in effect complete the original capacity that was proposed and approved under the prospectus of 1972. In other words, we will end up with approximately 1,200,000 pounds total capacity at the central plant.

Senator MORGAN. Is this what you set out to do in 1972?

Mr. WENDEHACK. That is correct, sir.

Senator MORGAN. How much money was spent then and what was the projected cost?

Mr. WENDEHACK. For the central plant, the authorization was approximately \$11.4 million. Part of that amount was obligated. However, because of stopping the conversion about two-thirds of the way through, we are in the process of receiving credits from the contractor. The exact amount we do not know as yet. It is dependent on the amount of work he did and so forth. But we are receiving credits against that.

Senator MORGAN. Would you estimate you spent half of it?

Mr. WENDEHACK. I would estimate that we have spent more than that because we did do two-thirds of the work, and the contractor had done some work on the third boiler.

Senator MORGAN. You now say the plant is going to cost how much?

Mr. WENDEHACK. The new proposal, or this proposal before you, is \$20.3 million.

Senator MORGAN. That is just for the central plant?

Mr. WENDEHACK. That is just for the central plant.

Senator MORGAN. You proposed to do it all in 1972 for \$11.4 million?

Mr. WENDEHACK. In 1972, the total was \$11.4 million. However, since that time there have been some changes that have affected us significantly. The 5 years of escalation has increased the cost by about 50 percent.

Second, we are going to install more efficient boilers. These multi-fuel boilers are more efficient and much more complex because they can burn various types of fuel.

Third, we are going to a special pulverizing system that will allow us to burn a lower grade of coal and receive operating cost savings. Since more coal will be used, we will be having additional handling requirements for the coal.

Senator MORGAN. Will the two boilers that were installed under the 1972 project be able to burn pulverized coal?

Mr. WENDEHACK. The two oil-fired?

Senator MORGAN. Yes.

Mr. WENDEHACK. No; not at this time, sir. They would have to be converted in order to burn coal.

Senator MORGAN. Let's go back to the lawsuit again. Aren't Federal facilities exempt from pollution laws and regulations?

Mr. HESPE. No, sir. I have to qualify that. As far as the substantive law is concerned, as far as the standards are concerned, we must comply.

We do not have to comply with the procedural requirements of a State or local government. By that I mean we don't have to get a

permit or comply with the other internal operations. So we are not subjected to their procedural requirements.

The Supreme Court held in two cases, which were decided in June of this year, that the Federal Government must comply with the substantive requirements but not with the procedural requirements. I can refer you to those two cases, if you would like, sir.

Senator MORGAN. You might give us the citations on them.

Mr. HESPE. One is the *Environmental Protection Agency v. California*. It is number 74-1435. It was decided on June 7, 1976.

The other case is *Hancock v. Train*. That number is 74-220. That also was decided on June 7, 1976.

Senator MORGAN. What States did they involve; or was it the District?

Mr. HESPE. The *Hancock* case involved the State of Kentucky. The EPA case involved the State of California.

Senator MORGAN. Has the lawsuit brought by the District been completed?

Mr. HESPE. No, sir.

Senator MORGAN. What is the status of that?

Mr. HESPE. The District of Columbia filed a motion for partial summary judgment. The Federal Government opposed that motion based on the fact we had done everything we could have done.

We in our response followed the history of our plants from 1968 until the current time. We pointed out that Congress had approved our prospectus in 1970, that contracts had been awarded, and due to the change in the oil situation and the energy crisis we had to terminate the contracts, and that we now have to go through the new procedure, get a new prospectus, to put us in compliance.

The court recognized that we had done everything that we possibly could and that we were the victim of circumstances. Therefore, the court refused to grant the motion which the District had requested and decided they would take no further action at the present time.

The judge did ask that we keep the court advised as to what our progress is in bringing the plants into compliance.

Senator MORGAN. Their motion pending now is to strike that judgment?

Mr. HESPE. At this point it is still before the court, and it will stay there—

Senator MORGAN. It is in limbo, in other words?

Mr. HESPE. That is correct.

Senator MORGAN. Was there any kind of consent agreement between GSA and EPA?

Mr. HESPE. Yes, sir, there was at one time.

Senator MORGAN. What type of an agreement?

Mr. HESPE. What was the question?

Senator MORGAN. What was the consent agreement?

Mr. WENDEHACK. I can provide the consent agreement for the record.

Senator MORGAN. Why don't you tell me now.

Mr. GALUARDI. I signed the consent agreement. The consent agreement was between myself and the regional office of the EPA in Philadelphia.

The consent agreement states that the General Services Administration would pursue a policy which would be to bring the plants into compliance with the District of Columbia's air pollution and water pollution laws, and that the timetable would be established whereby we would seek the authority from the Congress and the necessary appropriations to bring those plants into compliance.

Senator MORGAN. When was this done?

Mr. GALUARDI. It was approximately August of 1975.

Mr. WENDEHACK. We were to be in compliance by 1979.

Mr. GALUARDI. The consent agreement was conditional in that it was necessary to seek the necessary authorization from the Congress. But the agreement was that we would attempt to get the authorization from the Congress.

Senator MORGAN. Does this project, or anything that you have done with regard to the heating plant, require an environmental impact statement?

Mr. WENDEHACK. Yes, sir.

Senator MORGAN. Have you made one?

Mr. WENDEHACK. We have filed a draft environmental impact statement within the last couple of months. Comments are coming in on that. We will proceed with the full environmental statement once the comments have been received.

Senator MORGAN. Is that on the project you propose?

Mr. WENDEHACK. That is for the central heating plant; yes, sir. The west plant, the draft environmental statement has not yet been issued.

Senator MORGAN. How long does it take you to prepare these statements?

Mr. WENDEHACK. Once they are published, the public has to be given 90 days to comment on that. Our actual time for preparing it is normally about 3 months.

Senator MORGAN. When you entered into your consent agreement, and began your impact statement, did you set up any time schedules as to when this action would be taken?

Mr. WENDEHACK. In the consent agreement there was a time frame set up as to when we would take the action. In both cases, in both plants, the action was to be completed by 1979.

We have fallen somewhat behind that schedule now as a result of delays in getting the whole process completed.

Senator MORGAN. The District Government contends, as I understand it, that you can comply at a cost of less than half a million dollars, fairly quickly, and it would not require congressional review and approval.

Is that a correct statement? If so, what do you say about it?

Mr. WENDEHACK. No, sir. We do not agree with that. At the west plant, for example, in order to come into compliance, we have got to install both precipitators for the particulate matter going into the air and a dry ash system to take care of the bottom ash going into the Potomac. That cost alone is about \$2 million. We cannot proceed with that project without getting congressional authorization.

At the central plant again we have four 42-year-old boilers which are polluting the air. No. 1, we have got to replace them in order to retain the sufficient capacity that we need.

Once we do, we have got to put precipitators and bottom ash handling capability on those.

In both cases we need the authorization to proceed.

Senator MORGAN. I have here page 5 of the court record of a hearing before the judge on May 3 of this year.

Statement No. 9 dealt with GSA's contention that measures cannot be taken without congressional approval. It states, "Again, it is the District's contention that there are less costly measures which can be undertaken which will not require congressional approval; that is, measures can be undertaken which would cost less than half a million dollars."

Mr. GALUARDI. There are some actions we can take, Senator, and we are doing it already. Unfortunately, last winter we had a problem which was that we buy coal from a certain part of the country, the Island Creek Coal Co.

There was a delivery of bad coal which arrived, which was very difficult for us to control, and it sent an excessive amount of particulate matter into the air. Until such time as we could get the coal out of the system, we had to keep burning it. We received no further coal.

The contention was we did not have adequate control over the coal being delivered. We are now establishing controls whereby we have people who will go to the mine and establish a quality control system whereby we will be assured that we obtain the right kind of coal from the mine and not get something into our system and therefore have to burn it out to get rid of it.

The other thing we are doing is there is the ash system. We have sort of a jury-rigged system that we can put together to reduce the amount of ashes going into the Potomac. That is purely a jury-rigged system.

It is necessary on a permanent basis to install what we are asking for under this prospectus: a dry ash removal system.

Senator MORGAN. Did you pursue their suggestions to see if they were based on any kind of significant data, or whether this was just an allegation on their part?

Mr. GALUARDI. The lawyers from the District of Columbia have stated this position. We have not received any specifics from the District as to what they had in mind.

They don't know our plant as well as we do, and we don't know that they have anything very significant because we have looked at our plant. Nevertheless, we would be glad to go back and talk to them.

Senator MORGAN. What about GAO? Haven't they made some kind of study along this same line?

Mr. WENDEHACK. GAO has talked to us in the past, about a year ago, regarding the then proposal as far as capacity on the plants. We went through quite a series of studies.

We have adjusted the request. At that time the proposal was for three additional boilers. We felt we needed them for the future. We have adjusted back to two additional boilers at the central plant under this proposal. We are assured this will carry us through 1985 as far as capacity.

Senator MORGAN. I am pursuing the question because I think we ought to try to distinguish between what we are doing, for the purpose

of controlling pollution, and what we are doing because a plant needs revamping.

Now, GSA has been quoted in the press as saying the reason they are polluting the air is because they didn't have congressional appropriations.

It seems to me that if what the District contends is true, then the responsibility has been placed unduly on the Congress. It seems to me that there should have been some kind of inquiry, if the District made that kind of allegation, as to what specifically were their contentions and how they thought you could do it.

Mr. WENDEHACK. Senator, I believe we have been somewhat misquoted on that. Our position has been that we have got to do the steps that we have proposed in this prospectus in order to handle two problems. No. 1 is the capacity requirement for the plant, which would be a continuation of a capacity that we originally got authority for under the 1972 prospectuses.

Second, as I mentioned, there will probably be about 4 million dollars' worth of work between the two plants that needs to be done for environmental purposes.

Our statements to the courts and so forth were merely statements of the process that we have to go through in getting authority to proceed with the project. We explained that we had to go through OMB and through the Congress to get authorization to spend any funds on a project of this size.

I think we have been somewhat misquoted in directing any blame on the Congress. We are extremely pleased that the Congress has been willing to respond so quickly and listen to our problems and have this hearing held so quickly.

Senator MORGAN. We don't want to be led into it under any misapprehension of the facts. In other words, if you could have taken care of these pollution problems by building shelters or buildings for your coal and doing some other things—

Mr. WENDEHACK. Sir, the problems that have been referred to here as far as the acids caused by the coal being exposed to rain and so forth are minor problems. We cannot correct the air pollution problem without precipitators at the plants. We cannot permanently handle the pollution of the Potomac and the Tidal Basin without the proper bottom ash handling equipment.

I can address the capacity situation for you and give you a rundown on the capacity requirements of the plant versus the load requirements, if you would like.

Senator MORGAN. What do you mean by capacity?

Mr. WENDEHACK. Let me go through the capacity requirements versus the load requirements of the plants so you may more fully understand our needs as far as the plant requirements.

There are three basic types of capacity that I think have been referred to. GAO was referring to No. 1 in their statements, name plate capacity; that is, the rated capacity or the design capacity of the boilers when they are new.

As I mentioned, we have got a total of 11 boilers at these two plants. The nameplate capacity, when they were new, was 2,700,000 pounds of capacity per hour of steam generation. However, like an

old car that has gone 150,000 miles, boilers get old. They no longer have the horsepower or capability to generate steam at that rate.

The present total available capacity, the derated capacity of the boilers, these 11 boilers, is 2,300,000 pounds per hour. As I have mentioned, four of these boilers are 42 years old. They are very unreliable. They are reaching the end of their life. We can't depend on them for any long-term planning beyond the next 5 years.

This actually leaves us with a total capacity that we can depend on for the future of 1,700,000 pounds—subtracting the 600,000 from the 2,300,000 which those four coals are able to put out at this point. By the way, that will leave us with seven boilers left between the two plants.

We know that under operating conditions, under load conditions, you must have some standby boilers available if for any reason one of your boilers or two of your boilers go off line. They may go off line because of control problems, a burnout of your grating, a myriad of different problems that may shut them down for 1 or 2 weeks or even a month.

The standby capacity that we are asking for is about 30 percent. I would like to submit for the record a study that we did that compared 40 other plants on capacity. These are private plants and plants across the country.

[The information follows:]

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WEST AND CENTRAL HEATING PLANTS  
HEATING MATERIAL  
ATTACHMENT B

TABLE IV-4

Comparison of IDHA & DHS Statistics  
 (IDHA Statistics are for Calendar 1974)

Co. No.	City	Company Name	Actual		Maximum		Capacity M lb	City Utility used
			Hourly N lb	Hourly Send-Out	Hourly N lb	Hourly Send-Out		
1.	New York, NY	Consolidated Edison Co. of NY*	12,740		15,150		37.3	
2.	Philadelphia, PA	Philadelphia Electric Co.	2,482		3,837		52.5	
3.	Detroit, MI	Detroit Edison Co.	1,728		2,971		33.1	
4.	Boston, MA	Boston Edison Co.	1,850		2,005		24.3	
5.	Indianapolis, IN	Indianapolis Power & Light Co.*	1,252		1,735		11.3	
6.	Rochester, NY	Rochester Gas & Elec. Corp.*	1,118		1,875		32.1	
7.	Milwaukee, WI	Wisconsin Electric Power Co.	935		1,640		22.1	
8.	Baltimore, MD	Baltimore Gas & Electric Co.*	678		990		31.6	
9.	Cleveland, OH	Cleveland Elec. Illuminating Co.	896		1,320		21.9	
10.	Dayton, OH	Dayton Power & Light Co.	508		982		33.1	
11.	Denver, CO	Public Serv. Co. of Colorado	440		530		25.3	
12.	Pittsburg, PA	Allentgheny County Steam Htg. Co.	668		1,041		61.3	
13.	Seattle, WA	Seattle Steam Corp.	598		925		24.0	
14.	Toronto, ON, Canada	Toronto Hydro-Electric System	434		560		11.5	
15.	Harrisburg, PA	Pennsylvania Power & Light Co.	376		500		13.7	
16.	San Francisco, CA	Pacific Gas & Electric Co.	330		375		31.1	
17.	Lansing, MI	Board of Water & Light	223		450		21.2	
18.	Grand Rapids, MI	Consumers Power Co.	231		380		21.4	
19.	Duluth, MN	Duluth Steam Corp.	227		520		21.0	
20.	Acron, OH	Ohio Edison Company	205		307		11.3	

\*These companies were closely compared to the District Heating System.

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WEST AND CENTRAL HEARING PLANTS  
ATTACHMENT B

Comparison of IDHA & DHS Statistics

(IDHA Statistics are for Calendar 1974)

Co. No.	City	Company Name	Actual Maximum Hourly Send-Out		Maximum Hourly Send-Out Capacity		Actual Maximum Hourly Send-Out Capacity
			M	lb	M	lb	
21.	Vancouver, BC, Canada	Central Heat Distribution Ltd.	260		535		535
22.	Eugene, OR	Eugene Water & Electric Board	141		550		550
23.	Winnipeg, MB, Canada	Winnipeg Hydro CSH Division	225		390		390
24.	Spokane, WA	Washington Water Power Company	280		337		337
25.	Toledo, OH	Toledo Edison Company	190		305		305
26.	Birmingham, AL	Alabama Power Company	203		476		476
27.	Youngstown, OH	Ohio Edison Company	183		268		268
28.	St. Paul, MN	Northern States Power Company	240		350		350
29.	Hartford, CT	Hartford Steam Service Company	155		332		332
30.	Rochester, NH	Rochester Public Utilities	90		111		111
31.	Houston, TX	Houston Natural Gas Corp.	150		375		375
32.	Wilkes-Barre, PA	Wilkes-Barre Steam Heat Co.	158		341		341
33.	Concord, NH	Concord Steam Corp.	65		112		112
34.	Piqua, OH	Municipal Power System	59		80		80
35.	St. Joseph, MO	St. Joseph Light & Power Co.	80		150		150
36.	Springfield, OH	Ohio Edison Company	79		252		252
37.	Southfield, MI	Dayton Hudson Properties	42		110		110
38.	Nashville, TN	Nashville Thermal Transfer Corp.	65		218		218
39.	Rice Lake, WI	Rice Lake Steam Corp.					
40.	San Antonio, TX	City Water Board	23.1		80		80

TABLE IV-4  
Comparison of IDHA & DHS Statistics

(IDHA Statistics are for Calendar 1974)

Co. No.	City	Company Name	Actual Maximum		Maximum		% of Capacity Used
			Hourly Send-Out M lb	Hourly Send-Out M lb	Hourly Capacity M lb	Hourly Capacity M lb	
1.	New York, NY	Consolidated Edison Co. of NY*	12,740	15,130	84.2		
2.	Philadelphia, PA	Philadelphia Electric Co.	2,482	3,857	64.4		
3.	Detroit, MI	Detroit Edison Co.	1,728	2,971	58.2		
4.	Boston, MA	Boston Edison Co.	1,850	2,005	92.3		
5.	Indianapolis, IN	Indianapolis Power & Light Co.*	1,292	1,735	74.5		
6.	Rochester, NY	Rochester Gas & Elec. Corp.*	1,118	1,875	59.6		
7.	Milwaukee, WI	Wisconsin Electric Power Co.	915	1,640	55.8		
8.	Baltimore, MD	Baltimore Gas & Electric Co.*	678	990	68.5		
9.	Cleveland, OH	Cleveland Elec. Illuminating Co.	896	1,320	67.9		
10.	Dayton, OH	Dayton Power & Light Co.	508	982	51.7		
11.	Denver, CO	Public Serv. Co. of Colorado	440	580	75.9		
12.	Pittsburg, PA	Allengheny County Steam Htg. Co.	668	1,041	64.2		
13.	Seattle, WA	Seattle Steam Corp.	598	925	64.6		
14.	Toronto, ON, Canada	Toronto Hydro-Electric System	434	560	77.5		
15.	Harrisburg, PA	Pennsylvania Power & Light Co.	376	500	75.2		
16.	San Francisco, CA	Pacific Gas & Electric Co.	330	375	88.0		
17.	Lansing, MI	Board of Water & Light	223	430	51.9		
18.	Grand Rapids, MI	Consumers Power Co.	234	380	61.6		
19.	Duluth, MN	Duluth Steam Corp.	227	320	70.9		
20.	Akron, OH	Ohio Edison Company	205	307	66.8		

\*These companies were closely compared to the District Heating System.

Comparison of IOHA & DHS Statistics  
(IOHA Statistics are for Calendar 1974)

Co. No.	City	Company Name	Actual Maximum Hourly Send-Out		Maximum Hourly Send-Out Capacity		% of Capacity used
			M lb	lb	M lb	lb	
21.	Vancouver, BC, Canada	Central Heat Distribution Ltd.	260		535		48.6
22.	Eugene, OR	Eugene Water & Electric Board	141		580		24.3
23.	Winnipeg, MB, Canada	Winnipeg Hydro CSH Division	225		390		57.7
24.	Spokane, WA	Washington Water Power Company	280		457		61.3
25.	Toledo, OH	Toledo Edison Company	190		305		62.3
26.	Birmingham, AL	Alabama Power Company	203		476		42.6
27.	Youngstown, OH	Ohio Edison Company	183		260		70.4
28.	St. Paul, MN	Northern States Power Company	240		350		68.6
29.	Hartford, CT	Hartford Steam Service Company	155		339		45.7
30.	Rochester, MN	Rochester Public Utilities	90		150		60.0
31.	Houston, TX	Houston Natural Gas Corp.	150		375		40.0
32.	Wilkes-Barre, PA	Wilkes-Barre Steam Heat Co.	158		341		46.3
33.	Concord, NH	Concord Steam Corp.	65		112		58.0
34.	Piqua, OH	Municipal Power System	59		80		73.8
35.	St. Joseph, MO	St. Joseph Light & Power Co.	80		150		53.3
36.	Springfield, OH	Ohio Edison Company	79		258		30.6
37.	Southfield, MI	Dayton Hudson Properties	42		110		38.2
38.	Nashville, TN	Nashville Thermal Transfer Corp.	65		218		29.8
39.	Rice Lake, WI	Rice Lake Steam Corp.	-		-		-
40.	San Antonio, TX	City Water Board	23.1		80		28.0

Mr. WENDEHACK. The average standby capacity that these plants provide in order to insure continuity of work is 30 percent. This is consistent with what we are providing.

If we were left with only the seven boilers and 1,700,000 pounds of total capacity, predicated on a net of 30 percent standby, we have only now a net reliable of 1,100,000 pounds.

If we relate that to the loading requirements at these plants, our peak load occurred in 1970, which was 1,295,000 pounds. That occurred at an 8-degree temperature, average temperature outside, and a 4-degree low temperature for the day.

Two things have occurred since that time frame. No. 1, at that time we had approximately 36,500,000 square feet of buildings on line that we had to provide steam for. Since that time we have added over 4 million square feet of buildings—for a total now of 40,500,000 square feet. In addition, by 1980 we expect to have another 1,800,000 square feet on line.

The second thing is that during the past 6 years, we have had a continuing warming trend in weather and, as a result, we have not reached those temperature conditions that we did in 1970.

However, we have done quite a bit of checking with the weather bureau. We know the weather temperatures run through approximately a 15-year cycle. We have been in an upward trend of the cycle. By 1978, based on a chart they provided, we will be going back into a cooling trend again as part of that 15-year cycle, and we very conceivably and very likely will reach temperatures again that we had in 1970, and possibly much colder.

But applying those temperatures that we had to contend with in 1970 against the new load, as far as the building load—and the calculations procedures are the same as the industry uses—we know that we have at least 1,430,000 pounds of requirement right now. This, as I mentioned, will increase with more workload—building—coming on line.

This prospectus proposes that we have a total capacity, again before we consider standby capacity, of 2,140,000 pounds. Applying the 30 percent standby for emergency, which is consistent with the industry practices, we will have a reliable service capability on an on-going basis of 1,498,000 pounds.

This is very consistent with the loading requirements that we anticipate up through 1985.

Senator MORGAN. Let me go back. You did say that the west plant and central plant operate together?

Mr. WENDEHACK. That is right, sir.

Senator MORGAN. You say in your prospectus that the central plant serves 112 buildings at an annual cost of \$3,162,000. And you say the west plant serving the same buildings does it for \$3,318,000. Of course, that is only \$118,000 or so. But why the difference?

Mr. WENDEHACK. There are 112 buildings that are served between the two plants. The dollar cost is additive for a total of \$6 million, whatever the total is.

Senator MORGAN. This is not combined for both?

Mr. WENDEHACK. No. We split the cost between the two buildings.

Senator MORGAN. I see.

Mr. WENDEHACK. The total is \$6 million something, whatever the total is there.

Senator MORGAN. Has OMB approved this prospectus?

Mr. WENDEHACK. The central plant, under the requirement of OMB, was submitted to OMB because it was over \$10 million. It was approved by OMB before we submitted it to you.

The west plant, which was under \$10 million, did not have to be submitted to OMB. However, we did submit them a copy, as is our practice with any prospectus we submit to the Congress under \$10 million.

Senator MORGAN. You talk about steam in these 112 buildings. Do you use hot water anywhere?

Mr. WENDEHACK. The buildings are supplied with steam only to buildings. However, the buildings' heat exchangers are used to heat your necessary hot water for the buildings.

Senator MORGAN. What about chilled water?

Mr. WENDEHACK. We only supply three buildings with chilled water. That is Agriculture South, the Agriculture Administration Building, and the Forrestal Building.

Senator MORGAN. What about the other buildings? Do they generate their own?

Mr. WENDEHACK. In other buildings we have chillers and air conditioning systems within the buildings.

Senator MORGAN. Are all Government buildings in the District heated by steam?

Mr. WENDEHACK. All GSA buildings?

Senator MORGAN. Yes.

Mr. WENDEHACK. I don't believe all of them are.

Mr. GALUARDI. In the District, yes.

Mr. WENDEHACK. OK. Yes, sir.

Senator MORGAN. Is the GSA reimbursed for these services by the various departments, or is it by direct appropriation?

Mr. WENDEHACK. As far as the buildings GSA operates, they are serviced under the SLUC charges and we finance those costs. The buildings that are other than GSA operated, such as the Smithsonian, or nongovernment buildings such as the American Red Cross, in these buildings they reimburse us on a quarterly billing basis based on meter readings.

Senator MORGAN. Let's go back to your standby boilers. Do you have any now?

Mr. WENDEHACK. Do we have any standby boilers now?

Senator MORGAN. Yes.

Mr. WENDEHACK. Our capacity now is predicated on the four 42-year-old boilers. That provides us the standby capacity. However, as I mentioned, the capability of those boilers is fact running out. We just cannot rely on them any further, considering that we have the responsibility of 112 buildings in the District of Columbia.

Senator MORGAN. Are there any alternatives other than installing new ones, in case these boilers gave out?

Mr. WENDEHACK. We have made a significant number of studies. We have had a private firm investigate. We have had a great deal of in-house investigation. We have no viable alternatives.

We investigated the alternative of going back on our energy conservation efforts. Under our energy conservation efforts, we turn off the heat in the evening and on the weekend in order to conserve energy.

We investigated the possibility of going back to the heating of these buildings around the clock in order to reduce the peak load somewhat. However, this alternative is very nonviable as far as operating costs. It would mean that as a minimum it would cost us an additional \$4 million a year in fuel costs and electrical costs in the buildings because of having to run the air handlers and so forth in order to keep the building temperature up.

This does not consider the additional manpower we would have to put on again to man this activity. I feel we have investigated every possible alternative, and these are our alternatives.

Senator MORGAN. In your prospectus you indicate the only alternatives as being replacement of the building or leasing space. Was any consideration given simply to installing precipitators or other equipment necessary to comply with the D.C. requirements?

Mr. WENDEHACK. As far as the comparison in the prospectus, that is a normal review that we go through as far as comparing the costs of construction versus leasing versus repairing the installation that we are presently occupying.

We use the "present value analysis" to determine whether it is more economical to go to a leased building or construct a new building.

There are no leased buildings available that could possibly meet our needs in this particular case. New construction would be astronomical. Therefore, under our present value analysis basis it was concluded we must take the repairs to this building.

Senator MORGAN. Did I understand you to say earlier that there are two new oil boilers on line.

Mr. WENDEHACK. There is one on line now. The second one is under final contract completion. There are a few problems with it. We have not yet accepted the boiler. But upon acceptance of that boiler there will be two new oil-fired boilers. The total of each is 400,000 pounds, for a total of 800,000 pounds. This is at the central plant.

Senator MORGAN. If your two new multifuel boilers are installed, what kind of coal handling equipment will be required? Will they use the same equipment or will you have to have new equipment?

Mr. WENDEHACK. No, sir. Because of the fact we will be relying primarily on coal to meet our normal requirements and using the oil to hit the peaks, we will have to have additional coal handling capacity. Plus, as I mentioned, we are going to be pulverizing low-grade coal and blowing it into the boilers.

Senator MORGAN. Will all four boilers of the central plant that haven't been changed be burning pulverized coal too, or just the two?

Mr. WENDEHACK. Just the two.

Senator MORGAN. The other two will be standby?

Mr. WENDEHACK. They will be put in mothballs.

Senator MORGAN. Will they be standby?

Mr. WENDEHACK. As I mentioned, in an emergency where we had to use them, we would have to fire them up. But then we would be in non-compliance with the air pollution standards.

Senator MORGAN. Then you would have to have your present coal handling equipment for those, wouldn't you?

Mr. WENDEHACK. Yes, sir. They are stoker-fired boilers. They are not the same type of boilers as the multifuels.

Senator MORGAN. How many precipitators are proposed for the new central heating plant?

Mr. WENDEHACK. Two for the new boilers.

Senator MORGAN. One for each boiler?

Mr. WENDEHACK. One for each boiler.

Senator MORGAN. Why are you proposing three for the west plant?

Mr. WENDEHACK. At the west plant, the two boilers—numbers three and five boilers, I believe it is—which were converted under the previous prospectus, already have precipitators on them. The other three which are coal-fired do not have sufficient precipitators to take care of the pollution in the air.

Senator MORGAN. What about your ash collector silos?

Mr. WENDEHACK. The silos?

Senator MORGAN. Yes.

Mr. WENDEHACK. Three at each plant.

Senator MORGAN. Are there any structural or architectural changes you are going to have to make to accommodate these new boilers?

Mr. WENDEHACK. We do not believe so. We feel we will be able to accommodate it in the existing building structures.

Senator MORGAN. If the new ash disposal systems were installed that you are asking for, what would happen to the residue?

Mr. WENDEHACK. It will be taken away to an EPA approved landfill.

Senator MORGAN. That would take a tremendous landfill, wouldn't it? By truck?

Mr. WENDEHACK. By truck.

There is also, Mr. Ward mentions here, the possibility that it could go into construction of cinder blocks also. We can utilize it that way.

Senator MORGAN. Is there any approved dumping ground identified in your environmental impact statement?

Mr. WENDEHACK. No, sir; there is not. But it will be a requirement of the contract that it be an EPA-approved dumping ground.

Senator MORGAN. How far away do you estimate you would have to go?

Mr. WENDEHACK. I am not really sure. I don't know if the region can answer that question or not.

Mr. GALUARDI. I think most dumping sites are in Prince Georges County. It is probably a matter of 6 or 8 miles.

Senator MORGAN. What kind of oil handling and storage facilities exist now at both of these locations?

Mr. WENDEHACK. As far as capacity?

Senator MORGAN. Yes.

Mr. WENDEHACK. I believe I have those figures. At the central plant, there are 7,500 tons of coal storage capacity and four oil tanks which hold 1,130,000 gallons.

At the west heating plant, there are 8,000 tons of capacity for coal and 796,000 gallons of oil.

Senator MORGAN. If this project is approved, how many boilers will be left that are not multifuel, except the two standby at the central plant?

Mr. WENDEHACK. That are not multifuel?

Senator MORGAN. Yes.

Mr. WENDEHACK. There will be two at the central plant that will be the oils and three at the west plant which will be the coals.

Senator MORGAN. Will they be standby, too?

Mr. WENDEHACK. No. All of those boilers will be used. The only two that will be put into mothballs will be the two 42-year-old remaining boilers.

Senator MORGAN. The three at the west plant now use pulverized coal?

Mr. WENDEHACK. No, sir. They use stoker coal.

Senator MORGAN. Will they on the project?

Mr. WENDEHACK. No, sir.

Senator MORGAN. Will they still not be polluting the air?

Mr. WENDEHACK. They will not be polluting the air. We will be putting in precipitators and bottom ash capacity.

Senator MORGAN. The main reason you are replacing the two here is because of their age?

Mr. WENDEHACK. At the central plant, yes, sir.

Senator MORGAN. What is the rated output capacity of these new boilers? Did you tell us that?

Mr. WENDEHACK. 220,000 pounds each, for a total of 440,000 pounds.

Senator MORGAN. Did you give us an average daily load demand on the combined heating plants from October to March?

Mr. WENDEHACK. We have gone through calculations on that. That was one of the questions that GAO had raised.

On a rough average, we calculated that an average load would be around 850,000 pounds. I want to stress a couple of points on that.

Average load, as far as a heating plant or a utility plant, has absolutely no meaning. I might make an analogy of comparing it to a person that can't swim who asks what the depth of a pool is, and somebody tells him the average depth is four feet. If he steps off into the 4-foot end, he is fine. If he steps off into the eight-foot end, he is out of luck.

We may have on a particular day during the winter a 75-degree day where we don't have to provide any steam. But then on another day in the same month we may drop down to 4 degrees, and we will then have to hit a peak of some 1,500,000 pounds.

Senator MORGAN. Is this Senate office building on that line?

Mr. WENDEHACK. No. Your building is on a separate heating plant, the Capitol heating plant.

Senator MORGAN. I was going to ask you if you could save some heating capacity by cutting off the heat now. We had hot air coming out one day this week.

Mr. WENDEHACK. No, sir. We have gone through an extensive energy conservation program in our buildings and cut back the heat to 65 to 68 degrees.

Senator MORGAN. One more question, before I go into three or four others that have been proposed by some of the members.

Does the authorization requested here include any refrigeration or chiller-line alterations?

Mr. WENDEHACK. No, sir.

Senator MORGAN. Upon completion of this project, can you meet performance standards under the Clean Air Act?

Mr. WENDEHACK. Yes, sir.

Senator MORGAN. Karl, you were talking about under the new law.

Mr. BRAITHWAITE. No; the existing law.

Mr. WENDEHACK. Yes, sir.

Senator MORGAN. Have these changes been coordinated with the District and EPA? We talked about EPA. Have you coordinated these proposals with the District?

Mr. WENDEHACK. I am sure we have.

Mr. ZOELLNER. The environmental impact statement did go to the District of Columbia before being published, if that is what you are referring to.

Senator MORGAN. Did they comment on it?

Mr. WENDEHACK. I believe they are in the process of commenting now.

Mr. GALUARDI. The District has commented. They have basically restated their position that we are in violation.

Senator MORGAN. Have they expressed any position with regard to whether these proposals will clear up the problem?

Mr. GALUARDI. I don't think they have. We have the problem of seeing what their regulations are and determining whether or not technically what we are installing will do it. Our experts, both in-house and consultants we have hired who are experts in the field, have stated we will comply.

Mr. WENDEHACK. I don't think the District has any way of determining whether or not what we are doing will comply. But we know it will comply.

Senator MORGAN. John, will you make sure that the District's comments go in the record?

Mr. PURINTON. Yes.

[The material requested follows:]

GOVERNMENT OF THE DISTRICT OF COLUMBIA,  
EXECUTIVE OFFICE,  
Washington, D.C., May 28, 1976.

Mr. JAMES F. STEELE, Jr.,

Acting Assistant Commissioner, Office of Operating Programs, Public Building Service, General Services Administration. (Region 3), Washington, D.C. (Attention of Mr. William W. Sayers (3-MCTE)).

DEAR MR. STEELE: Enclosed are comments of the Executive Branch of the District of Columbia Government on the draft Environmental Impact Statement (DEIS) for the Multi-Fuel Boiler, Central Heating and Refrigeration Plant. These comments have been prepared and coordinated by the Municipal Planning Office in collaboration with other District agencies, including: The Corporation Counsel Department of Environmental Services, and the Department of Transportation.

I wish to express the District's appreciation for affording us the opportunity to comment on the DEIS. We look forward to working with the General Services Administration to upgrade the operation of the Central Plant to bring it

into compliance with District and Federal air and water pollution control laws and regulations.

Sincerely,

BEN W. GILBERT, *Director*.

Enclosure.

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT No. EDC-76001  
ON MULTIFUEL BOILERS: CENTRAL HEATING AND REFRIGERATION PLANT,  
WASHINGTON, D.C.

The District of Columbia Government Executive Branch has reviewed the Draft Environmental Impact Statement, Number EDC 76001, Multifuel Boilers: Central Heating and Refrigeration Plant, Washington, D.C. Districts agencies participating in this review include: the Corporation Counsel, Department of Environmental Services, Department of Housing and Urban Development, Department of Transportation, Office of Budget and Management Systems, and Municipal Planning Office. The following comments have been coordinated and consolidated by the Municipal Planning Office. They discuss the District's general, legal and technical concerns over the proposal and its draft environmental impact statement (EISS).

GENERAL COMMENTS

The draft EIS describes and evaluates the proposed modifications to the facilities at the G.S.A. Central Heating and Refrigeration Plant ("Central Plant"). The modifications are designed to bring the Central Plant into compliance with both District and Federal air and water pollution control laws and regulations. The Central Plant is currently in violation of applicable District law and will remain so, according to the EIS, until the modifications are complete.

LEGAL IMPLICATIONS: DISTRICT OF COLUMBIA *v.* SAMPSON

The District of Columbia has brought suit against officials of the General Services Administration to enforce compliance of the operation of the Central Plant and of the West Heating Plant with the District's air and water pollution laws, which these officials have a duty to obey under Section 118 of the Clean Air Act Amendments of 1970 (42 U.S.C. 1857f), Section 313 of Federal Water Pollution Control Act of 1972 (33 U.S.C. 1323 and) Executive Order 11752. This litigation, *District of Columbia v. Sampson*, Civil Act No. 75-1017, is pending in the United States District Court for the District of Columbia. G.S.A. officials have acknowledged that they are bound by the District laws in the operation of these two facilities. They have also admitted to the Court that they are in violation of District law with regard to visible and particulate emissions into the air and ash discharges into the Potomac River.

Because of the very lengthy period required to complete the modification and to bring the Central Plant into compliance with District law, Judge George L. Hart of the United States District Court has encouraged the General Services Administration to pursue temporary or interim measures which can also be taken to bring the operation into compliance, or closer to compliance. Such measures would decrease as much as possible the amount of emissions and the time period in which the operation of the Central and West Plants remain in violation of local law.

INTERIM MEASURES

It is the legal position of the District of Columbia that it is mandatory that the present operations of the Central Plant be modified so as to bring its operations (and those of the West Plant) into compliance or closer to compliance immediately, and that this can be accomplished through interim measures. It is anticipated by GSA that the proposed modifications for the Central Plant in the draft EIS can be completed in a period of 141 weeks from the time procurement procedures are initiated.

Unfortunately, the draft EIS does not indicate any program of interim measures which can bring the Central Plant into compliance or closer to compliance.

The only interim measure proposed in the draft EIS is the installation of a temporary ash handling system for two of the four coal-fired boilers at the Central Plant. These two boilers will not be replaced. Once the other two coal-fired boilers at the Central Plant are replaced, the draft EIS states that use of

the two coal-fired boilers utilizing the temporary ash handling system will be suspended. In the lawsuit, GSA officials have talked in terms of "abandonment" of these boilers. However, the draft EIS does not indicate that these boilers will be removed or that they or their control equipment will be modified. The possibility remains, therefore, that these two coal-fired boilers may be used again at some time in the future without having been equipped with control equipment to bring their emissions within allowable levels. The District has advised the Court that further operation of these boilers in violation of the air pollution laws is not acceptable.

It is our opinion that there are several interim measures that can be immediately taken to bring the operation of the Central Plant (and of the West Plant) into compliance or closer to compliance with District law. These interim measures should include:

- (1) Converting the boilers to a complying grade of oil.
- (2) Operating complying boilers to the maximum extent possible. Install necessary equipment to enable Boilers No. 3 and 4 to operate at maximum load.
- (3) Before non-complying boilers are used, steam supplied should be reduced proportionately to each building supplied by the plant.
- (4) Emissions from each boiler should be continuously monitored by installing suitable monitoring equipment.
- (5) Immediate measures should be instituted to prevent the discharge of acidic waters from the coal storage areas/coal traps into the storm drains and sewers from the coal storage areas/coal traps into the storm drains and sewers of the District of Columbia, into the Potomac River or into Rock Creek.
- (6) Immediate measures should be instituted to prevent the discharge of ashes into the storm drains and sewers of the District of Columbia into the Potomac River, or into Rock Creek.
- (7) GSA should burn only good quality coal in its boilers. Coal samples should be analyzed, prior to being used, to ensure that the coal meets the specifications.
- (8) The damaged steam transmission conduits from the West Heating Plant in the vicinity of the Ellipse in the District of Columbia should be immediately repaired or replaced.

#### TECHNICAL COMMENTS

The following comments apply to various technical aspects of the draft EIS:

- (1) The number of multi-fuel fired boilers to be installed is indicated in the draft EIS as two on page 3 and as three on page 15 Table 1. The latter figure is used in the determination of future air quality from mathematical modeling.
- (2) The formula given to calculate the District's allowable particulate emission from fuel burning equipment on Page 21, Table VII is incorrect. The correct formula is  $0.17455 H^{-0.2352}$ .
- (3) In the event of an oil spill during filling of tanks, provisions should be made to prevent the oil entering the storm sewer.
- (4) The draft EIS does not address the methods of handling dust caused during coal handling. This should be corrected in the final EIS.
- (5) The latest control technology for controlling particulate emissions from coal-fired boilers is the use of fabric filters. Since the subject document does not consider any alternative to a precipitator, we feel that fabric filters and other control equipment should be evaluated.
- (6) The proposed macerated paper storage and handling building and at least one existing building are partly sited in public space. The D.C. Surveyor has no record of a request for a street closing action being filed with his office. The General Services Administration should advise the District of its intent in this matter.
- (7) The G.S.A. should include a traffic circulation plan, maintenance of traffic plan (during construction) and related information in the EIS. We consider this to be pertinent to the draft EIS, and that it should be part of the draft statement. This information is essential if any adverse transportation impacts are to be identified.

GOVERNMENT OF THE DISTRICT OF COLUMBIA,  
EXECUTIVE OFFICE,  
Washington, D.C., June 8, 1976.

Mr. JAMES F. STEELE, JR.,  
Acting Assistant Commissioner, Office of Operating Programs, Public Building  
Service, General Services Administration (Region 3), Washington, D.C.  
(Attention of Mr. William W. Sayers (3-MCTE).)

DEAR MR. STEELE: Enclosed are additional comments of the Executive Branch of the District of Columbia Government on the draft Environmental Impact Statement (DEIS) for the Multi-Fuel Boiler, Central Heating and Refrigeration Plant. These comments have been coordinated by the Municipal Planning Office in collaboration with other District agencies participating in the review of the DEIS, including: the Corporation Counsel, Department of Environmental Services, Department of Transportation, and Department of Housing and Community Development. For your ready reference, a copy of our previous comments is also enclosed.

I wish to express again the District's appreciation for affording us the opportunity to comment on the DEIS. We look forward to working with the General Services Administration to upgrade the operation of the Central Plant to bring it into compliance with District and Federal air and water pollution control laws and regulations.

Sincerely,

BEN W. GILBERT, *Director.*

Enclosure.

COMMENTS ON THE DRAFT ENVIRONMENTAL IMPACT STATEMENT No. EDC-76001,  
MULTIFUEL BOILERS: CENTRAL HEATING AND REFRIGERATION PLANT, WASHINGTON, D.C.

ADDITIONAL COMMENTS

The following comments supplement the District comments furnished to the General Services Administration on May 28, 1976. They have been coordinated with the previous comments and the agencies participating in the review of the subject draft environmental impact statement (DEIS).

DISTRICT OF COLUMBIA URBAN RENEWAL LAND

The DEIS indicates, on page 6, that a macerated paper handling facility is no longer included in the project. However, Site Plan No. 1 of the DEIS shows a structure for paper handling and what appears to be a turn-around for truck service to this facility. The structure appears to be located within the right-of-way of D Street, S.W., and the area for the turn-around appears to require land extending south of the D Street right-of-way.

This land south of D Street and land adjacent to it have been acquired for redevelopment by the D.C. Redevelopment Land Agency pursuant to the Urban Renewal Plan for the Southwest Urban Renewal Area, Project C. The Plan does not provide for the turn-around shown for the paper handling facility. Expansion of the D Street right-of-way to provide for the turn-around would require amendment of the Plan.

The Final EIS (FEIS) should eliminate the apparent conflict of the present description in the text with the site plan for it in the DEIS. The FEIS should also clarify whether or not the project will require any of the urban renewal land along D Street.

Senator MORGAN. If coal is the prime fuel, how can reduction of emissions be achieved when it is essentially a higher pollutant?

Mr. WENDEHACK. The precipitators and the bottom ash handling will take care of the pollutants.

Senator MORGAN. Will this take care of it, and meet the standards?

Mr. WENDEHACK. And meet the standards.

Senator MORGAN. Is there any other way you could achieve a higher degree of clean air?

Mr. GALUARDI. You can burn all oil. But the burning of all oil, we just predict for this last fiscal year, if we did that, burn number two

fuel oil, which is the higher priced fuel, it would cost us in operating costs \$1.2 million a year more than using coal.

Mr. WENDEHACK. We could not meet the capacity unless we had all the boilers converted to oil, and we could still not meet our peak demand. We could handle the average situation. But when you get into the higher requirements—and during the past year, for example, I believe we hit over a million pounds of steam requirement at least one-third of the time, 20 to 25 percent of the time—that without burning coal, we just will not be able to meet the load requirements.

Senator MORGAN. You say it would cost \$1.2 million more. What is the total cost of fuel now, for the 112 buildings?

Mr. WARD. The present budget, Senator, which again is predicated upon a cold winter, the budget I can answer for the District heating system is \$18 million, and 60 percent of that would be fuel.

Senator MORGAN. Sixty percent?

Mr. WARD. Sixty percent of the \$18 million.

Mr. GALUARDI. \$10.8 million.

Senator MORGAN. What precautions have been taken to meet sulfur dioxide standards, for the change in fuel?

Mr. WENDEHACK. We are keeping the quality of oil and coal we buy controlled so that we stay within the sulfur requirements.

Senator MORGAN. What kind of contracts do you have, to insure the quality of coal?

Mr. GALUARDI. The Defense Supply Agency is the main agency which buys all fuels. GSA buys under their contract. We have been buying basically from the same line for many years, Island Creek Coal Co. I am not sure where they are located. I think it is West Virginia.

The sulfur content both of the oil and coal is very critical. The States have established different kinds of standards with regard to the sulfur dioxide emissions. Virginia and Maryland have decided that you measure the sulfur dioxide emissions at the stack. The District of Columbia has stated they want to measure the sulfur at the fuel that is being imported.

Therefore, they have established a standard, and we have to buy the fuel which you test the fuel itself to measure the sulfur in it. Therefore, we are buying the fuel from Island Creek Coal Co. It is the lowest sulfur coal we can get. I think it is .9 percent.

Mr. WENDEHACK. The only other alternative we would have in the future if coal or oil was not available would be, like any other plants that have to meet the requirements, to go to scrubbers.

Mr. GALUARDI. There is a problem with sulfur in oil also, which is critical. Basically what you try to do here is make sure the heating system furnishing the Federal agencies in the District of Columbia, do not have to rely upon imported oil.

At the present time, the oil which is necessary that has the lowest sulfur content only comes from overseas. There are no internal, within the United States, plants which produce the low sulfur oil, at least on the eastern seaboard. Most of the oil has to come from overseas. Most of it is coming from Venezuela. It is all imported oil. You have to get the low sulfur content oil.

The other problem we have is the distribution system is not set up to give you that low sulfur oil. They have to have a large enough customer to be able to furnish you with that low sulfur oil.

We have not yet made the total contractual arrangements with those distribution people to get the low sulfur oil. Basically I go back that these two boilers are needed so that the U.S. Government does not become dependent on overseas oil to keep the Federal agencies in warmth in the District of Columbia.

Senator MORGAN. From the prospectus and what you say, I think you have established a reasonable need for this work. But I have no other real way of knowing, except from what you say.

The thing that worries me is that we don't have any system of checks on the request. I have no way of knowing whether your estimate is high or low, except what I read in here about cost overruns.

I frankly feel we ought to have some better determination of cost, and how it is going to be handled, before we go ahead with approval. But I am not completely prepared to proceed this morning.

If we approve the project, and you start it, are we going to be confronted with another cost overrun, like the Visitors Center? These are the things I wish I knew.

Mr. GALUARDI. We would know the answer to that very shortly because we would expect that we would put this contract on the market and have it ready for awarding in about a 3-month period. At that time we would know for sure whether or not we have the right authorization. We would not be able to proceed with the award of the contract if it does exceed the authorization.

Senator MORGAN. Why did they award the contract for the Visitors Center, if it was not within the limits of their authorization?

Mr. GALUARDI. We don't handle the Visitors Center. The National Park Service does.

Senator MORGAN. I thought you did this for all Federal buildings in Washington.

Mr. WENDEHACK. Not special purpose type buildings; only office type buildings.

Senator MORGAN. Aren't they bound by the same laws that GSA is, with regard to letting contracts?

Mr. GALUARDI. They are, yes.

Senator MORGAN. Would GSA let a contract like that, for a Federal building in Washington?

Mr. GALUARDI. I am not familiar with their problems. I think it is a contract claim that is causing the overrun on the National Visitors Center.

Senator MORGAN. What do you mean, a contract claim? Changes?

Mr. GALUARDI. It is a change of some sort; either a design error or added scope of work. I am not familiar with it.

Mr. WENDEHACK. I think we have a very good track record in avoiding cost overruns. I think our estimates are usually very sound. Assuming we get appropriations for the money to spend on it and within the time frame of the original prospectus budget, then we have had a very good record as far as staying within our authorization.

Senator MORGAN. If this committee recommends approval, will you give me positive assurance that GSA will not let the contract for this work unless it comes within the authorization, unless they come back first to this committee?

Mr. WENDEHACK. We will give you our 100-percent assurance. That is our policy.

Senator MORGAN. I assure you if I am still on this committee, and if you don't do that, you will have trouble getting any more authorizations.

Mr. WENDEHACK. That is our policy. Our regional offices recognize that. That is the policy we follow. We do not proceed with a project unless we have a prospectus approved and unless we have the limit.

We do have under the law 10 percent authority to escalate a prospectus. I think you are aware of that.

Senator MORGAN. I know that. But if we approve this contract, will you give me the assurance that you won't let the contract, even with a 10-percent escalation?

Mr. GALUARDI. We wouldn't be allowed to anyhow because the 10-percent escalation has to occur. Since the authorization is about to occur and we are about to award the contract, there is no way we could use the 10-percent escalation factor anyhow.

We do not use the 10 percent at all. We are in a better position on this contract than we are on most others because we already have it designed. With a design you can be more specific as to what the cost is.

Your cost estimators have something to actually look at. They can come a lot closer. You have to realize the cost is whatever the market says it is going to cost and not necessarily what estimators say it is going to cost.

So we are about to go out and find out what the cost is when we place it on the market. We feel we have a good estimate and we will get good prices from contractors. However, there is a limited number of contractors who can do this work. Now in the United States it is turning out that the number of people who have the capability of providing these kinds of facilities are rapidly decreasing. We are somewhere between a very small boiler for small commercial operations and the very large ones that are built for heating in power companies. So we are somewhere in between.

The number of people building that kind are rapidly disappearing. So therefore we have to presume we are going to get a very good price from those people.

Mr. WENDEHACK. We will give you our word, my word, that we will come back here if there is any problem.

Senator MORGAN. That I appreciate, because this other system worries me.

Senator Buckley has some questions and would like you to submit written answers. I also would like to reserve that right, for any other committee members.

Mr. WENDEHACK. All right, sir.

Senator MORGAN. If any committee member has questions, we will get them to you.

[Responses to additional questions follow:]

UNITED STATES OF AMERICA  
GENERAL SERVICES ADMINISTRATION  
WASHINGTON, DC 20405



August 6, 1976

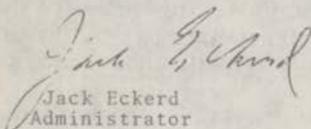
Honorable Robert Morgan  
Chairman, Subcommittee  
on Buildings and Grounds  
Committee on Public Works  
United States Senate  
Washington, DC 20510

Dear Senator Morgan:

We appreciate your continued interest in the Central and West Heating Plants Prospectuses. Answers to your question submitted by your letter of July 23, 1976, are attached. This is a complicated project that has stimulated a very thorough review by all interested parties. We hope in our answers that we have been fully responsive.

If there is any way we can be of further assistance to your Committee in this matter, we stand ready to oblige and will coordinate with your very tight schedule.

Sincerely,

  
Jack Eckerd  
Administrator

Enclosure

## CENTRAL AND WEST HEATING PLANTS D.C.

## ANSWERS TO SENATE QUESTIONS

August 2, 1976

1. **QUESTION:** A prospectus submitted on May 1970, stated there were six coal-fired boilers at the Central Heating Plant, approaching the end of their useful life, and proposed replacement with new gas-fired units. Installation of new precipitators was also proposed. This was approved June 1971, and \$10,795,900 authorized for the work. What has been done since then?

**ANSWER:** Contract was awarded on July 25, 1972, to provide for installation of 3 oil-fired units and precipitators. In line with the President's message to Congress November 8, 1973, The Effects of the Oil Embargo, the conversion project was stopped on December 12, 1973. This stoppage has resulted in only two oil-fired units and precipitators being installed.

2. **QUESTION:** A contract was awarded in 1972 for removing four of the six old boilers and installing three new oil-fired units. Why didn't the contract specify removing and replacing all six, as the prospectus authorized?

**ANSWER:** During the design phase of the project, it was determined by the architectural engineer that the replacement of the six coal-fired boilers could be accomplished with the installation of three new oil units having the same total capacity as six of the smaller units. Accordingly, it was only necessary to remove four of the old units and, in order to keep the project cost within the prospectus authority, it was decided to abandon the remaining two units in place.

3. QUESTION: Why was it then proposed to install oil-fired units when gas-fired units had been authorized only the year before?

ANSWER: At the time that the prospectus was prepared in the fall of 1969, GSA authorized design of the Central and West Plants to be converted to natural gas firing. The prospectus dated May 6, 1970, was approved by the Senate on June 11, 1970, and by the House on June 23, 1971.

At the same time, the Clean Air Act of 1970 and Executive Order 11507 dated February 4, 1970 entitled "Prevention, Control and Abatement of Air Pollution at Existing Federal Facilities" provided direction for GSA to select gas and oil for all heating plants resulting in the virtual elimination of coal burning. By June 1971, the architect-engineer presented a final design report which contained the provision to burn natural gas, Number 2 fuel oil and Number 6 fuel oil. The inclusion of oil firing capability was logical because the boiler configuration for oil is the same as for gas.

Soon after award of the construction contract on July 25, 1972, the Washington Gas Light Company advised that it could not provide us with natural gas except for lighting off purposes. We were immediately confronted with the realization that we were reduced to a single fuel capability. On January 8, 1973, the Federal Power Commission issued a policy statement which placed natural gas used as boiler fuel in the lowest priority of service for pipeline companies which find it necessary to curtail deliveries.

4. QUESTION: Only two old boilers were removed and only two new ones were installed, along with new precipitators, yet the work cost \$11 million. This is the same as originally estimated for replacement of all boilers. What happened?

ANSWER: Please note that the \$11.4 million includes \$653,000 of prospectus authority approved in Prospectus No. 1, dated April, 1963. Work completed against the first prospectus amounted to \$581,900, leaving a balance for uncompleted work of \$10.9 million. The contract for installing the two new boilers along with precipitators was awarded in July, 1972, in the amount of \$9,214,349. Please note that the cost of three boilers approaches the cost of the replacement for six boilers because they provide the same capacity. Although the original contract provided for three boilers, one was subsequently deleted (see credits under Question No. 7). Work now accomplished in the plant has been summarized in the answer to Question No. 6.

The work stoppage left four old coal boilers in place. Because the space was not needed for the two new boilers, and, to conserve funds, only two of the boilers were removed.

5. QUESTION: Was installing the Zeolite water softening equipment, now requested, a part of the original contract? If not, why wasn't suitable equipment installed so the two new boilers could be operated at full capacity?

ANSWER: The prospectus 08-0001-2 dated May 6, 1970, did not speak to the matter of Zeolite water softening equipment. The interim report of the designer, dated September 1970, stated "Depending on the results of an up-to-date water analysis of the new boilers, it is presently felt that this system will be adequate for the future plant needs." At that time, the boiler sizes had not yet been determined.

The invitation to bid did go forth (Contract GS-03B-15693) with no additional water treatment for the 400,000 pph oil and gas-fired boilers. However, the boiler manufacturer of these two boilers thereafter stated his requirements to be zero hardness. Therefore, GSA, through more studies and in consultation with its water chemistry consultant, Hall Laboratories, Calgon Corporation and the boiler manufacturer, resulted in the conclusion that the maximum hardness of the water be limited to zero hardness. The existing feedwater equipment used for the coal-fired boilers allowed 15 ppm hardness, therefore, it was mandatory that GSA obtain additional feedwater softening equipment for the two oil-fired boilers. Therefore, in the summer of 1974, it was estimated that we could install an additional water softening capability as an interim answer to the problem for the two oil boilers within our authority (under \$500,000). Procurement for the Zeolite tanks was started on August 20, 1974, and delivery occurred prior to April 1976.

However, while waiting for the delivery of the Zeolite equipment, the development of the total plan and prospectus for the Central Plant continued, and it was during this period that it was determined that it would be in the best overall interest of the Government to include a total water softening system in the proposed prospectus, one which would take care of the two additional multi-fuel boilers, including all the necessary piping and pumps, the deaerating tanks, and demolition, and structural changes necessary for a complete integrated feedwater system. Since the total cost of the total water-treatment system for the two oil boilers and the two new multi-fuel boilers requires specific Congressional approval anyway, the Zeolite equipment is included as part of the \$1,832,000 as listed in the current prospectus.

6. QUESTION: In testimony given by GSA at our recent June 18 hearing it was stated that only part of the \$11.4 million authorized had been obligated. How much actually was, and for what?

ANSWER: All of the \$11.4 million authorized has been used as itemized below for both prospectuses:

Projects completed:

Renovation and extension of elevator	\$	93,188
Improvements to high voltage system		16,283
Repair of electrostatic precipitator		93,215
Additional roof access		8,141
Modernization of electrical drive-ash pumps		49,348
Installation of additional ash tanks and lines		73,271
Replacement of coal chute		32,566
Replacement of stoker drives and two feed pump turbines		144,606
Boiler ash pits and supports rebuilt		71,282
Installation of additional transformer and modifications to electrical system		51,887
Replacement of low voltage switchboard		46,786
Replacement of two boilers	*	10,255,827
Extension of chimney stack		63,455
Installation of air compressor		33,500
Installation of precipitators for two new oil boilers		333,140
Rewiring and waterproofing of electrical conduits		39,750
Winterization of cooling tower		23,550
		<u>\$11,443,800</u>

\*See credits Question No. 7

7. QUESTION: It was also stated that GSA is now in the process of receiving credits from the contractor, but the exact amount is not yet known. What was deleted from the contract?

ANSWER: GSA has received credits from the contractor for the deletion of one boiler and four oil storage tanks in the amount of \$1.5 million. As to why we did not get more than \$1.5 million back, costs other than the manufacture of the boiler were involved, i.e., contractor's overhead costs for his time, travel, other manufacturing or order costs, etc.

8. QUESTION: Isn't there some record or documentation of work actually done by the contractor? If not, how can the credits be figured?

ANSWER: Yes. On large construction projects of this size a CPM is prepared at the beginning of the project and is updated regularly to determine what items of work have been completed by the Contractor.

Also, a Construction Progress Report is completed each month during the work period from which the value of completed work and its percentage of the entire project can be determined.

The most effective way of determining the amount of work actually done by the Contractor is by visual inspection of the work in the field. Visual inspection, in addition to testing of equipment, provides the basis of how each item of work is paid for.

9. QUESTION: Is any litigation now in progress, or anticipated?

ANSWER: There is no litigation in progress or anticipated with regard to the Central Heating Plant construction contract.

10. QUESTION: The testimony states some work was done on a third boiler. What was done?

ANSWER: No field work was done on construction of a third boiler. However, the boiler manufacturer had fabricated only the boiler drums for the third boiler. This equipment was sold back to the contractor by the Government for a 100% credit.

The fuel oil storage and transfer system which is a shared facility was installed with capacities to serve three oil-fired boilers. Because significant redesign of the system would have been required, it was determined not to change the capacities of the pumps and piping system to serve two oil-fired boilers. However, the storage capacity of the system was reduced by 40%.

11. QUESTION: Have both the new oil-fired boilers now in place been accepted by GSA, without qualification?

ANSWER: The new oil-fired boilers have now been accepted and are going through the normal procedure associated with a large construction project to correct deficiencies and omissions. Final payment to the Contractor is being withheld until all deficiencies and omissions are corrected.

12. QUESTION: One of our staff recently looked at these two new boilers and was advised of numerous deficiencies, which he observed. As an example, two of the four burners in one of them were not working, and two in the other could not generate enough heat to "purge" or clean the unit, which is a routine operational necessity. Why is this, and what is being done about it?

ANSWER: All burners now work in boilers 3 and 4 and can be manually purged at any time. These items are on the contractor's list for automatic purging at his expense. These items are part of the deficiencies and omissions (D's & O's) mentioned in the answer to the previous question.

13. QUESTION: We were informed that all of the main valves are leaking, even though some have been replaced or repaired, and pressures cannot be maintained. This includes not only the temperature control valves but the blowdown valves, which will not hold. Who will replace these, and when, and who will pay for it?

ANSWER: The only valves known to be leaking on the new boilers are two 2 inch steam valves on the atomizing steam systems and blowdown valves on the rear of the new boilers. Two new 2 inch valves have been procured and will be installed during the summer shutdown for repairs. The blowdown valve stem length of travel appears to need readjusting. All of the above items are on the deficiencies and omissions (D's & O's) list for correction by the contractor at his expense.

14. QUESTION: A long handled rod must be used to adjust the bypass valves manually, so that oil temperatures can be maintained. This is guesswork, and temperatures cannot be adjusted automatically by the console controls, which makes the system undependable. How is this explained, and what is going to be done about it?

ANSWER: The original temperature control elements for the oil heaters were manufactured for a minimum pre-heat of 180 degrees, which is too high in view of the high viscosity of the fuel oil now being received. Those pre-heat control elements have been replaced with 120 degree elements which permits a lower temperature, better viscosity and better atomization for burning, correcting the problem. Prior to replacement of temperature control element, a reach rod was installed on a steam bypass valve to permit manual control of oil temperature. While this required more operator attention, it was not "guesswork" because a thermometer was available on the operating floor to indicate oil temperature.

The reference to "console controls" is not understood since there are no oil temperature controls associated with the control console.

15. QUESTION: We are informed that the contractor who installed the boiler control consoles has since gone bankrupt. Who does GSA turn to, for correction of these deficiencies?

ANSWER: The above comment is apparently a reference to a sub-contractor. This equipment is presently under warranty by the manufacturer against defects in fabrication and installation until December 15, 1976, for Boiler No. 3 Control Panel and February 9, 1977, for Boiler No. 4 Control Panel. If problems arise which are deemed to be covered by the warranty, the Government will work through the prime, general contractor to get the problems corrected. After warranties expire, GSA will be responsible for maintenance and repair of equipment. Prior to settlement of the contract, all "punchlist" items (D's & O's) and equipment tests will be complete and approved.

16. QUESTION: Another thing is that flue ash is not being removed, due to insufficient heat, and must be wetted down and hauled away. What effect has this had on the operation generally, and how will the situation be corrected?

ANSWER: This comment is not understood. The flue ash (which is fly ash) is being removed in a normal manner by the dry ash handling system. To prevent particles from blowing they are "wetted down" during transportation away from the plant. There is no effect on operations and no situation requires correction.

17. QUESTION: We are told that water going through the two new boilers is being treated with a mixture of lime, soda, and phosphate, fed by hand into a mechanical mixer. However, this tends to build up in the tubes, creating a serious problem. How will installation of the proposed new Zeolite equipment correct this?

ANSWER: Water treatment for all boilers at Central Heating Plant is presently in two stages. In the first stage (pre-boiler) lime and soda are fed. These chemicals are fed by hand into chutes leading to mixing tanks. The feed from these tanks is automatic and in proportion to the amount of water which must be added to the system to replace losses. The result of this pre-boiler treatment is a reduction of water hardness to approximately 15 parts per million and a reduction in dissolved solids.

The second stage of water treatment takes place inside the boilers. Chemicals are added to the boiler feedwater line from a separate chemical feed system to react with the water hardness minerals to form a less adherent sludge instead of hard, adherent scale. Some of this sludge is removed by blowing out sludge and water from the lowest parts of the boiler. If the chemicals sodium phosphate and sodium hydroxide were not present, instead of sludge being formed, a hard scale would result in the boiler tubes.

The new oil boilers are of modern design "High Heat Release" per cubic foot of furnace volume. Therefore, at the higher loads, say above 200,000 pph, the heat flux at various places with respect to the flame placement can approach a condition causing "film boiling" in the tube rather than nucleate boiling. This results in local high tube metal temperature which rapidly attracts any depositing type material which insulates the tube metal from the water, heating the tube more, until it is ductile and tube rupture occurs.

The new Zeolite equipment will provide the pre-boiler water treatment which will reduce water hardness to zero.

18. QUESTION: The prospectus indicates a cost of \$1.8 million for installation of feedwater system. How much of this is for the Zeolite installation?

ANSWER: The Zeolite equipment is not a system by itself but is a part of the total feedwater system and cannot be operated independently. There is no logical way of breaking out the cost separately. The total feedwater system, as shown in the prospectus, includes pumps, piping, deaerating tanks and Zeolite equipment.

In reality the total feedwater system at an estimated cost of \$1.8 million includes the 8 Zeolite tanks purchased for \$263,638. The total system will include pumps, deaeration tanks, piping, related items, and will also include demolition, electrical and structural changes in the plant itself.

19. QUESTION: The response to one of the questions posed by Mr. Braithwaite of our Committee staff refers to formation of sulfuric acid when boilers are operated at less than 150,000 lbs. per hour capacity, which causes scaling and contributes to the pollution problem when lines are drained. What effect does this have on the plant's overall operation?

ANSWER: Operation at less than 150,000 lbs. per hour causes sulfuric acid to be deposited in the electrostatic precipitators. This acid will attack steel and will ultimately destroy the precipitators. Boilers running without the precipitators intact result, in atmospheric pollution. The result, therefore, of operating at less than 150,000 lbs. per hour would be that these two new boilers would become unusable, probably in 1 to 2 years, until the precipitators were replaced. However, the boilers will not be operated at less than 180,000 pph.

20. QUESTION: Information furnished further states that the project is designed to install six Zeolite water softening units, and that treatment will be adequate "as soon as authorization by Congress and operating conditions permit." We have already heard about Congress delaying this work, but what are the operating conditions that must permit it to be done?

ANSWER: The installation of the Zeolite units involves removal of some existing water treating equipment (to provide space), structural alterations, and re-piping of the basic feedwater system. Since the Feedwater System is common to all boilers, the work can only be done during times the plant can be shutdown completely for a period of 6 months, which is during summer months. During this summer months shutdown, the West Heating Plant will be able to carry the lower summer load.

21. QUESTION: GSA already has this Zeolite equipment, haven't they, which we are told is so necessary and so critical? Why hasn't it been installed?

ANSWER: GSA prudently purchased these units in advance, to speed up their availability for installation. They are a long term procurement item with about a year elapsing between purchase order and delivery. The pre-purchase was an effort to shorten the exposure of the boilers to hardness in the boiler feedwater.

The new water treatment system will serve both the existing two oil fired boilers and the proposed two multi-fuel boilers as an integrated system. We could have installed the Zeolite equipment into the existing system to serve only the oil boilers, but opt to wait for a total system serving all four boilers thereby obtaining a more efficient system at a more economical cost.

22. QUESTION: When was it procured and how?

ANSWER: The procurement started August 30, 1974, on a request for quotes No. 117952 and delivery occurred prior to April 1976.

The need was known, the specifications were available, the design was complete, the estimated cost was within GSA's authorization and the funds were made available. The purchase was made through normal channels by the GSA Federal Supply Service, on the open market, by soliciting bids and awarding to the low bidder to fabricate and deliver.

23. QUESTION: Why is it included, at this late date, in the prospectus now before us?

ANSWER: See answer to Number 5.

24. QUESTION: This prospectus, which has been reviewed by OMB and submitted to our Committee for approval, requests installation of two new boilers. We have learned that only a year ago GSA advertised for bids on installing two additional new boilers at the Central Heating Plant. Why was this not submitted for the Committee's approval?

ANSWER: The FY-75 R&A appropriation contained \$10.2 million for the purchase of two boilers. Under the then schedule, it was planned to have the prospectus for the heating plant before the Congress and hopefully approved during fiscal year 1975. Because of the tight time frame involved, solicitation was placed on the market for the purchase of two boilers in anticipation of the prospectus being submitted to and approved by Congress. However, because of administrative and other delays experienced in processing the prospectus, the prospectus was not submitted on time and the bids were therefore cancelled for lack of authority.

25. QUESTION: Under what authorization was it done and why was no mention made of it, either in the current prospectus or elsewhere?

ANSWER: See answer to Number 24.

26. QUESTION: What is GSA's real plan for the Central Heating Plant? How many new boilers do they really want, and why haven't they been more candid with the Committee?

ANSWER: GSA really wants a heating system that is (1) reliable, since the measure of a heating system's success is continuity of operation; (2) efficient, since we wish to operate economically burning the most plentiful and economic fuel; (3) effective, since we desire safety of personnel and plant and conformance to environmental constraints.

GSA's real plan for the Central Heating Plant is as stated within the prospectus awaiting approval. We really want the two new multi-fuel boilers so that we can meet the anticipated steam demand through 1985. We have no comment on the candid inference other than that statement is unjust and unwarranted.

27. QUESTION: We are told by GSA that if this project isn't promptly approved, the funds appropriated for it in the FY-1976 budget will be lost. Please explain this.

ANSWER: The FY-76 funds for this project will not be lost since GSA has carryover authority of \$40 million.

28. QUESTION: We have been informed that the same argument was used last year when GSA wanted to go out for bids on two new boilers. Are there any comments? Was the money lost, or will it be?

ANSWER: Please refer also to Question No. 24. In FY-75, we had \$10.2 million in the budget (one-year money - no carryover), and since we could not award the Central Heating Plant, the money was used to accomplish other high priority projects in 1975 that were programed for 1976.

29. QUESTION: Didn't the appropriations bill for FY-76 stipulate that funds would remain available until expended?

ANSWER: Yes, in FY-76 \$40 million out of the appropriation bill can be carried over.

30. QUESTION: Testimony was given at the hearing that GSA has a current requirement for more than 1.4 million lbs. of steam per hour. How was this determined?

ANSWER: A 10 year analysis of maximum steam demand in pounds of steam per hour discloses a peak of 1,295,000 on January 9, 1970. The average temperature for that day was +8°F with one inch of snow, a wind velocity of 21 mph, and 52% of possible sunshine. The low for the day was +4°F and the day previously was windy and cold. January, 1970, was the coldest month in the past 10 years.

Weather statistics show that this +4°F or a lower temperature can occur every 5 years. We choose the +4°F temperature base on a 10 year basis rather than a more severe recorded -6°F on a 50 year basis. This selection is not conservative, but, reflects an engineering decision which is also the basis upon which the membership of the International District Heating Association determines its maximum possible de-rated hourly steam generation capacity.

January 9, 1970, peak of 1,295,000 pph supplied a calculated 36,553,000 gross square feet of building area overall. Since then and until the winter of 1975 - 1976, an estimated 7,232,740 gross square feet of space was added to the system and 3,389,000 square feet of space was deleted, for a net increase of 3,843,740 square feet of area. This 10.8% increase in space equates to an anticipated steam demand increase of 1,430,000 pph, provided the same meteorological conditions exist as did on January 9, 1970.

Washington, D.C. is experiencing a long range average temperature rise anticipated to begin declining by 1979. Such decline will increase the probability of reaching or exceeding GSA's projected maximum steam demands.

31. QUESTION: Backup information furnished to us indicates that 36.6 million square feet of building area were being served by the two heating plants in 1970. But this included the old Navy and Munitions buildings which had large open areas and were badly insulated, in addition to other obsolete structures that have been demolished. Is it fair to compare the load required to heat these buildings with the much lesser output required for modern office buildings constructed since that time?

ANSWER: It is a more than fair comparison since 2,800,000 square feet out of 3,400,000 square feet vacated were composed of Navy-Munitions Buildings which were low heat loss buildings (i.e. reinforced concrete construction.)

The new James Forrestal Building, Federal Reserve Annex, Hirshorn Museum, J. Edgar Hoover FBI Building, Department of Labor Building, U. S. Tax Court, South Portal Building, and Air and Space Museum are testimonies to the spirit of architectural freedom. They are acres of glass, open underneath to the breezes of winter, and some contain miles of hot water distribution systems where the radiators are located at the exterior glass, immediately subject to freezing in the event of steam curtailment.

Even if we granted that these new buildings are considered to be more impervious to transmission of heat, it must be recalled that the vast majority of the building being served in 1970 were heavy monumental structure buildings such as the Federal Triangle.

32. QUESTION: Data furnished by GSA, also, indicates future requirements by 1980, which include an expanded Bureau of Engraving Building, a downtown Eisenhower Civic Center, and new S.W. Federal Employment area. Why is it believed that any of these will ever be constructed?

ANSWER: All of the projects proposed were the result of the planning available at the time the last survey was made. The Bureau of Engraving Building prospectus was before Congress. The Eisenhower Civic Center was a viable project at the time and is still being talked about. Like the Pennsylvania Avenue Project, it lived, died, and now is resurrected.

The S.W. Federal Employment Area was a project planned for 1978. In view of new budgetary considerations it will be slipped to 1980 - 1981.

All of the buildings listed were the buildings most likely to be approved for construction, according to the many sources contacted, i.e., D.C. Government, Department of the Treasury, Smithsonian Institution, etc. The art of planning is to anticipate success. Our objective is to provide economical steam upon demand, both efficiently and safely.

33. **QUESTION:** We are told the highest recorded demand was 1.3 million lbs., and this was when the obsolete buildings were being serviced, including several old WW I structures, all of which have since been torn down. The 11 boilers now operating have a combined of 2.3 million lbs. or 77 percent in excess of the maximum recorded demand. If the four old boilers in the Central plant were retired, there would still be a 1.7 million lbs capacity, or nearly 30 percent over that required. Why are any new boilers needed?

**ANSWER:** The combined capability of the boilers at the Central and West plants is 2.3 million pounds of steam per hour (pph):

	<u>Coal</u>	<u>Oil</u>	<u>Total</u>
Central	4 @ 150	2 @ 400	1,400 pph
West	3 @ 175	1 @ 200	
		1 @ 175	+900 pph
Eleven boilers including 4-43 yr. old coal boilers			<u>2,300 pph</u>

Since the four coal boilers at the Central Plant must be retired, we take away 600

Total derated capacity of seven (7) boilers	<u>1,700 pph</u>
	-600 pph

We must prepare for the eventuality of the largest boiler at each plant being out of service at any one time. Accordingly, we must take away one 400 from Central and one 200 from West

Net reliable capacity of five (5) boilers	<u>1,100 pph</u>
	(Standby Capacity) -600 pph

With two new multi-fuel boilers, we can add 440	<u>+440 pph</u>
	<u>1,540 pph</u>

Our calculated peak demand was 1,430,000 pph in 1975 with a projected maximum steam demand of 1,540,000 pph in 1980 and 1,653,000 pph for 1985.

**NOTE:** WHILE A NUMBER OF OLD BUILDINGS WERE DISPOSED OF, MANY NEW BUILDINGS WERE ADDED, MORE THAN OFFSETTING THE LOSS OF SPACE (SEE ATTACHMENT A).

Gross Square Feet Served By  
The Central And West  
Heating Plants  
1970 - 1980

<u>Year</u>	<u>Gross Square Feet (GSF)</u>
1970 (Base)	<u>36,553,000</u>
 <u>Added</u>	
D.C. Library, October, 1972	344,000
Federal Reserve Annex, October, 1973	215,000
Hirshhorn Museum, November, 1974	170,200
J. Edgar Hoover Building, November, 1974	2,397,000
Department of Labor Building, November, 1974	1,802,000
U.S. Tax Court, June, 1974	217,000
South Portal Building, December, 1975	887,540
Air and Space Museum, December, 1975	<u>1,200,000</u>
TOTAL	<u>7,232,740</u>
 <u>Deleted</u>	
Navy Building, March, 1970	1,428,000
Munitions Building, March, 1970	1,428,000
Temporary Building E, March, 1970	215,000
1300 E Street, March, 1970	71,000
1711 New York Avenue, March, 1970	215,000
Winder Annex, 1974	9,000
1723-25 F Street, 1974	<u>23,000</u>
TOTAL	<u>3,389,000</u>
 <u>To Be Added Before 1980</u>	
Federal Home Loan Bank Board	400,000
National Gallery of Art Annex	591,000
District of Columbia Courthouse	700,000
1951 Constitution Avenue (Extension)	<u>100,000</u>
TOTAL	<u>1,791,000</u>

ATTACHMENT A

34. QUESTION: Further, we are informed that the 2.3 million lbs. capacity figure shown is one arbitrarily "de-rated" by GSA, reflecting a 20 percent reduction below the actual rating. Wouldn't that indicate a current excess of more than 100 percent, based on the highest recorded demand of 1.3 million lbs. Doesn't it also indicate a 93 percent excess over the 1.43 million lbs. now stated as GSA's current need?

ANSWER: The 2.3 million pph capacity was not arbitrarily derated by GSA. Boilers and their auxiliaries are built to produce a given amount of steam. This is called the boiler "Name Plate" capacity. As equipment ages, it reaches a stage of deterioration so that maintenance and repair cannot keep it operating at a full load condition or at an economical cost. The load that a boiler can actually carry at normal operating conditions is called the "derated" capability. It is not possible to accurately predict the actual, or derated capability at any future time because of many unknown factors. For example, the capability of a boiler may improve after replacement of a major piece of auxiliary equipment.

Estimates concerning the system capability are based upon experience which indicates that two boilers can be out of service for repairs when an on line unit fails. With the planned replacement of critical auxiliaries for boilers at the West Heating Plant and the replacement of some boilers in the Central Heating Plant, the reliability of the total system will be significantly improved.

It is assumed that only one boiler would be down for repairs during the peak load condition and that one could fail at any time. Because of rapidly changing conditions, the inability to accurately predict future available fuels and the conditions and repairs of boilers, projections past 10 to 15 years in the future are difficult. However, these data indicate that the proposed system will be adequate unless unforeseen construction adds significant amounts of new space.

All of the original major equipment is still in service and a major portion of the equipment has become obsolete. Spare parts can no longer be obtained and most are exceedingly costly to fabricate "in house". Many parts cannot be fabricated, and the equipment will have to be replaced upon failure of these critical parts. This situation causes excessive maintenance and repair costs, with boilers being unavailable when needed because of delays in repairs.

The existing coal-fired boilers will no longer produce steam at their rated capacity, due to the degeneration of tubes, fire boxes, stokers and auxiliary equipment.

The current system frequently has three units forced out of service at one time. During December, January and February of 1973, 1974 and 1975, there were two or more boilers out of operation 46.7% of the time. During the same heating seasons (December through February); there were 37 days when three or more boilers were out of operation due to malfunctions. Therefore, we know that three boilers can be out of service during peak load periods.

Attached are three papers supplementing this matter:

1. Comparison of International District Heating Association statistics depicting the maximum hourly send-out capacity (derated) together with the percent of capability of 40 steam heating systems. GSA will compare very favorably with the IDHA 72% capability utilized, i.e., GSA will have total capacity of 2,140,000 pph, with the two multi-fuel boilers operating and assuming one 400,000 pph boiler and one 200,000 pph boiler incapable of being fired for a percent capacity utilization rate of 71.9%.
2. Specific causes of boiler failure
3. Effects of a system failure

## COMPARISON OF IDHA STATISTICS

(IDHA Statistics are for Calendar 1974)

Co. No.	City	Company Name	Actual Maximum Hourly Send-out		Maximum Hourly Send-out Capacity		% of Capacity used
			M	lb	M	lb	
1.	New York, NY	Consolidated Edison Co. of NY*	12,740		15,130		84.2
2.	Philadelphia, PA	Philadelphia Electric Co.	2,482		3,857		64.2
3.	Detroit, MI	Detroit Edison Co.	1,728		2,971		58.2
4.	Boston, MA	Boston Edison Co.	1,850		2,005		92.3
5.	Indianapolis, IN	Indianapolis Power & Light Co.*	1,292		1,735		74.5
6.	Rochester, NY	Rochester Gas & Electric Corp.*	1,118		1,875		59.6
7.	Milwaukee, WI	Wisconsin Electric Power Co.*	915		1,640		55.8
8.	Baltimore, MD	Baltimore Gas & Electric Co.*	678		990		68.5
9.	Cleveland, OH	Cleveland Electric Illuminating Co	896		1,320		67.9
10.	Dayton, OH	Dayton Power & Light Co.	508		982		51.7
11.	Denver, CO	Public Service Co. of Colorado	440		580		75.9
12.	Pittsburg, PA	Allentgheny County Steam Htg. Co.	668		1,041		64.2
13.	Seattle, WA	Seattle Steam Corp.	598		925		64.6
14.	Toronto, ON, Canada	Toronto Hydro-Electric System	434		560		77.5
15.	Harrisburg, PA	Pennsylvania Power & Light Co.	376		500		75.2
16.	San Francisco, CA	Pacific Gas & Electric Co.	330		375		88.0
17.	Lansing, MI	Board of Water & Light	223		430		51.9
18.	Grand Rapids, MI	Consumers Power Co.	234		280		61.6
19.	Duluth, MN	Duluth Steam Corp.	227		320		70.9
20.	Akron, OH	Ohio Edison Co.	205		307		66.8

\* These companies were closely compared to the District Heating System.

COMPARISON OF IDHA STATISTICS  
(IDHA Statistics are for Calendar 1974)

Co. No.	City	Company Name	Actual Maximum Hourly Send-out M 1b	Maximum Hourly Send-out Capacity M 1b	% of Capacity used
21.	Vancouver, BC, Canada	Central Heat Distribution Ltd.	260	535	48.6
22.	Eugene, OR	Eugene Water & Electric Board	141	580	24.3
23.	Winnipeg, MB, Canada	Winnipeg Hydro CSH Division	225	390	57.7
24.	Spokane, WA	Washington Water Power Co.	280	457	61.3
25.	Toledo, OH	Toledo Edison Co.	190	305	62.3
26.	Birmingham, AL	Alabama Power Co.	203	476	42.6
27.	Youngstown, OH	Ohio Edison Co.	183	260	70.4
28.	St. Paul, MN	Northern States Power Co.	240	350	68.6
29.	Hartford, CT	Hartford Steam Service Co.	155	339	45.7
30.	Rochester, MN	Rochester Public Utilities	90	150	60.0
31.	Houston, TX	Houston Natural Gas Corp.	150	375	40.0
32.	Wilkes-Barre, PA	Wilkes-Barre Steam Heat. Co.	158	341	46.3
33.	Concord, NH	Concord Steam Corp.	65	112	58.0
34.	Piqua, OH	Municipal Power System	59	80	73.8
35.	St. Joseph, MO	St. Joseph Light & Power Co.	80	150	53.3
36.	Springfield, OH	Ohio Edison Co.	79	258	30.6
37.	Southfield, MI	Dayton Hudson Properties	42	110	38.2
38.	Nashville, TN	Nashville Thermal Transfer Corp.	65	218	29.8
39.	Rice Lake, WI	Rice Lake Steam Corp.	-	-	-
40.	San Antonio, TX	City Water Board	23.1	80	28.0

Specific Failures or Malfunctions of Equipment

While the obsolescence and deterioration of the basic equipment or units of the District Heating System create problems, curtailments of steam often result from the failure or malfunction of specific parts of the oil-fired boilers. Among the parts that malfunction or fail are these:

- Induced draft (I.D.) fan speed detectors
- Forced draft (F.D.) fan speed detectors
- Flame detectors
- Air control instruments
- Electric switching transients
- Annunciator cards
- Atomizing steam valves
- Oil pressure regulators
- Oil pump/heater sets
- Water level controllers
- Solenoid valves
- Gas ignition
- Feedwater pumps
- I.D. fan drives (many modes)
- F.D. fan drives (many modes)
- Boiler tubes
- stoker drives (many modes)
- Connecting rods on stokers
- Stoker drive controllers
- Grates (many modes)
- Ash grinders
- Water columns
- Soot blowers
- Safety valves
- Electric switch gears
- Hydraulic lines (for stoker drives)
- Precipitators (electric and mechanical)
- Brick work in furnace and ash pit
- Ash Pits
- Feedwater regulators
- Gasket in manholes, hand holes and steam header pipes

Attachment 2

Effects of the System's Failure

Some of the effects of the failure of the District Heating System to supply steam during the heating season, in addition to the huge loss of productive time and money to send Federal employees home on Administrative leave, include the following:

1. The Bureau of Engraving stops printing money.
2. The HEW Medical Research experiments also are stopped, with the results possibly destroyed.
3. Agricultural Research experiments also are stopped, with the results possibly destroyed.
4. Museums' irreplaceable art work is subject to damage.
5. The National Archive's documents are endangered.
6. Military computer programs, such as those in the Forrestal Building and the White House, involving National Defense are interrupted.
7. The State Department's support of the Secretary of State is interrupted.
8. The Justice Department functions are impaired or stopped.
9. FBI criminal computers and records are not available for field use.
10. The D.C. Government would be interrupted.
11. The Treasury Department computers would be stopped, including disbursement of checks.

35. QUESTION: How is GSA compensated for steam furnished to non-Government buildings? How is the amount determined? Would rate be affected by the new work proposed?

ANSWER: GSA is compensated for steam furnished to non-Government buildings through the means of the GSA Form 2957. Under the provisions of the Federal Building Fund, an obligation is received from the non-Government building for steam to be consumed. This obligation is a firm price commitment consummated every quarter.

The amount to charge for steam is determined based upon the estimated cost of operation divided by the estimated consumption of steam in thousands of pounds per hour. Operating costs include all costs except major repair and replacement items, such as are contained in the prospectus. The amount to charge is determined based upon the analysis of expense and income. An adjustment is made to the next quarter's obligation depending on whether too little or too much money was obligated for the existing quarter.

The steam rates would not be affected by the cost of the items contained in the prospectus. The steam rates would be affected if a lesser cost fuel could not be burned and/or if there be no action, or the prospectus and overall plant physical deterioration affects increased maintenance and repair.

36. QUESTION: The prospectuses do not indicate any alternatives to the work proposed at both plants. Why not?

ANSWER: The prospectuses present the best plan developed by GSA. Alternate courses of action were considered, rejected and explained in the Environmental Impact Statement.

Copy of Environmental Impact Statement attached.

37. QUESTION: In the interest of economy, at this time, why can't only the work be done that is necessary to comply with D.C. and EPA requirements?

ANSWER: (1) To add new precipitators to the four 43 year old derated boilers, which would be sized and usable on a future modernization project, would cost an estimated \$5,150,000. This work would cover demolition of old precipitators, installation of new precipitators, structural modifications, fan revisions, controls, electrical modifications, duct work, insulation, and architectural screen wall at roof. Since we have not attempted any design of this type of approach, (because present boilers must be replaced, regardless of this action) we cannot at this time be assured that this is physically possible.

(2) To add mechanical separators plus precipitators to the four old boilers, covering their present derated capacity only, would cost an estimated \$3,085,300. These precipitators would be unusable for the future modernization of the boilers and would have to be replaced at that time.

COMMENTARY:

We do not have design for either of these alternates. To get such a prospectus approved, complete the design, procure a contractor, fabricate and erect, will involve three years or more.

If A.1. is chosen, the precipitators would remain in place during a future modernization project, and the contractor would be prevented from using the roof access for the erection of the boilers and thereby materially increase the cost of the project. Regardless of all this, the old boilers must be replaced within the next five years. Since it would take some three years to design and install these precipitators, we would be by that time realizing the end of the useful life of the boilers, and would end up with new precipitators on useless boilers, without the capability of meeting peak steam demands.

If A.2. if chosen, the money use would be marginal as the precipitators

would be demolished when the old boilers reach a "point of no return" within the next five years. Since design and construction of these precipitators will take three years, their useful life will be only two years since the boilers will be at the end of their useful life.

38. QUESTION: The Final Environmental Impact Statement dated June 25, 1976, is titled Central Heating Plant. Will there be another one filed for the West Heating Plant?

ANSWER: Yes, GSA will publish a Draft Environmental Impact Statement for the West Heating Plant.

39. QUESTION: EPA's response to the draft statement, which is included in the final, states that they need more information and offer suggestions. There is no evidence in the Final Impact Statement that GSA ever complied, or that EPA approves without qualification. Will additional exhibits be submitted?

ANSWER: The Draft Statement was revised, taking into account EPA's comments and suggestions and published as a Final Statement and then distributed on June 25, 1976. EPA, by letter to GSA dated July 2, 1976, stated: "We have reviewed the Final Environmental Impact Statement for the proposed project. Based on this review, we have no objections to the further development of the Central Heating Plant as described." No additional exhibits will be submitted at this time.

40. QUESTION: The D. C. Government's comments also comprise only questions and suggestions. Further, they reflect a belief that trash-burning boilers will be used, and point out right-of-way problems that will be encountered with truck facilities. Has D. C. filed comments indicating unqualified approval, and why are they not included in this Final statement?

ANSWER: The project, as revised does not include paper-handling facilities or truck facilities for trash. The Final Statement explained this and responded to all of the other comments to the Draft Statement offered by the District of Columbia. The Municipal Planning Office of the District, at a meeting of the National Capital Planning Commission on August 5, 1976, introduced a letter from the Corporation Counsel of the District dated July 30, 1976. A portion of this letter reads as follows: "The District has no legal objection to the project as currently planned so long as it leads to bringing the subject boilers into compliance with District air pollution laws. Therefore, any measures, both interim and long term, which can be implemented to achieve such compliance should be undertaken as soon as possible."

41. QUESTION: The National Capitol Planning Commission's response comprises only suggestions but does not indicate approval. Why not, and is such approval anticipated?

ANSWER: The National Capitol Planning Commission in its December 10, 1974, letter to GSA stated that the Commission "approved the preliminary site and building plans for the expansion and improvement of the Central Heating Plant. . .with the recommendation that the GSA, in the preparation of final site and building plans:

1. Obtain from the Redevelopment Land Agency a right of entry into the urban renewal tract south of D Street to permit truck maneuvering; and
2. Design the facilities along the railroad siding so as not to preclude air space building development over these facilities and access to D Street.

The 2 recommendations refer to the paper handling facility which has been deleted from the prospectus and the proposed project. Approval of final site and building plans for this project will be sought from the Commission at its August 5, 1976, meeting.

42. QUESTION: Why wasn't release of the Final Environmental Impact Statement withheld until all approvals had been given?

ANSWER: The Environmental Impact Statements were written in accordance with the Council on Environmental Quality Guidelines. The Draft Statement was distributed to other Government agencies, the A-95 clearing-house designee, and the public. The Draft Statement was revised, taking into account the substantive comments received, and was then published as a Final Statement. It is not possible to include concurrences on the revisions to the Draft Statement and the Final Statement in the Final Statement. There is nothing in the Guidelines to indicate that approvals are requested from other agencies on any statement. The National Capitol Planning Commission indicated that they would not grant final approval of the project unless 30 days had passed since publishing the Final Statement.

General Services Administration  
Central Heating Plant - Environmental Questions  
July 12, 1976

This pertains to the latest set of questions received from the Senate Public Works Committee with responses from General Services Administration. This data concerns environmental aspects only and does not address the matter of the need to accomplish certain work because of the age and unreliability of boilers and associated equipment. The overall plan remains, that of either installing new equipment in the Central Heating and Refrigeration Plant, as well as in the West Heating Plant, or other measures must be taken that would enable these plants to use the most available fuels, comply with national laws, and deal with environmental concerns.

The five questions referred to are listed with answers in the order of their presentation.

Question 1. Could you identify the specific design adjustments that have been made to insure that the burning of solid waste fuel (either as a dry fuel or after conversion to oil or gas) would not interfere with the full efficiency of the pollution control equipment and would not lead to corrosion of the boiler, pipes or other parts of the systems?

Responses: Although solid waste fuel is not a part of this prospectus, the boilers and precipitators are specifically designed to fire coal, oil, gas, and macerated paper. The paper must be fired in conjunction with another fuel (20% or less paper). Due to the nature of fuels, burning of coal and precipitation of coal ash is the basic consideration among these fuels. When the design handles coal, then oil, gas, and paper are automatically covered.

All solid waste fuel will be carbon or hydro/carbon based with the sulfur content controlled. The precipitators are designed to be operated at elevated temperatures which preclude condensation and inhibit corrosion. The air preheater has corrosion resistant construction on the cold end. Under these conditions no increase in corrosion will occur.

Question 2. The Washington, D.C. area has a substantial air pollution problem caused by high levels of oxidant. The oxidant is formed from the combination of hydrocarbons, nitrogen oxides and sunlight. In addition,  $\text{NO}_2$  is a pollutant regulated under the Clean Air Act independent of its contribution to the formation of oxidant.

Table XI, page 25 of the appendix D of the Draft Environmental Impact Statement indicates that in some areas the emissions from the new plant would use up 77% of the available air quality under the national ambient air quality standards even if it were assumed that absolutely no  $\text{NO}_2$  other than the power plants emissions were contributed to the area. Since the heating plant is located very close to two large major commuting routes, this is not an accurate assumption.

Given these potential air pollution problems and the fact that control of nitrogen oxides will need to be emphasized in the future because of the projected growth trends for this pollutant in all areas of the country, it would be very useful to have the Federal government lead the way in the adoption of techniques for the control of nitrogen oxides. I would appreciate having you contact the Environmental Protection Agency and gain their suggestions as to the way in which the boiler design and pollution control systems might be modified so as to use techniques which will minimize the reduction of nitrogen oxides emissions to the extent feasible.

Response: Some  $\text{NO}_x$  occurs naturally in coal and oil and this will simply go through the boiler unchanged and be put back into the environment. The remainder of  $\text{NO}_x$  is associated with combustion and is formed at

high flame temperatures. The boilers are designed with the largest furnace volume which will fit the space available, providing reasonable heat release/CU Ft. This plus the furnace water wall tube heat absorption controls flame temperature so  $\text{NO}_x$  is minimal.

The boilers are heating oriented which means the full heat release condition is sporadic and under winter weather circumstances. The nominal loads throughout the year will be at lesser heat release conditions and at reduced  $\text{NO}_x$  formation.

The boilers will have  $\text{O}_2$  monitors and  $\text{O}_2$  devices (continuous/recording) which will control the amount of excess air which is a control of the amount of  $\text{NO}_x$ . This excess air will be held at a minimum producing the minimum  $\text{NO}_x$  possible.

The EPA has been contacted and the only information given was that GSA must meet the new source standard for  $\text{NO}_x$  (40 CFR 60). If boiler manufacturer's meets these requirements, they meet the EPA requirements and recommended action.

Question 3: The Central Heating Plant is located within a few blocks of the Thomas Jefferson Memorial and the Washington Monument. The reduction of particulate matter, and especially the reduction of fine particulate matter, will play a role in improving the visibility of those historical sites from the surrounding areas. This is an important interest for the tourists who visit Washington, DC.

Could you please investigate the advantages and disadvantages of using pollution control equipment other than electrostatic precipitators (such as baghouses) which might have a greater chance of controlling more particulate emissions and especially controlling the fine particulate emissions and provide us with a discussion of that investigation?

Response: Initially, two types of Particulate Removal Systems had been considered for this project, i.e., electrostatic precipitators and fabric filters units. Consideration of particulate removal systems has been limited to high efficiency type equipment.

a. Baghouses. To achieve and maintain high efficiency cleaning of the flue gases, the system must be designed with a low air-to-cloth ratio. The requirements for a baghouse of this size, approximately 36 ft. by 44 ft. would be difficult to accommodate within the space available at the Central Plant. Additionally, separators are required ahead of the filters for high efficiency cleaning.

(1) Flue gases from oil fired boilers tend to clog the filter medium pores requiring more frequent bag replacement.

(2) The danger of fires at elevated temperatures (450°F) is greater than with precipitators.

(3) Operation and maintenance costs are expected to be higher than for precipitators. Capital costs are expected to be comparable. (See Journal of Air Pollution Control Association Dec. 1975. Performance and cost comparison between Fabric Filters and Alternate Particulate Control Techniques.)

(4) Baghouses must be heated during boiler shutdowns to prevent fouling and failure due to moisture.

(5) Baghouses require greater fan horsepower than precipitators.

(6) To maintain a 99.5 percent particulate collection efficiency while injecting additives (lime, nahcolite) to protect the fabric media would require designing for a low air-to-cloth ration (3:1).

(7) A high incidence of bag failure and fouling due to moisture, sulfur oxides, and other fuel ash components will require frequent shutdown of filtering compartment and continual and expensive maintenance.

b. Particulate Scrubbers. Particulate scrubbers are a possible pollution control device for boilers and a discussion of such equipment is included. A scrubber is a device which uses a liquid to separate particulates from a gas stream. The venturi scrubber is commonly used to achieve high particulate removal efficiencies (99+ percent). Dust removal is primarily a function of the energy consumed to achieve dust to liquid contact. Required contact is achieved by passing liquid and dust through an orifice or venturi throat, where the velocity is dramatically increased, and collection efficiency is primarily a function of pressure drop across the scrubber throat.

Very few scrubbers have been used for particulate control alone. Their chief advantage is that they can be designed for both particulate and gaseous pollutant removal. . . . Although high efficiency collection of particulate is feasible, particulate removal by scrubber devices is not recommended for the CHP because:

- (1) At 99.5 percent particulate removal, the operating pressure drop of a venturi scrubber could be as high as 60 inches of water.
- (2) Operating costs for this device are generally 2 to 3 times higher than those of fabric filters and electrostatic precipitators.
- (3) Space requirements for scrubber modules and waste water treatment and recycling are greater than other particulate control alternatives.
- (4) Without additive injection, corrosion of the scrubber would occur.
- (5) Abrasion is a major problem in particulate scrubbers.

Question 4. On May 17, Mr. William W. Sayers of the General Services Administration received a letter from Dr. Bailus Walker, Jr., Director of the Bureau of Air and Water Quality Control of the Government of the District of Columbia. That letter listed eight specific steps which could be taken immediately to reduce the pollution from the central heating plant. Could you explain steps you are taking to comply with these requests or if such steps are not being taken, explain why you have chosen to reject these suggestions?

Question a. Converting the boilers to a complying grade of oil.

Response: There is no need to use any grade of fuel other than that being used at present.

In Answers to Interrogatories Proposed by Defendants (Second Set), the District of Columbia states that it does not have sufficient information to state that the oil fired boilers at the Central and West plants are incapable of meeting applicable District air pollution laws. Also, that no grade of oil lighter than number 6 fuel oil needs to be burned.

As of this date the evidence from stack testing conducted indicates that all oil fired boilers are in compliance when burning No. 6 oil. Reference Research-Cottrell Particulate Test Survey of units 3 and 4, Central Heating Plant dated March, 1976; Particle Data Laboratories, LTD., West Heating Plant Boiler 3, GSA Order No. 01692514, dated October 8, 1975;

and Particle Data Laboratories, LTD., West Heating Plant Boilers 4 and 5, dated May 12, 1975.

The new precipitators numbers 3 and 4 at the Central plant were in compliance by a comfortable margin. The renovated precipitators numbers 3 and 5 at the West plant, which are identical units, had physical constraints at the time of the testing. However, the results taken compositely indicate compliance in all ranges. Specifically, No. 5 failed at high load (175,000 pph) and No. 3 failed at low load (about 65,000 pph). Subsequently, it was discovered that high voltage insulators were cracked in number 3 and 5 indicating that the boilers would comply if tested with new brushings.

It is estimated that it would cost \$175,000 to make the necessary alterations to Boilers No. 3 and 4 at Central plant and Boilers No. 3 and 5 at West plant to convert them to burn a lighter grade of fuel.

Question b. Operating complying boilers to the maximum extent possible. Install necessary equipment, to enable Boilers No. 3 and 4 to operate at maximum load.

Response: Complying boilers are being operated to the maximum extent practicable. Boilers No. 3 and 4 at the Central Plant will have adequate water treatment installed to enable their operation at maximum load, as soon as project authorization by Congress and operating conditions permit. The project is designed to install six Zeolite Water Softening Units (cost of six units now on hand was about \$270,000). Estimated cost to install will be about \$700,000. This work is necessary prior to operating the boilers above one half load because zero parts per million water hardness is required by the boiler manufactures. Any water hardness above zero causes scaling of the waterside of the boiler tubs which could ultimately severely damage the boilers. Experience shows that we remain in a safe range and do not excessively scale the boilers when operating at half designed load. We dare not increase this firing rate.

Boilers 3 and 4 have generated sulfuric acid at loads lower than 150,000 pph. Current summer loads average 175,000 pph. We dare not operate these particular oil fired boilers because they are not yet reliable operationally (can suddenly go off-line with an immediate loss of steam generating capability) and because we cannot keep one or both oil fired boilers on-line lower than 150,000 pph because of the sulfuric acid generation capability.

Question c: Before non-complying boilers are used, steam supplied should be reduced proportionately to each building supplied by the plant.

Response: There is no feasible method at the steam plant whereby steam can be reduced proportionately to each building supplied. The reason is that steam is supplied to steam reducing stations at the buildings at or about 250 psi. This pressure is reduced several times, the first reduction between 60-80 psi usually, with the ultimate pressure usually being 5 psi. Any pressure sensed by the 5 psi valve at or above 5 psi will result in the 5 psi system continuing to demand steam, which means that the distribution system would have to operate lower than 5 psi to limit all buildings proportionately. This is an impossibility due to pipe sizes, inability of steam auxiliaries to function under 175 psi, inability of the high pressure drip condensate lines to operate, and many other reasons. GSA has no control over the 25 percent steam demand by other than GSA operated buildings.

The only method of load control would be to anticipate the demand and lower all building temperatures by building personnel via the thermostats in advance. Due to lower building temperatures, for example how much reduction would be necessary in order to meet an unpredictable weather condition. This method would always be unsatisfactory.

Question d. Emissions from each boiler should be continuously monitored by installing suitable monitoring equipment.

Response: Emissions from coal and oil fired boilers will be continuously monitored by the installation of suitable monitoring equipment which is being purchased. The District of Columbia has not yet indicated the level of monitoring to be required by it but these units will meet federal requirements.

The installation of monitoring equipment is estimated to be \$160,000 for seven coal boilers and \$120,000 for four oil boilers, totaling \$280,000. Estimated installation attainment date for full implementation is June 30, 1977.

The installation of monitoring equipment will not in themselves reduce pollution.

Question e. Immediate measures should be instituted to prevent discharge of acidic waters from the coal storage area/coal traps into the storm drains and sewers of the District of Columbia or into Rock Creek or the Potomac River.

Response: We are eliminating the discharge of acidic water to storm sewers and drains. At the Central plant, we are ascertaining whether or not the D.C. Government will allow the connection to be into a sanitary sewer rather than into the existing storm drain. The alternative action contemplated is to install piping from the sump to the sluice water piping within the plant where dilution will eliminate any possible trace of acid concentration. The estimated cost is \$7,500. Estimated completion date is September 3, 1976.

At the West plant, tests indicate complying water. However, we will pump the sump water into the sluice piping at an estimated \$11,000. Estimated completion date is September 3, 1976.

Question f. Immediate measures should be instituted to prevent the discharge of ashes into the storm drains and sewers of the District of Columbia or into Rock Creek or the Potomac River.

Response: A project is underway that will prevent the discharge of ashes by June 30, 1977. At the West plant an estimated \$327,416.00 will install a water cleaning system using separators. This project is designed, forwarded to 3MCO, and is awaiting authorization to proceed. At the Central Plant, \$283,896.00 for essentially the same project as at West Plant. This project is designed and is ready for issue for bidding purposes.

The most costly and least desirable solution is to pump the overflow into a holding tank and thereafter transfer the water into tank truck for disposal. A potential contractor estimates a cost of between \$20.00 and \$40.00 per thousand gallons. An experienced volume of 60,000 gallons on a light load day would amount to a cost of \$1200.00 per day. A heavy load day would approximately double this amount.

A product new to us is a centrifugal screen concentrator which may remove down to 60 ppm of suspended solids, thus allowing us to not install the separators mentioned above, provided this 60 ppm was diluted by 100 percent water without solids. Cost could be \$40,000.00 installed.

The dry ash system contemplated by the prospectuses would eliminate the water pollution problem entirely.

Question g. GSA should burn only good quality coal in its boilers. Coal samples should be analyzed, prior to being used, to ensure that the coal meets the specifications.

Response: The coal specified for GSA boilers is of good quality as supplied under the terms of US Government procurement regulations and is from same source as that used by the District of Columbia. A procedure has been established that will allow the analysis of coal, prior to combustion by GSA, from both coal supplies to be effective August 1, 1976.

(1) Island Creek Coal Company will supply the information as to coal content for \$70.00 per coal train. (TWX giving content and car numbers).

(2) A similar agreement is pending with the General Coal Company.

The D. C. Government neither tests nor requires a test report of the coal consumed by it.

Question h. The damaged steam transmission conduits from the West Heating Plant in the vicinity of the Ellipse in the District of Columbia should be immediately repaired or replaced.

Response: The applicability of this question to the matter at hand is questionable. However, the steam line in the vicinity of the Ellipse will be repaired during the week of July 12, 1976, when that part of the transmission line can be taken out of service for necessary repairs. It is necessary for both Central and West plants to be "on line" to be able to shut down the Ellipse steam lines.

We had three defective expansion joints removed near to 17th Street in November, 1975 at a cost of \$26,000. The work contemplated will be completed by July 17, 1976, at a cost of \$10,600. We could not effect the latter repairs during the spring of 1976 as planned, because of the inability at that time of certain valves to "hold."

The repair of underground steam lines are a continuous maintenance procedure of the Heating Operation and Transmission Area. The steam lines under the Ellipse are in the process of repair however replacement of line sections if required cannot be made until both steam plants are in operation. The repair of underground steam lines should not be covered in a prospectus for boiler plant modifications but properly in a prospectus for the steam transmission system.

Question 5. Please discuss the compatibility of the water pollution control system you plan to use with the permit you are to receive under P.L. 92-500?

Response: There are two systems that are planned for installation as part of the design covered under the prospectus for the Central Heating Plant. Both systems are necessary for compliance with the conditions of the proposed NPDES permit, (established by P.L. 92-500, Federal Water Pollution Control Act).

(a) A dry ash air handling system is designed as a part of the two new Multi-Fuel Boilers. This will remove any possibility of water pollution from the operation of these new boilers.

(b) As an interim measure, GSA will install equipment for the removal of ash particles from the present hydraulic ash removal system at the Central Heating Plant. This project will install equipment which will remove the suspended ash particles from the hydraulic ash removal system overflow to the storm sewer. This system will be utilized in conjunction with the two old coal fired stoker boilers that will be pressed into service to produce steam during construction of the new multi-fuel boilers. Present plans call for the installation and operation of the new equipment prior to June 30, 1977. This equipment will clean up the water discharged from the hydraulic ash removal system to meet the requirement for suspended solids concentration established by the proposed NPDES permit for the Central Heating Plant.

Senate Minority

HEARING MATERIAL  
WEST AND CENTRAL HEATING PLANTS  
WASHINGTON, DC

QUESTION - 1

I am advised that GAO believes that work necessary to meet environmental laws and regulations can be accomplished with far less money than requested in these two prospectuses. Would you please comment on this contention?

ANSWER

We do not know what information GAO has to arrive at such conclusions or what their estimated cost is. However, based on GSA engineering expertise as well as recommendations from consulting firms, the two plants require the following equipment to eliminate both air and water pollution:

CENTRAL HEATING PLANT

1. Install two electronic precipitators	
Estimated cost	\$1.1 million
2. Install dry ash system	
Estimated cost	\$1.1 million
TOTAL ESTIMATED COST	\$2.2 million

WEST HEATING PLANT

1. Install three electronic precipitators	
Estimated cost	\$ .6 million
2. Install dry ash handling system	
Estimated cost	\$1.4 million
TOTAL ESTIMATED COST	\$2.0 million

GSA:BS

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QUESTION - 2

Would you please break out the work necessary in each prospectus to provide environmental compliance and work needed for other reasons? In each prospectus, what is your cost estimate for work necessary to comply with environmental requirements?

ANSWER

The environmental work required has been broken out in our answer to question Number One. The remaining proposed work to meet steam demands of the plant and to ensure maximum use of coal is as follows:

CENTRAL HEATING PLANT

1. Install two multi-fuel boilers	
Estimated cost	\$16.1 million
2. Install feed water system for two new boilers	
Estimated cost	\$ 1.8 million
TOTAL ESTIMATED COST	\$17.9 million

WEST HEATING PLANT

1. Conversion of two oil boilers to multi-fuel	
Estimated cost	\$677,000
2. Replace elevator	
Estimated cost	\$ 90,000
TOTAL ESTIMATED COST	\$767,000

GSA:PAE

6-18-76

QUESTION - 3

Have these prospectuses been reviewed and approved by OMB?

ANSWER

OMB requires the submission of all prospectuses that are \$10 million or more. Consequently, the prospectus for the Central Heating Plant was reviewed and approved by OMB prior to submission to the Senate Public Works Committee and the House Public Works and Transportation Committee. The West Heating Plant prospectus is less than \$10 million and, therefore, did not require prior approval by OMB. However, a copy was sent to OMB simultaneously with submission of this prospectus to the Congress.

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GSA:RES

6-18-76

QUESTION - 4

The various items in the prospectuses will be programmed to be completed within five years. How long do you expect will be required to complete those portions of the work which will provide conformance with anti-pollution codes? Will this aspect of the work be given priority?

ANSWER

The anti-pollution work will be given high priority in both prospectuses. Providing we obtain approval for the Central Heating Plant, it is planned to award a contract for the entire project by September of 1976 with a construction completion date of 1979. The installation of a new temporary wet ash system scheduled for July 1977 will eliminate the water pollution problem until the new multi-fuel boilers with the new dry ash system go line in the fall of 1979. The air pollution problems will be mitigated by inspection of the coal supplied to the plant to ensure that GSA receives the quality of coal contracted for. The fly ash problem will be totally corrected when the new multi-fuel boilers with precipitators go on line in the fall of 1979.

At the West Heating Plant, it is proposed to install one precipitator and the dry ash system in 1977 and the remaining two precipitators in 1978.

GSA:BS

6-21-76

QUESTION - 5

Will the work proposed in these two prospectuses provide complete compliance with existing D.C. and Federal environmental standards?

ANSWER

The work proposed under these two prospectuses will provide for complete compliance with existing D.C. and Federal environmental standards.

QUESTION - 6

Will this work provide any cost savings in terms of energy utilization or fuel expenditures? Will fuel efficiency be improved?

ANSWER

The two prospectus projects will provide GSA with four multi-fuel boilers capable of burning a variety of fuels available now and in the future. Depending on current cost of various fuels, we can burn what best suits the situation. In today's market that means we will use coal as the major source of fuel. In the future, synthetic gas, synthetic oil, shale oil, derivatives, etc. may be available as fuel. We cannot foretell the future cost of any fuel, but we will be able to utilize the most efficient fuel available considering energy conservation, economy of operations, and ecological concern.

Fuel efficiency will be improved since the efficiency of the new boilers will be approximately 15% higher than the boilers being replaced.

Senator MORGAN. Thank you very much. We will conclude this hearing.

[Whereupon, at 10:15 a.m., the subcommittee recessed, to reconvene subject to the call of the Chair.]

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