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BY THE COMPTROLLER GENERAL  
 Report To The Chairman, Committee  
 On Energy And Natural Resources  
 United States Senate  
 OF THE UNITED STATES

**Financial And Regulatory Aspects Of  
 Converting Oil-Fired Utility Boilers To Coal**

by the Office of Comptroller General

RELEASED

Thousands of barrels of oil a day could be saved by converting oil-fired utility boilers to coal. A total of 26 utilities in the northeast United States are now listed in the proposed "oil backout legislation" and by providing grants to these utilities the Federal Government could help assure that the potential oil savings are attained.



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In an industrial fuels conversion case, the Anheuser Busch Company obtained an exemption under the Powerplant and Industrial Fuel Use Act to use oil or gas-fired boilers in its Los Angeles brewery. The Company cited expenses over \$1 million in obtaining the exemption. GAO considers that regulatory burden excessive. No other companies will face the same changing regulatory conditions because the Anheuser Busch case occurred while regulations were being developed. Further case experience will be necessary before an evaluation of the Act's burden can be completed.



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COMPTROLLER GENERAL OF THE UNITED STATES  
WASHINGTON D.C. 20548

B-201144

The Honorable Henry M. Jackson  
Chairman, Committee on Energy and  
Natural Resources  
United States Senate

Dear Mr. Chairman:

As requested in your letter of March 26, 1980, this report (1) explains the reasons for inconsistency among the various lists of powerplants which could be reconverted from oil to coal; (2) discusses the financial constraints to conversion; (3) indicates if the proposed Federal grant program would overcome these problems; and (4) reviews the Anheuser Busch Company's experience obtaining an exemption from the Powerplant and Industrial Fuel Use Act.

Written comments were requested from the Department of Energy and the Anheuser Busch Company. The Department had no substantive objections to the report and therefore decided not to provide us with official comments. The Anheuser Busch Company's technical comments were considered in finalizing the report.

As arranged with your office, unless you publicly announce its contents earlier, we will not release this report for 7 days from the date of the report.

Sincerely yours,

A handwritten signature in cursive script, appearing to read "Thomas A. Blasts".

Comptroller General  
of the United States



COMPTROLLER GENERAL'S  
REPORT TO THE COMMITTEE ON  
ENERGY AND NATURAL RESOURCES  
UNITED STATES SENATE

FINANCIAL AND REGULATORY  
ASPECTS OF CONVERTING  
OIL-FIRED UTILITY BOILERS  
TO COAL

D I G E S T

To encourage utilities to convert their oil fired boilers to coal and to overcome their financial difficulties in the process, the President has proposed "oil backout" legislation which would provide the utilities with \$3.6 billion in Federal grants. The Department of Energy estimated that about 400,000 barrels of oil a day could be saved and oil imports reduced.

The Senate revised the funding formula in its bill and reduced the list of targeted boilers from 107 to 80 because (1) some units were considered too small or old to merit inclusion, (2) other conversions could have delayed construction of new coal fired boiler units, or (3) there was substantial local opposition to the conversions.

LISTS OF POWERPLANT  
CONVERSION CANDIDATES DIFFER

GAO identified eight lists of powerplant conversion candidates; four of these were produced by the Economic Regulatory Administration. When compared, these lists show numerous differences. However, these differences are not a cause for concern since each list was compiled for a different purpose.

UTILITY FINANCIAL CONDITIONS VARY

GAO reviewed 14 of the 26 utilities targeted for grants by the Senate and found that Federal funding would have varying effects on their plans to convert oil fired boilers to coal. Six of the 14 utilities are now planning to convert 25 boilers from oil to coal regardless of Federal funding. Together with other utilities which have notified

the Economic Regulatory Administration of their plans to convert 5 additional units, about 190,000 barrels of oil per day will be saved.

Five of the utilities remain opposed to the conversion of 13 boiler units because they contend that conversion would not be cost-effective or practical, or because the costs of conversion may adversely affect the companies financial condition. Three utilities were completing studies to determine the feasibility of converting eight other units.

GAO's review showed that there are a number of advantages in converting the 25 boiler units. Most units have an estimated life after conversion of 20 years or more while the projected fuel savings are substantial. Ratepayers should benefit from the fuel cost reductions for long periods. Also, 1.8 billion barrels of oil could be saved over the life of these units. (See pp. 17 to 19.)

GAO believes that many of the 13 conversions which are opposed for financial or economic reasons may be cost effective to convert if Federal grants are offered. (See pp. 20 to 22.)

However, the time required for reaching agreement upon the method to attain acceptable air emission levels, and for design and installation of air pollution control equipment, is likely to cause some delays in completing these conversions.

GAO's review also shows that about 350,000 barrels of oil per day could be saved if all 80 units on the Senate list converts. The estimated cost of converting these units was \$4.7 billion as of June 1980. Based on the Senate's financing formula, the grant costs for these units would be between \$1.2 and \$2.4 billion. (See pp. 24 to 26.)

## OBSERVATIONS

The financial conditions of the utilities with powerplants which can be converted from oil to coal varies as well as the cost of converting individual powerplants. Those utilities with sufficient financial resources are proceeding to convert powerplants without Federal assistance due to the financial benefits resulting from the use of coal. For other utilities, the costs of conversion or the financial conditions of the companies may delay or preclude action unless Federal assistance is offered. Delays in converting to coal can also be expected for environmental reasons.

By providing Federal grants to finance portions of the costs of conversion, the Federal Government can help to assure that conversions are not delayed by the financial conditions of individual companies. However, some utilities with sufficient financial resources have already converted to coal or are in the process of converting and would not require grants. Yet, attaining the maximum level of residual oil savings appears to be dependent on Federal funding which would overcome the economic and financial hurdles to conversion.

### THE ANHEUSER BUSCH COMPANY OBTAINED AN EXEMPTION AT GREAT EXPENSE

GAO also reviewed a separate regulatory case concerning the potential for converting an industrial source to alternative fuels. In this 1979 case, the Anheuser Busch Company petitioned for an exemption from the Fuel Use Act to expand their Los Angeles brewery using oil and natural gas fired boilers. This was the first major petition for an exemption under the Act, and the Company was required to document their contention that reasonable alternatives to oil and natural gas were not available.

The regulatory process took 1 year to complete and the Company estimated that its expenses were over \$1 million. The Company was required to perform an extensive analysis of alternative fuels and supply environmental impact information. (See pp. 34 to 36.)

GAO found that the costs and time required to obtain the exemption were excessive. However, a portion of the Company's costs were attributable to changes in the regulations which occurred while the Company was preparing its petition for exemption and supporting documents. Additional costs were attributed by the Company, their legal representatives and energy consultants, and Economic Regulatory Administration officials to the learning experience which accompanied this first major exemption petition. (See p. 30.)

The Anheuser Busch Company's experience, however, is not representative of the effort now required to obtain a similar exemption. Because the regulatory program has been changed and final regulations published, petitioners will face fewer uncertainties and less cumbersome and costly research and documentation than that performed by the Busch Company.

Yet, it is clear that those who apply for a similar exemption can be required to perform an extensive study of alternative fuels. The Fuel Use Act authorized a regulatory process which, to be effective, appears to require substantive analysis of alternative technologies. The legal and regulatory issues raised by the Anheuser Busch Company require further analysis to determine if more information is required than intended by the Act and if changes in the law are appropriate. Further case experience will be necessary before an evaluation of the Powerplant and Industrial Fuel Use Act regulatory burden can be completed.



AGENCY AND COMPANY COMMENTS

Copies of this report were sent to the Department of Energy and the Anheuser Busch Company for their comments. The Department had no substantive objections to the report and therefore decided not to provide GAO with official comments. The Anheuser Busch Company's technical comments were considered in finalizing the report.



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#### ABBREVIATIONS

Btu	British thermal units
DOE	Department of Energy
ERA	Economic Regulatory Administration
EEI	Edison Electric Institute
FUA	Powerplant and Industrial Fuel Use Act
GAO	General Accounting Office

## CHAPTER 1

### INTRODUCTION

In a March 26, 1980, letter, the Chairman, Senate Committee on Energy and Natural Resources asked us for assistance on three matters related to the Federal efforts to convert oil and gas fired boilers to coal. Specifically, we were asked to (1) explain the reasons for inconsistency among the various lists of powerplants which could be converted from oil to coal; (2) determine if reconversion candidates have been hampered by financial constraints, and if the proposed Federal grant program would overcome such problems; and (3) review the Anheuser Busch Company's experience in obtaining an exemption from the Powerplant and Industrial Fuel Use Act to determine if this experience indicates any regulatory problems. This report contains the results of our work in these three areas.

We are also performing an overall review of Federal efforts to convert oil and gas fired boilers to coal. This review is focused on the implementation of the Powerplant and Industrial Fuel Use Act of 1978 and scheduled for completion in early 1981.

### BACKGROUND

Since 1974, an aim of Federal policy has been to expand coal use to replace oil imports and declining production of domestic oil and gas. Two key Federal statutes implement this policy: the Energy Supply and Environmental Coordination Act of 1974 (P.L. 93-319) and the Powerplant and Industrial Fuel Use Act of 1978 (P.L. 95-620). Through these statutes, the Department of Energy (DOE) is administering a regulatory program which requires large-scale conversion of existing major oil and gas using facilities to coal and alternative fuels and prohibits the construction of new major oil and gas fueled boilers unless specific exemptions are granted.

Under the first statute, the Energy Supply and Environmental Coordination Act, the Federal Energy Administration (DOE's predecessor agency) issued 107 proposed prohibition orders, but only 23 coal capable units operated by 12 companies had been issued final orders by August 1980. The Economic Regulatory Administration (ERA) of DOE rescinded orders on 48 of these units, many of which were burning coal already, and is acting to complete the regulatory process for the 36 remaining orders. Under the Powerplant and Industrial Fuel Use Act (FUA), ERA has issued

additional proposed prohibition orders to 36 units of 15 utility companies, but none of these conversions has been completed. Also, three utilities have formally notified ERA that they will voluntarily convert seven units.

To hasten the pace of conversions, the President proposed "oil backout legislation" on March 6, 1980, which is intended to amend the FUA. The proposal would reduce oil imports by providing about \$9.6 billion in Federal grants to displace an estimated 1 million barrels of oil per day by 1990. In transmitting this proposal to the Senate, the President noted that the results of the current conversion programs have not been satisfactory, and that regulatory and financial impediments have prevented the acceleration of oil and gas displacement.

Phase I of the proposed program is aimed at saving 400,000 barrels of oil per day by 1985, by converting 107 boilers at 50 utility powerplants. To encourage these conversions, about \$3.6 billion would be made available to pay for portions of the capital costs to convert. Phase II of the program is designed to save 600,000 barrels of fuel per day by 1990 through oil and gas displacement. Under Phase II, grant funds totaling about \$6 billion would be made available to assist utilities in identifying and implementing energy conversion and conservation projects. Variations of this proposed program are embodied in Senate Bill 2470, and House Bills 6930 and 7341, of the 96th Congress.

#### OBJECTIVES, SCOPE, AND METHODOLOGY

To respond to the Committee's concerns about the varying lists of powerplants which could be converted from oil to coal, we (1) interviewed various officials involved in preparing the lists, (2) determined the source of material used as a basis for composing the recent lists, and (3) traced the development of the lists to determine the reasons for inconsistency. We did not attempt to independently verify the accuracy and completeness of the various lists, and we did not perform a detailed review of the decisions to add or delete powerplants from the various lists. However, this report does note the basic considerations involved in developing each of the various lists of powerplants.

The Committee's concerns about the effect of utility financial conditions on reconversion to coal are related to Phase I of the President's proposed program. We evaluated these concerns from several perspectives. For those utilities

specifically mentioned in the President's proposal, we reviewed earnings and credit research data of Dean Witter Reynolds, Inc. and Salomon Brothers, and summary financial information supplied by Edison Electric Institute. Also, in selecting utilities for review, we considered the age, size, and location of the 107 units targeted for reconversion to coal in the President's proposal. Our objectives in selecting utilities were to (1) include companies whose financial conditions varied significantly, (2) include a sizeable portion of the generating capacity and number of units targeted for conversion, (3) obtain wide geographic coverage so varying environmental circumstances would be encountered, and (4) include a wide range of boiler sizes and ages.

Using the criteria described above, we selected 64 units of 14 utilities located in 6 States for our review. These units represent more than 50 percent of the 107 listed by the President for conversion, and of the 80 listed by the Senate for conversion. The units range in age from the Long Island Lighting Company's Port Jefferson Unit Number 1 which was placed in service in 1948 to Baltimore Gas and Electric Company's Brandon Shores Unit Number 2 which is planned for start up in 1984. In size, the units selected range from the 40 megawatt McManus Unit Number 1 of Georgia Power Company to the 1,028 megawatt Ravenswood Unit Number 3 of the Consolidated Edison Company. As noted on page 19, the financial conditions of the utilities selected for review varies widely.

At each of the selected utilities we obtained (1) the dates of any planned conversions, (2) the costs of conversion projected by the companies for each unit, (3) the fuel savings which would result from conversion, and (4) company officials positions about the feasibility of conversion based on the utility's financial condition. We did not verify the completeness and accuracy of the information supplied by the utility companies.

This report also includes an analysis indicating what could be expected depending upon the formula used in awarding grants. The analysis is based on current utility estimates of their conversion costs and GAO calculation of the total Federal financing required for the program. This analysis

is intended to indicate the variation between the grant formulas contained in the Senate and House versions of the proposed legislation. 1/ A further description of the methodology used in our calculations is included in chapter 3.

The conversion cost and fuel savings data were compared with data previously supplied to DOE and, in some cases, to the House Subcommittee on Energy and Power. 2/ When data differed among these sources, we discussed these with company officials to assure the information base for our analysis included the most accurate data available. In some cases, utility officials pointed out that the data they supplied us were taken directly from site specific engineering studies of the costs of conversion. In other cases, the company estimates were recognized as less precise since detailed engineering studies had not been performed or were not yet completed.

Several utility officials also revised their estimates of conversion costs and overall positions on the feasibility of converting certain boilers during the course of our work. We believe that these changing positions indicate that in certain cases, a degree of uncertainty exists. Nevertheless, the utility positions and conversion cost information contained in this report is the latest available as of June 30, 1980.

We also interviewed other concerned officials about the potential for powerplant conversions and the effect of conversions on the financial conditions of affected companies. These interviews included DOE and Edison Electric Institute officials, and State public utility commission officials of Massachusetts, Virginia, New Hampshire, Connecticut, New York, and Georgia. In those cases where the State commissions

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1/Another grant formula is contained in a revised House bill introduced on July 23, 1980, which would provide grants of up to 100 percent of the eligible conversion costs. The analysis contained in this report is based on the earlier House bills which were similar to the President's proposal.

2/See "Profiles For Title I Existing Electric Powerplants Named in the Proposed Powerplant Petroleum and Natural Gas Displacement Act," Economic Regulatory Administration, Office of Fuels Conversion, U.S. Department of Energy, Apr. 21, 1980. The data supplied by utility companies to the House Subcommittee on Energy and Power was prepared in response to a Subcommittee questionnaire of Apr. 1980.



had performed detailed studies or taken public positions on conversions, we obtained and reviewed the available documents.

Our work in the environmental area was limited due to the short study time frame and the Committee's expressed interest in the financial feasibility of conversion. We did not assess the requirements for specific pollution control equipment, the increase in emissions levels which might result from conversions, nor discuss conversions with State air quality regulatory officials. However, we obtained background information on air quality from the Environmental Protection Agency and noted the concerns of utility officials about the costs of meeting Federal and State air quality requirements. Any cost data and calculations contained in this report are based on utility company estimates which reflect compliance with Federal air quality standards. In some cases, the utilities desire to obtain changes to the State standards and their cost data correspond to these changes.

Our review of the Anheuser Busch case included interviews with responsible officials of DOE's Economic Regulatory Administration, the Anheuser Busch Company, Holmes and Narver, Inc., and Adams, Duque and Hazeltine. The latter two organizations provided the Anheuser Busch Company with energy analysis and legal representation, respectively. We also reviewed the pertinent regulations of ERA, the report prepared by Anheuser Busch Company in support of their request for an exemption, and the subsequent analysis of this report prepared by ERA. We did not perform an independent audit of the expenses incurred by the Anheuser Busch Company.

## CHAPTER 2

### THE DEVELOPMENT OF LISTS OF POWERPLANT CONVERSION CANDIDATES

The various lists of powerplants which could be converted from oil to coal differ because each was compiled for a different purpose. The recent efforts to identify powerplants which could be converted from oil to coal started with a listing of the universe of these powerplants by ICF Inc., an energy consulting firm. ICF Inc., supplied this list to the President's Commission on Coal for the Commission's March 1980 report to the President. ERA obtained this list and refined it four times; once to identify candidates for prohibition orders, and the others as part of ERA's efforts to develop the oil backout legislation. Others, such as the Edison Electric Institute, have produced lists of powerplants which represent their particular knowledge and interests in the development of the oil backout legislation.

The ICF Inc., list required substantial revision because it was intended to identify the universe of powerplants with potential for conversion and contained powerplants with marginal potential for conversion. In contrast, the final list developed by ERA and included in the President's proposed legislation was intended to identify the candidates with a high potential for conversion. Including the ICF Inc., list, eight major lists of powerplants have been composed since 1977; these are briefly described on page 7.

#### THE ICF INC., LIST

As a part of the various analyses developed for the President's Commission on Coal, ICF Inc., compiled a listing of the universe of coal capable powerplants. This list was published as part of the Commission's March 3, 1980, report which described how coal use could be increased. The list included 350 boiler units at 114 generating stations with approximately 38,000 megawatts of capacity.

This list was considered by ICF Inc., as preliminary. According to an August 1979 memorandum describing the list, it included powerplants which were "potentially capable of burning coal" and reflected a "first-cut at identifying the universe of powerplants which should be evaluated in more detail." Even though the list was based on limited data, ICF Inc., stated that the list provides a "useful point of

Principal Lists of  
Powerplants Which Could  
Be Converted To Coal

<u>List</u>	<u>Date</u>	<u>Author</u>	<u>Comments</u>
"PEDCo List"	Updated April 1977	PEDCo Environmental, Inc. for the Federal Energy Administration	Used for identifying powerplants for proposed prohibition orders.
"ICF, Inc., List"	August 1979	ICF, Inc. a contractor to the President's Commission on Coal.	Based on the PEDCo list. Most recent effort to define the universe of coal capable powerplants.
"List of 42"	Fall 1979	ERA	Based on the ICF list. Included units over 100 megawatts and used for identifying power- plants for proposed prohibition orders.
"List of 68"	Jan. 1980	ERA	Based on the ICF list. Included powerplants over 25 megawatts and less than 40 years old. Used for developing the "Preliminary Backout List."
7 "Preliminary Backout List"	Jan. 1980	ERA	Refinement of the "List of 68" based on the techni- cal and environmental viability of conversion.
EI's x List	Feb. 1980	Edison Electric Institute	Based on the "Preliminary Backout List." Identified powerplants which have low conversion potential according to a survey of utilities performed by the Institute.
"Final Backout List"	Mar. 1980	ERA	Refinement of the "Preliminary Backout List". Based on technical and economic considerations, funding limits of the proposed legislation, and all natural gas fired units were deleted.
"Senate List"	June 1980	Senate Committee on Energy and Natural Resources	Refinement of the "Final Backout List" based on information supplied to the Committee by interested parties.

reference from which various interested groups can discuss potential coal conversion possibilities." ICF Inc., also noted that conversion of some plants on the list posed substantial engineering and site problems.

The ICF Inc., list was based on an earlier list of powerplants prepared by PEDCo Environmental, Inc., as revised and updated in April 1977. The PEDCo list had originally been used as the initial list of powerplants which were considered for prohibition orders under the Energy Supply and Environmental Coordination Act by the Federal Energy Administration. Although the PEDCo list was available to ERA, it had not been thoroughly maintained nor updated. Consequently, changes caused by the passage of time, such as the economics of conversion over the useful life of a powerplant, outdated the PEDCo list.

To further develop and refine the PEDCo list, ICF Inc., obtained supplemental information on the powerplants as was available from ERA and others. Additional sources which provided ICF, Inc., information about the universe of coal-capable powerplants included the President's Commission on Coal and the National Coal Association. The resulting list was supplemented with vital statistics about each boiler and checked to determine if any of the powerplants were already burning coal. Vital powerplant statistics such as unit identification numbers, the year of first commercial operation, and net dependable capacity were obtained from information maintained by the Energy Information Administration. To determine if the powerplants were already burning coal, ICF checked the utility fuel consumption data reported to the Federal Energy Regulatory Commission.

#### ECONOMIC REGULATORY ADMINISTRATION LISTS

The ERA developed four lists of powerplants from the ICF, Inc., list as part of their efforts to identify candidates for prohibition orders and to identify units for consideration in the proposed oil backout legislation. When composing these lists, ERA conducted various screening reviews which considered the feasibility of converting individual powerplants and the potential effects of conversion. Subsequently, ERA has developed and published profiles describing each of the powerplants included in the proposed legislation. ERA is continuing to update these profiles through further contacts with utility companies.

The original list of ICF, Inc., was first refined by ERA to develop candidates for FUA prohibition orders. This

"list of 42" utility generating stations was composed of those units which are 100 megawatts or larger, and less than 40 years old, except those having outstanding prohibition orders issued under the Energy Supply and Environmental Coordination Act. This list was discussed with various utility officials, and the Environmental Protection Agency provided DOE with comments about the environmental aspects of converting these units.

The ERA's second list, the "list of 68," was the basis for the list of plants now incorporated in the President's proposed legislation. To arrive at this list, ERA screened the original ICF, Inc., list again, and included all units which were less than 40 years old and 25 megawatts or larger. This list of 181 units at 68 generating stations, included those powerplants which had outstanding proposed prohibition orders.

On January 15, 1980, a DOE work session was held to refine the "list of 68" for inclusion in the proposed oil backout legislation. When making choices, DOE considered the readily available information from official files, meetings with State and local officials, ICF transcripts of telephone interviews with utility officials, and information supplied by the Environmental Protection Agency. According to DOE, the group focused on the technical and environmental viability of conversion in composing a list of 62 stations. The list of 62 powerplants, known as the "preliminary backout list," accompanied the preliminary version of the oil backout legislation which was circulated to congressional committees and other Federal agencies for comment.

On February 12 and 13, 1980, ERA officials revised the preliminary list to make it conform with the funding parameters established for the final proposed backout legislation. In this session, ERA assumed that \$3.6 billion would be made available to subsidize conversions, and that each conversion candidate would be funded at a 50-percent subsidy rate. To match these criteria, ERA had to reduce the list to encompass no more than about \$7.2 billion of conversions. Based on ICF estimates of conversion costs per kilowatt of generating capacity, ERA officials dropped enough plants off the preliminary list to bring total estimated conversion costs in line with this figure. The plants eliminated were those which, on the basis of site-specific environmental and technical considerations, ERA officials believed least likely to be converted successfully. On March 5, 1980, ERA decided to drop natural gas-burning units from the list. The resulting "final backout list" contains 107 units at 50 generating stations, with about

26,000 megawatts of capacity. This list was proposed by the President for incorporation in the oil backout legislation and is shown in appendix II.

Another list appears in ERA's annual report to the Congress and identifies candidates for future proposed prohibition orders. 1/ It was derived from the preliminary backout list by dropping off the stations which had outstanding prohibition orders issued under the FUA and the Energy Supply and Environmental Coordination Act and included 98 units at 47 generating stations.

#### SUBSEQUENT LISTS

Since the publication of ERA's preliminary oil backout list, several interested organizations have published additional lists of powerplants. For example, the Edison Electric Institute (EEI) prepared a list of powerplants which critiqued the ERA's preliminary oil backout list. The list is known as "EEI's x list" because an x was placed next to each powerplant which EEI believed was not a proper candidate for inclusion in the legislation. The Institute's list was composed through contacts with the individual utility companies who own the powerplants listed on ERA's preliminary oil backout list. The EEI list represents the opinions of the utility industry about appropriate conversion candidates.

The most recent list of powerplants is included in Senate bill 2470 as reported by the Senate Committee on Energy and Natural Resources, and passed by the Senate. This list contains 80 units at 38 generating stations owned by 26 utilities. Although some differences of opinion remain about certain units listed in the Senate bill, the list considers a wide variety of viewpoints and is a substantial refinement of powerplants which can feasibly be converted from oil to coal. The Committee accepted the view that some units should be dropped from the "final backout list" proposed by the President for various reasons, including substantial local opposition, size or age of the units, or potential effect on planned coal fired plants. 2/

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1/"Powerplant and Industrial Fuel Use Act Annual Report," Economic Regulatory Administration, Department of Energy, Mar. 1, 1980.

2/This list is contained in appendix II of this report and was published in S. Rept. No. 96-802, Report on the "Powerplant Fuels Conservation Act of 1980," June 16, 1980.

## CONCLUSION

The reason for the apparent inconsistencies between the various lists of coal-capable utility powerplants is that the lists were compiled for different purposes. The ICF Inc., list, recent predecessor to all subsequent lists, was compiled as an attempt to identify the universe of coal-capable utility powerplants. Subsequent refinements of the ICF Inc., list were produced by ERA for regulatory purposes and as an effort to identify those which should be included in the proposed oil backout legislation. Other lists, such as the one prepared by EEI represent its particular knowledge and interests in the conversion of the individual powerplants.

## CHAPTER 3

### UTILITY FINANCIAL CONDITIONS

#### AND THE COSTS OF CONVERSION VARY

The financial conditions of the utilities with powerplants which can be converted from oil to coal varies as well as the cost of converting individual powerplants. Those utilities with sufficient financial resources are proceeding to convert powerplants without Federal assistance due to the financial benefits resulting from the use of coal. For other utilities, the costs of conversion or the financial conditions of the companies may delay or preclude action unless Federal assistance is offered. Delays in converting to coal can also be expected for environmental reasons.

Six of the 14 utilities contacted by us plan to voluntarily convert 25 oil burning units to coal by 1987. Together with the utilities that have notified ERA of their voluntary conversion plans, about 190,000 barrels of residual oil per day will be saved. This residual oil savings could be increased to a maximum of 350,000 barrels of oil per day if all 80 units on the Senate list of powerplants converts to coal. However, attaining the maximum level of residual oil savings appears to be dependent on Federal funding which could overcome financial hurdles to conversion.

#### FINANCIAL CONDITIONS OF UTILITIES VARY

The financial conditions of the 14 utilities we contacted vary considerably. DOE has linked the previous lack of conversion actions, in part, to the poor financial conditions of some utilities. The stock and bond ratings of the utilities included in our review lend support to the view that financial conditions may delay or preclude certain conversions.

DOE officials noted in April 1980 that many of the utilities owning oil fired powerplants which could be converted to coal were legally constrained from issuing additional debt and discouraged from marketing new equity issues due to market conditions. For example, 13 of 32 such companies had interest coverage ratios at or below 2.0, a level below which they were generally precluded from issuing new debt. DOE thought that some of these utilities were discouraged from issuing new common equity since the average ratio of market value to book value for these utilities was 64 percent compared to an average of 71 percent for the 100



largest utilities. DOE believes these factors contributed to some utility companies' inability to finance the costs of conversion.

While recognizing these potential financial constraints, ERA officials noted that formal objections on financial ground have not generally been raised to prohibition orders. However, the regulatory process has not reached the point where a company which was opposed to conversion on financial grounds was forced to obtain an exemption or finance a conversion they did not deem acceptable.

As an indicator of the financial position of the 14 utilities included in our analysis, we obtained the Standard and Poor's quality ratings of utility securities as shown below. The Standard and Poor's ratings can be used as an indicator of a utility's earnings capability and as a means for investors in utility stocks and bonds to assess the relative risks of owning one company's securities versus those of similar companies.

Standard And Poor's Quality  
Ratings For Selected Utilities (note a)

<u>Utility</u>	<u>1979 quality rating</u>	<u>1980 quality rating</u>
Virginia Electric and Power Co.		
Bonds	A	A
Preferred Stock	BBB+	BBB to BBB+
Savannah Electric and Power Co.		
Bonds	BBB-	BB to BBB-
Preferred Stock	B	B
Consolidated Edison Co. of New York Inc.		
Bonds	A	A to AAA
Preferred Stock	A-	A-
Baltimore Gas and Electric Co.		
Bonds	AA-	AA-
Preferred Stock	AA-	A-
New England Power Co.		
Bonds	A to A+	A+
Preferred Stock	A	A

<u>Utility</u>	<u>1979 quality rating</u>	<u>1980 quality rating</u>
Public Service Electric and Gas Co.		
Bonds	AA	AA
Preferred Stock	A+	A+
Long Island Lighting Co.		
Bonds	A-	A-
Preferred Stock	BBB	BBB
Public Service Co. of New Hampshire		
Bonds	BBB	BB+ to BBB
Preferred Stock	BBB	BB
Georgia Power Co.		
Bonds	BBB	BBB
Preferred Stock	BBB	BBB
Canal Electric Co.		
Bonds	A	A
Preferred Stock	None listed	None listed
Hartford Electric Light Co.		
Bonds	A-	A-
Preferred Stock	None listed	None listed
Connecticut Light and Power Co.		
Bonds	A-	A-
Preferred Stock	None listed	None listed
Boston Edison Co.		
Bonds	BBB	BBB
Preferred Stock	BB to BBB	BB
United Illuminating Co.		
Bonds	None listed	None listed
Preferred Stock	BBB	B to BB-

a/If a rating is not shown, this indicated that no rating was provided or there are no outstanding issues in the category. When issues in a category were rated differently, the range of ratings is presented. These ratings are further explained in appendix I.

These ratings show that while most of the utilities enjoy good bond and preferred stock ratings ("AAA"- "BBB"), four have lower rated securities. For example, Savannah Electric and Power Company, Public Service Company of New Hampshire, Boston Edison Company, and United Illuminating Company have preferred stock rated "B" to "BB". This means that each company's capacity to pay the preferred stock obligations is predominately speculative and is subject to large uncertainties or major risk exposures to adverse conditions.

SUPPORT FOR CONVERSIONS GROWING  
BUT OPPOSITION REMAINS

While some utilities are now making plans to convert from oil to coal with the support of their State public utility commissions, other companies remain opposed to conversion. The planned conversions will be completed unless unforeseen circumstances cause delay or preclude action. In addition, delays can be expected when major environmental questions exist. Other companies stated that they are opposed to certain conversions, but some may reconsider favorably if substantial assistance were provided. The utilities included in our review reported the following viewpoints on conversion.

<u>Utility viewpoints on conversion</u>	<u>Number of units</u>
Favorable, voluntary conversions are planned	30
Opposed to conversion on economic, financial, or feasibility grounds	13
Undecided while awaiting study results	<u>8</u>
Total	<u>51</u>

These units are included in the Senate's list of 80 units, and 46 of the 51 received detailed attention in our review. The utility companies which own the five other units have notified ERA that they plan voluntary conversions. 1/

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1/These include two units of the Atlantic City Electric Company (Deepwater station) and three units of the Central Maine Power Company (Mason station).

In addition to the 51 units mentioned above, we included 18 other units in our review which were originally proposed for conversion by the President, but subsequently eliminated from consideration by the Senate. In these cases, our review supported the Senate decisions to eliminate the units from consideration because the units were too old or too small to merit consideration, some did not appear economically beneficial to convert, or there was substantial local opposition to the conversions. <sup>1/</sup> The Department of Energy has also endorsed the Senate list for legislative purposes. The list originally proposed by the President and the Senate's list of 80 units is included as appendix II.

#### Data analysis and qualifications

Our review was intended to provide an indication of the costs and financial viability of conversion. In addition to the financial information discussed earlier, we obtained utility officials' viewpoints on the costs of conversion and as detailed information about the costs and feasibility of conversion as were available. In this chapter, the information is used to (1) provide a record of the utility viewpoints on conversion and (2) calculate and compare the costs of the proposed program based on the grant funding allocation formulas proposed by the President and the Senate.

The quality of the conversion cost and fuel savings data supplied by the utility companies varied. In some cases, the information was based on detailed engineering and feasibility studies while other utilities supplied the results of preliminary studies. Some companies noted that the cost estimates could change significantly depending upon the negotiation of environmental requirements. Because of reporting time constraints, we assumed the utility estimates were reasonable and did not audit the estimates or review the assumptions used by the companies as a basis for their analyses.

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<sup>1/</sup>Our review concurred with the Senate decisions for two units of the Georgia Power Company (McManus station), two units of the Baltimore Gas and Electric Company (Riverside station), two units of the Public Service Electric and Gas Company (Kearney station), three units of the Hartford Electric Company (Middletown station), one unit of the Connecticut Light and Power Company (Montville station), six units of the Long Island Lighting Company (Northport and Port Jefferson stations), and two units of the Virginia Electric and Power Company (Portsmouth station).

Variations occurred in the reporting of environmental compliance costs. Some utilities reported their estimate of full compliance with Federal and State air quality standards but others provided a range of potential conversion costs based on alternative forms of pollution control equipment which could be required. In a few cases, the utility cost estimates did not reflect full compliance with State air quality standards because the utilities plan to petition for revision of the standards. We used the highest cost estimate provided for each conversion based on the conservative assumption that it would be required for environmental compliance. However, we recognize that some companies might not need the higher amount, while others may need more.

We also used other data supplied by utility officials in our computations such as fuel savings estimates and remaining boiler lifetimes following conversion. Utility officials pointed out that the actual fuel savings following a conversion can vary depending upon changes in electricity demand or electricity sales from one power system to another. We also noted that some utilities were not projecting an increased service life for converted boilers although DOE generally expects an increased service life for such boilers.

The grant funding formula proposed by the President, and contained in the applicable House bills, differs from the formula contained in the Senate passed version of the legislation. The House bills would provide grants based on the lesser of 50 percent of the costs of conversion, or \$4 per barrel for each barrel of oil saved. <sup>1/</sup> The Senate bill would provide grants ranging from 25 percent to 50 percent of the conversion costs, depending upon individual company financial circumstances.

Thirty voluntary conversions  
now planned--a new trend

Six of the 14 utilities included in our review were planning 25 conversions and 2 other utilities have notified ERA that they plan to convert 5 additional units from oil to coal. The major considerations in planning these conversions were the return on investment, the cost-effectiveness of the conversions themselves, the rate relief which would be provided to customers, and the general support of the public utility commissions. Conversion of these 30 units would save about

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<sup>1/</sup>See footnote on p. 5.

190,000 barrels of oil per day. Although Federal grants are not necessary to effect these conversions, such grants could assure that the planned conversion schedules are met.

The 25 units cited below are scheduled to be converted to coal before 1985, according to company officials, except for Brandon Shores unit Number 2. This unit is now under construction and being converted from oil to coal before its initial startup in 1987.

Virginia Electric and Power Company:

Chesterfield 3, 4, 5, 6  
Portsmouth 3, 4  
Possum Point 3, 4  
Yorktown 1, 2

Consolidated Edison Company:

Ravenswood 3  
Arthur Kill 2, 3

Public Service Electric and Gas Company:

Burlington 7  
Bergen 1, 2  
Hudson 1

New England Electric Power Company:

Brayton Point 1, 2, 3

Savannah Electric and Power Company:

Effingham 1

Baltimore Gas and Electric Company:

C. P. Crane 1, 2  
Brandon Shores 1, 2

However, some delays in completing these plans can be expected. While four of these utilities have already started to perform emission tests as one of the first steps toward converting most face regulatory or environmental constraints that may delay their conversion plans. Delays may occur as a result of the time required for reaching agreement upon the method to attain acceptable air emissions levels and for design and installation of air pollution control equipment.

In addition to the conversion of the Brayton Point station which is in its final stages, several other companies are making progress. The Virginia Electric and Power Company has all 10 of its conversions in progress. It expects five of these conversions to be completed during

1980 and the remaining units to be converted by 1983. Also, Consolidated Edison and Baltimore Gas and Electric Companies are performing or seeking approval for emission tests using high sulfur oil to determine whether they can burn coal within acceptable air quality standards. Should the tests be successful and any required changes in State air quality standards be approved, Consolidated Edison expects to convert Ravenswood unit Number 3 by 1982, and Baltimore Gas and Electric Company would convert its C.P. Crane units by 1983.

The financial condition of two of these utilities may affect the completion date of their conversions. For example, Public Service Electric and Gas Company's plans to convert the Bergen and Hudson units at a cost of \$556 million may be adversely affected by the financial condition of the utility to the point that the conversions may be delayed beyond 1985. Company officials stated that competing demands for capital may make it difficult to properly pace the conversions. In addition, they said the units involved are an integral part of the current baseload and because each conversion is expected to require about 6 months, an attempt to convert all of these units at one time prior to 1985 could adversely impact the Company's electrical production reliability. Officials of Baltimore Gas and Electric Company said their plans may also be influenced by the availability of grant funds.

There is a significant range in conversion costs among these 25 units--\$251 million for Hudson to \$23.5 million for the two Portsmouth units. These cost differences result primarily from the varying expenses the utilities expect to incur by complying with Federal and State environmental standards. In some cases, these standards may require expensive pollution abatement equipment such as flue gas desulfurization systems (more commonly called scrubbers) in order to protect local air quality. Other major factors affecting the costs include the current condition of coal handling and pollution abatement equipment which had previously been installed.

Despite the high costs, our analysis shows a number of advantages to converting these units. The majority of these units have an estimated life after conversion of 20 years or more while the projected fuel savings are substantial.

This means that ratepayers should benefit from fuel cost reductions for long periods. Also, 1.8 billion barrels of oil will be saved over the life of the units.

Other conversions are  
opposed or are under study

Officials for 5 utilities we contacted oppose voluntarily converting 13 of the units that are on the Senate's list because they are not cost-effective, are potentially impractical, or the costs may adversely affect the company's financial condition. Their opinions were also based on the high cost of meeting environmental standards, the low amount of expected fuel savings, or the relatively short remaining useful life of the boilers after conversion. Three other utilities are studying the conversion of eight units and are undecided about the feasibility of conversion. The utilities oppose voluntary conversion of the following 13 units, unless sufficient financial assistance is made available to overcome their financial and economic objections:

Canal Electric Company  
Canal 1

Connecticut Light and Power Company:  
Devon 7, 8  
Norwalk Harbor 1, 2

Long Island Lighting Company:  
Port Jefferson 3, 4  
E.F. Barrett 1, 2

Public Service Company of New Hampshire  
Schiller 4, 5, 6

United Illuminating Company  
Bridgeport Harbor 3

Canal Electric Company officials stated that Unit 1 was designed and constructed in the mid-1960s for both oil or coal firing, but their present assessment indicates several inadequate or marginally designed areas. Conversion to coal would require extensive boiler and precipitator modifications and all coal storage and handling equipment would need to be purchased. These costs were estimated at \$150 million and company officials stated that such an addition to their construction program would put an excessive and risky financial burden on the Company and its customers.

Connecticut Light and Power officials opposed converting their powerplants primarily because of the financial strain they would impose on the Company. They stated that the Company will not commit itself to conversion unless Federal grants are a certainty and State regulatory agencies make



the balance of financing possible. The Company officials are also concerned about the restricted space available for coal storage and the availability of an ash disposal site.

Long Island Lighting Company opposed converting any units, according to its officials, because new nuclear, coal, and refuse generating facilities are expected to reduce the Company's oil use 60 percent by 1995. Also, the costs to comply with environmental standards and for coal delivery equipment would not be recovered through fuel savings. As a result, company officials said they anticipate filing for exemptions to preclude converting any units.

Even with grants, the \$3.2-billion cost to convert these units may not be equaled by fuel savings over their remaining life. One reason is that the costs estimated by the company are among the highest of the units we reviewed considering their remaining useful life. Company officials reported that Port Jefferson 3 and 4 and E. F. Barrett 1 and 2 would not be planned for conversion until 1987-88 after which they would have an average useful life of only 7 years.

Officials of Public Service Co. of New Hampshire and the United Illuminating Company told us that incurring significant conversion costs would adversely impact the financial condition of their companies. For this reason, they oppose converting Schiller units 4, 5, 6, and Bridgeport Harbor unit 3, respectively. In the case of Schiller, Public Service Company of New Hampshire opposed the conversion although the State's public utility commission has ordered it because of the expected rate relief that would result. United Illuminating officials reported that the Company is going to have extreme difficulty financing its current construction program and that conversion of Bridgeport Harbor may be feasible only if provisions are made for financing the capital costs which could be as much as \$170 million. In addition, air quality compliance, fuel supply, and waste disposal problems must be solved. The officials also noted that conversion would reduce the net capacity of the unit which will have some adverse economic impact on the Company.

Three utilities, Baltimore Gas and Electric Company, New England Power Company, and Boston Edison Company are opposed or are undecided pending completion of studies on eight units. Tentatively, Baltimore Gas and Electric opposes converting Wagner units 1 and 2 due to their age and environmental concerns. The New England Power Company

is undecided about the conversion of its 3 Salem Harbor units pending the completion of air modeling studies which will help determine the amount of funds required for pollution control equipment. The Boston Edison Company is awaiting the results of a study before taking a position on the potential for converting its Mystic Station.

Public utility commissions  
support conversions

Because of the potential benefits, the public utility commissions in Georgia, Maryland, Massachusetts, New Hampshire, New York, and Virginia generally supported conversions. Commission officials were aware of the numerous voluntary conversion plans and many of the constraints cited by the utilities. Recent actions by three of these commissions are described below.

In response to President Carter's July 1979 address on energy, Maryland's Commission held hearings with the utilities serving Maryland rate payers. The hearings were held in August 1979. According to the Commission officials, the Brandon Shores Power Plant project was started prior to the Fuel Use Act. Units 1 and 2 will start generating electricity in 1984 and 1988, respectively. The Baltimore Gas and Electric Company began planning for the conversion of C. P. Crane units 1 and 2 in 1979 for completion by 1983. Commission officials said they have encouraged conversions, when possible, because of the public benefits but have yet to order any conversions.

In a July 1979 report, the New York Commission supported the conversion of 13 units, including Port Jefferson units 3 and 4, Ravenswood 3, and Arther Kill 2 and 3. The New York Commission also encouraged conversions by hosting meetings with the public utilities and numerous agencies that issue permits, such as DOE, the Environmental Protection Agency, municipalities, and State agencies for taxation, health, and environment. According to Commission officials, the governor gave his support for forming a coal conversion expediting group headed by the State Environmental Conservation Agency, which met several times since its organization.

In July 1979, the New Hampshire Public Utilities Commission began an investigation to determine whether any of the five Schiller Station units should be converted from burning oil to burning natural gas or coal. On March 17, 1980, after considering the economics of conversion, the feasibility of conversion, the environmental impact, and the physical features of the plant, the Commission ordered the company to begin converting Schiller units 4, 5, and 6

to coal. This action was taken despite the Company's claim that it was experiencing serious difficulties in obtaining external financing for its construction program and in maintaining cash flow adequate to fund the program and the cost of the Company's business operations. The Commission estimated that despite a cost of \$15 million to \$33.8 million, the conversion would result in expected economic savings of at least \$20 million annually and would result in a decline in projected total rates of approximately 7 percent.

#### OVERALL EFFECTS OF ALTERNATIVE GRANT FUNDING FORMULAS

A maximum of 350,000 barrels of oil could be saved each day under either the grant formula proposed by the President or the Senate, but the amounts of Federal funding would vary. The President's formula would require about \$2.2 billion in grant funds while the Senate formula would require between \$1.2 billion and \$2.4 billion. These estimates are based on the conversion of the 80 powerplants listed in the Senate bill.

#### Program specifications

To overcome the financial constraints which have limited the number of conversions, the President proposed a program in March 1980 to provide grants which would cover a portion of the capital costs of conversion. This proposal would accelerate conversions during the 1980s. The President's proposed program included the following specifications

- 107 identified units operated by 31 utilities were to be converted by 1985;
- funds totaling \$3.6 billion would be appropriated as grants to be administered by DOE;
- the grant funds were to be allocated to the utilities based on the lesser of 50 percent of the eligible conversion costs or \$4 per each barrel of oil saved;
- each of the units identified in the legislation would be placed under statutory prohibitions and compliance could be achieved by conversion, retirement, or by obtaining an exemption; and
- if a utility did not convert a unit and did not obtain an exemption, it would not be able to use a fuel adjustment clause to recover the fuel oil costs for such units after December 31, 1985.

The original House bills, H.R. 6930 and H.R. 7341 contained the same funding amount and grant formula proposed by the President. 1/

S. 2470, as reported by the Senate Committee on Energy and Natural Resources 2/ and passed by the Senate, maintained the same funding level but revised the President's proposed list of powerplants for various reasons as discussed on page 10. These lists are shown in appendix II.

The Committee also revised the grant funding formula. A minimum grant of 25 percent of eligible conversion costs would be provided to all utilities. In addition those utilities that could document financial need would be eligible for supplemental assistance which could include loans not to exceed 50 percent of the utility's qualifying capital costs or an additional grant of 25 percent of costs. The supplemental assistance is limited to a total of not more than 50 percent of qualifying capital costs.

#### Effects on program costs

The two funding allocation formulas would affect not only the individual grant amounts but also the total amount of funds which would be required for converting every proposed powerplant. Estimates of the grant amounts required under each proposal are shown in the following table together with an estimate of the related oil savings.

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1/See footnote 1 on p. 4.

2/See S. Rept. 96-802, June 16, 1980.

Conversion Costs and Oil Savings for  
Units Cited in the Senate's Proposal

<u>Information source</u>	<u>Number of units</u>	<u>Estimated daily oil savings</u> (000 omitted)	<u>Estimated conversion costs</u> (note a) (millions)	<u>Estimated Grant amount (millions)</u>	
				<u>House (note b)</u>	<u>Senate (note c)</u> minimum      maximum
Utilities	43	246	\$2,936	\$1,305	\$ 734      \$1,468
DOE's April 1980 Report	23	62	1,249	573	312      625
Other DOE information	<u>14</u>	<u>43</u>	<u>553</u>	<u>277</u>	<u>138</u> <u>277</u>
Total	<u>80</u>	<u>351</u>	<u>\$4,738</u>	<u>\$2,155</u>	<u>\$1,184</u> <u>\$2,370</u>

a/The higher conversion costs were used when ranges were given.

b/Based on the lesser of \$4 per barrel or 50 percent of conversion costs.

c/Based on a minimum of 25 percent of conversion costs and a maximum of 50 percent of conversion costs.

Our estimates are based on

- oil savings and conversion cost estimates provided by utilities to us for about 50 percent of the units, and DOE information for the remainder and
- our calculation of illustrative grant amounts based on the two grant formulas but limited to maximum grants of 50 percent as required by the Senate formula.

Our analysis shows that either proposal would require grants of less than \$2.4 billion, for the 80 units listed by the Senate. This is \$1.2 billion less than has been estimated for the 107 units listed by the President. For the Senate formula, this assumes that the amounts of any loans provided to the utilities would be offset by grants of less than the maximum available. The principal reason that our estimated costs for the program are less than previous estimates is that several of the more expensive conversions were omitted from the Senate list. For example, the potential grant amount for Long Island Lighting Co.'s Northport units, which were not included in the Senate list, would have been approximately \$1.3 billion based on 50 percent of the costs of conversion.

#### OBSERVATIONS

The utility industry appears to have reached a turning point in its outlook on converting oil fired boilers to coal. Six of the 14 utilities we contacted have concluded that it is advantageous to convert 25 of their units to coal. With the 5 other conversions which utilities have notified ERA will be completed, an estimated 190,000 barrels of oil per day could be saved. Delays in completing these conversions may be caused by environmental constraints and, in a few cases, financial constraints.

However, utility financial constraints may preclude certain conversions that appear beneficial to ratepayers, while other conversions may not be practical or economical. Five utilities opposed the conversion of 13 units for such reasons. In addition, three utilities were awaiting the completion of studies on eight units.

Providing grant funds for those utilities which have already converted to coal or to those in the process of converting is unnecessary from a financial viewpoint. In these situations the utilities with sufficient financial

resources have decided that conversions are economically advantageous. Beyond these conversions, a large number remain to be initiated and these represent a substantial oil savings. For those utilities unable to attract sufficient investment capital to undertake a conversion within the time frame goals of the legislation, or for those conversions which would otherwise be uneconomic to convert, Federal grants would help to assure that the potential oil savings are attained.

We note in this regard that the Senate rejected financial need as a basis for providing grants of 25 percent for each conversion. Facts supporting this approach to Federal funding are the past record of delays and inaction on conversion under the Energy Supply and Environmental Coordination Act and the financial condition of some utility companies. This approach also underscores the national benefits of reducing oil consumption and the fuel savings which consumers would receive if conversions were expedited.

Based on our review, the Senate bill contains the more viable list of units which are suitable for conversion. If all 80 units on the Senate list were converted, about 350,000 barrels of oil per day could be saved. Our analysis also shows that the maximum grant cost would be between \$2.2 and \$2.4 billion for either the President's or the Senate's funding formulas.

Some consumers can expect conversions to provide rate relief for long periods while others may not receive actual rate reductions. This will occur because the benefits of conversion vary from utility to utility depending upon the costs of conversion and the amount of fuel savings achieved. In addition, consumers may not experience rate reductions if the costs of other utility activities dominate the composition of their bills.

## CHAPTER 4

### COST OF ANHEUSER BUSCH'S FUA

#### EXEMPTION EXCESSIVE BUT NOT TYPICAL

##### OF REGULATORY BURDEN

This chapter discusses the Anheuser Busch Company's request for an exemption from the FUA, a regulatory case which is not related to the proposed "oil backout" legislation, but involves industrial fuels choices. Both utility and industrial fuels choices, and conversion to coal, are regulated under FUA.

Although the Anheuser Busch Company cited expenses of about \$1 million in obtaining a FUA exemption to use oil or natural gas fired boilers in their Los Angeles brewery expansion, its experience is unlikely to be repeated. The Company started developing their exemption request the month the FUA became law to prevent a delay of their brewery expansion and proceeded with the exemption process while the regulatory program was undergoing design changes. These changes increased the Company's costs. Another portion of the costs is attributed to the learning experience which accompanied this first major FUA exemption petition. Combined with the extensive analysis of alternative fuels which was required, the Company incurred excessive regulatory costs.

In the late 1970s, the Anheuser Busch Company decided to expand its Los Angeles brewery to serve the highly competitive southern California market. The \$300 million brewery expansion was planned for completion by 1981 and required two oil and natural gas fired boilers to provide additional quantities of steam. These new boilers were expected to cost about \$2.3 million and consume approximately 202,000 barrels of low sulfur residual oil per year or an equivalent amount of natural gas.

The preliminary stages of the expansion were nearly completed when the FUA was enacted on November 9, 1978. However, the boilers had not been purchased because the Company was awaiting the final major environmental permit from the Environmental Protection Agency and completion of arrangements for adequate sewer capacity. Company officials expected the permit to be issued because the State, with stricter environmental requirements, had approved the proposed boiler installation. Because the



Company had not yet purchased the boilers, they became subject to FUA which prohibited the use of such boilers unless an exemption from the Act had been obtained. 1/

The desirability of completing the brewery expansion on schedule compelled the Company to proceed under the proposed regulations although these were likely to be changed. But, the Company believes that FUA should not have applied to projects which were close to the start of construction. In addition, FUA did not provide for emergency consideration of ongoing projects unless 75 percent alternative fuel could be used, and ERA did not believe it was authorized to act on the Company's request for consideration until the interim regulations were published in May 1979, 6 months later. The Company believes that FUA's coverage of projects which had been initiated before the regulatory program could be implemented was an unreasonable burden, and that such regulatory programs should recognize a company's prior investments.

EXTENSIVE ANALYTICAL  
REQUIREMENTS AND CHANGING  
REGULATIONS CAUSED HIGH COSTS

Besides the analytical requirements, this case was notable because of the changing regulations and their impact on the Company's costs. As a result of the regulatory changes, the analysis developed to support the exemption required major revisions. In addition, this was the first major exemption processed under FUA. Consequently, it was a learning experience for all involved which contributed to the costs of the exemption. The time required for obtaining the exemption was about 1 year as shown in the following chronology of events.

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1/The proposed boilers had a capacity of about 144 million British thermal units (Btus) per hour while section 202(a) of FUA prohibits the use of oil and gas in new industrial boilers over 100 million Btus per hour unless an exemption is obtained.

<u>Date</u>	<u>Event</u>
Fall 1978	The Company was planning their brewery expansion, and the boilers had received all major permits but one from the Environmental Protection Agency.
November 1978	FUA became law and prohibited the use of oil and gas in new large industrial boilers and ERA issued proposed regulations for implementing FUA.
December 1978	The Company began a survey of alternatives to oil and gas.
April 1979	ERA decided that 5 fuels plus 4 fuel mixtures needed in-depth analysis in the Company's Fuels Decision Report.
May 1979	ERA issued interim regulations with a revised reporting format and additional regulatory requirements.
July 1979	ERA accepted the Company's report and petition for an exemption.
November 1979	ERA staff tentatively determined that the only feasible fuels were oil and gas.
December 1979	ERA granted the Company an exemption.

Fuels search required by  
proposed regulations

Despite the fact that ERA had issued proposed regulations which were likely to be changed, the Anheuser Busch Company initiated the process for a permanent exemption from FUA in December 1978 so that the brewery expansion could be completed on schedule, if possible. These proposed regulations required Anheuser Busch to consider all alternate fuels which were potentially reasonable alternatives to natural gas or petroleum. The following 17 fuels indicate the wide range which was considered. As ERA reported, "virtually every potential energy source which conceivably could be used" was investigated, and documentation was obtained in order to identify those fuels which warranted a thorough examination.

Solid fuels

Coal  
Refuse derived fuel  
Biomass  
Wood  
Petroleum coke

Gaseous fuels

Low Btu coal gas  
High Btu coal gas  
Sanitary landfill gas

Liquid fuels

Shale oil  
Alcohol  
Synthetic oil  
Oil from diatomite

Miscellaneous fuels

Solar  
Electricity  
Geothermal  
Uranium  
Refinery wastes

The fuels search performed by the Company's energy consultants concluded that most of these fuels were not reasonable alternates and did not warrant further consideration.

Fuels decision report  
requirements extensive

The next step of the exemption process required by the proposed regulations was completion of a Fuels Decision Report to document the rationale for an exemption. In this report, the Anheuser Busch Company was to document the analysis of a number of fuels chosen for their potential feasibility as identified by the fuels search. If certain criteria were met, the report was to be used to demonstrate eligibility for one or more exemptions from the Act and to provide ERA with additional information necessary to carry out the purposes of FUA and the National Environmental Policy Act.

The report format was designed by ERA so that, in this case, the feasibility of all reasonable alternatives to oil and gas would be "rigorously explored and objectively evaluated." The report was also required to clearly and concisely describe the process and methodology used to search for, analyze, and evaluate each fuel, including documentation of feasibility reports, experts consulted, and sources used. Once the report was completed and submitted to ERA with a petition for exemption, ERA planned to review the petitioner's arguments against the use of each alternative fuel, and grant or deny an exemption as appropriate.

At an April 25, 1979, prepetition conference, ERA determined that the Anheuser Busch Company had to further consider and analyze the following fuels and report the results in a Fuels Decision Report. Also, ERA required the examination of fuel mixtures, and those listed below were analyzed as well.

Coal	
Petroleum coke	Coal/oil mixture
Solar energy	Coke/oil mixture
Refuse derived fuel	RDF/oil mixture
Low Btu coal gas	Solar/oil mixture

During the preparation of the report by the Anheuser Busch Company's consultants, various drafts were submitted to ERA for comment (although not required by ERA) in order to ensure the regulatory requirements would be met.

Report requirements  
changed

On May 8, 1979, ERA issued its interim regulations which set a revised format for the Fuels Decision Report and established new regulatory requirements needed for completion of the report. The revised report format modified the extensive reporting originally required in the proposed regulations. Consequently, the draft report that was being prepared by Anheuser Busch required statistical, analytical, and format revisions to meet the requirements of the interim rules. The Company's completed report and petition for exemption were accepted by ERA for consideration on July 11, 1979.

The Anheuser Busch Company's report concluded that:

- The cost of using low Btu coal gas or a mixture of solar energy and petroleum would exceed the minimum cost established by the regulations. 1/
- Solar energy collectors would require more land area than was available.
- The use of the other fuels would violate local air quality regulations.

The required analysis was extensive. For example, to support the environmentally based exemptions the Company was required to design coal fired boilers for the brewery and prove that adequate emissions control technology would not be available during the next 5 years. This required an investigation of the state of the art in the control of emissions from such a coal-fired facility. The environmental burden was also increased by the necessity of analyzing the expanded brewery as if the project was optional (a project, no-project basis) as required by ERA to meet the requirements of the National Environmental Policy Act. 2/ To support the cost exemption for low Btu coal gas, it was necessary for the Company consultants to design a complete coal gasifier facility for use at the brewery so that supportable cost data could be developed. The Company believes that the cost of addressing alternative fuels through substantial engineering studies may not have been recognized in the legislative design.

#### ERA ACTIONS IN APPROVING BUSCH EXEMPTION

To test the accuracy of the Company's report, ERA staff performed extensive verification and analysis and contracted with Argonne National Laboratory to prepare an independent

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1/The interim regulations specified that fuels would be considered uneconomical if their cost was in excess of 1.3 times the cost of using imported oil.

2/The Company's representatives also noted that ERA suggested that amendments to the California air quality standards be pursued to allow the use of coal, even though the Environmental Protection Agency was, at that time, adding a prohibition on new emission sources in the area because the State plan was not sufficiently strict.

verification of the environmentally based exemptions claims. Following completion of these tasks, ERA issued its Tentative Staff Determination on November 9, 1979, which concurred with Anheuser Busch Company's arguments in support of exemptions from the use of coal, petroleum coke, refuse derived fuel, coal gas, and the four mixtures. ERA disagreed with the contention that solar power was not feasible due to site limitations, but concluded that the cost would substantially exceed that of imported oil.

On December 14, 1979, ERA issued an order exempting the Anheuser Busch Company from the prohibitions of section 202(a) of the FUA. Exercising the authority granted in section 214(a) of FUA, ERA attached to the order a set of terms and conditions including a list of energy conservation measures which Anheuser Busch was required to incorporate into its brewery site. These measures were proposed by the Company and included a specification of physical characteristics of the petroleum which may be burned in the new boilers and a limitation on the annual fuel consumption, either oil or gas, of the two boilers. As part of these terms and conditions, the Company is required to install a solar energy system for hot water, heating and cooling at either the present administrative building or another of their Los Angeles facilities.

Although the exemption process required 1 year, the Company is planning to have the brewery expansion completed on schedule. ERA required about 6 months of this time period to analyze the Company's report and issue the exemption.

#### REASONS WHY THE COMPANY'S COSTS WERE EXCESSIVE

Besides the fact that the FUA applied to the ongoing project, three major factors contributed to the expense incurred by the Anheuser Busch Company. First, the regulations require an extensive evaluation of alternative fuels and environmental information. Second, there was no previous experience to indicate how the exemption process would best operate. And third, the changing regulations and regulatory process increased the company's analytic and reporting burden. Aside from the fact that this was the first major exemption case handled under the FUA, and that regulation changes added to the company's costs, Anheuser Busch Company officials stated that the costs of pursuing the exemption were not in balance with the decision being made, and that a smaller company may not have been able to complete the process.

In addition to the Company estimated \$1 million in legal and consultant expenses, Anheuser Busch also incurred salary and travel expenses for its employees associated with the exemption process. But, the billing format of the Company's consultants and lawyers did not separate charges for FUA activities from others. As a result, the Company could not readily provide a breakdown of its expenses which would show the portion attributable to the regulatory changes and stated that \$5,000 would be required to provide this data. The Company declined to cover this additional expense, and we did not audit the costs claimed by the Company.

The analysis of alternate fuels was expensive because it required a market survey followed by an in-depth analysis of the physical and commercial availability of each fuel, the potential for incorporating the fuels in the brewery operation, and their environmental and economic feasibility. Any potential fuel had to be considered in the fuels search, and any fuel which was eliminated from consideration had to be fully justified. In this case, six different brewery configurations had to be designed, and bids to document the costs had to be obtained. These costs were difficult to document when vendors perceived that their particular technology would be an unlikely prospect for incorporation in a brewery and therefore were not inclined to provide a bid. Finally, a computer program had to be developed to perform the financial calculations necessary to compare each technical option with the cost of using imported petroleum.

The Company also believes that ERA should have been a prime source of information and advice about the various technologies, but the ERA staff proved to be of little assistance in the technological area. Anheuser Busch feels that DOE should have provided a basic data base and that the company's expense in developing basic knowledge about the technologies should not have been incurred. Often, the information required as a starting point in preparing the Anheuser Busch analysis was obtained from Government reports, some of which were produced by DOE. In addition, the Company believes that a less costly method of establishing the price differential between imported oil and alternative fuels should be developed, and that sufficient information on the relative costs of these fuels is available within DOE and other Government agencies so that this task need not be placed upon industry.

ERA officials cited several factors which agree with the Company's perspective. First, some of the analyses which were prepared for the Fuels Decision Report were

based on the tougher proposed regulations rather than on the less complex interim regulations. As a result, some analyses turned out to be superfluous. For example, the alternate fuels search was more comprehensive than is now required by the regulations. Second, because the proposed regulations organized the Fuels Decision Report functionally and the interim only by exemption, the Company had to significantly rewrite the draft report chapters. ERA officials said that they could not offer technological advice because expertise was not yet available within their office and that other DOE officials had varying viewpoints on technological feasibility.

However, ERA officials also believe that the Company's consultant costs were increased because the company placed a high priority on speeding up the analysis and handling of this case. ERA officials believe that the costs of similar exemptions in the future will be far less than those claimed by the Anheuser Busch Company.

ISSUES RAISED BY THE  
ANHEUSER BUSCH COMPANY  
AND ERA COMMENTS

According to the Anheuser Busch Company, their legal representatives, and energy consultants, their experience with the recently devised ERA regulations raises a number of concerns which also add to the regulatory burden.

The concerns are

- that the terms and conditions provision of the law is overly broad;
- that the regulations treat mandatory exemptions as discretionary because Federal environmental decisions may be required, and such decisions could cause lengthy delays;
- that the maximum time period on temporary exemptions discourages those who might consider using an alternative fuel; and
- that ERA required analysis of fuel mixtures beyond those authorized by FUA.

Each of these concerns is discussed in the following paragraphs along with comments made by ERA during the development of the FUA regulations.



## Terms and conditions

The Company's representatives stated that section 214 of FUA, which authorizes the Secretary of Energy to impose such terms and conditions as are deemed appropriate, is overly broad and invites an excessive regulatory burden. They stated that this authority was used, in part, by ERA to justify the gathering of environmental impact information which is an excessive regulatory burden and expands the power of the ERA. They suggested that

--section 214 be amended to narrow the authority of the Secretary to approve terms and conditions to those reasonably necessary for the enforcement of the exemption granted and

--that section 763 be amended to clarify that an environmental impact statement is not required for granting an exemption to a petitioner to burn oil or gas in a polluted air basin.

Similar comments have been made previously. In the preamble to the final regulations, ERA noted that commenters on the interim regulations suggested that ERA lacked authority to impose a wide variety of terms and conditions such as the replacement of inefficient units, the use of specific fuels or fuel mixtures, and the use of environmental control measures beyond those otherwise required by law. ERA responded that FUA gives the Secretary wide latitude in prescribing terms and conditions so long as they are reasonable and consistent with the purposes of the Act and that such terms and conditions will be considered on a case-by-case basis.

## Mandatory exemptions transformed to discretionary exemptions

The Company believes that ERA's regulations transform mandatory exemptions of FUA into discretionary exemptions when requiring an environmental assessment and possibly an environmental impact statement. From its perspective, this requirement constitutes the implicit threat that a project will be delayed while an environmental impact statement is being prepared, evaluated, and a Federal decision is made. In this case, they felt this potential delay had a "substantial coercive effect on the Company at all stages of the exemption

process which contributed substantially to the expense incurred by the Company." 1/ As described above, the Company recommends that the law be modified to clarify the environmental requirements.

ERA has stated that environmental impact information is required to assist ERA in complying with the National Environmental Policy Act even though an environmental impact statement might not be required. ERA intends to use the required data to determine not only what level of environmental analysis is needed prior to granting or denying an exemption but also as a base to expedite preparation of environmental assessments and impact statements. ERA also stated that an environmental exemption would not be automatically approved for projects located in nonattainment areas because the Clean Air Act allows growth in either dirty or clean air areas, and it would be inconsistent with FUA to reserve such growth to oil or gas fired facilities. Therefore, ERA requires petitioners to explore the available regulatory options such as revision of State air quality standards.

#### Use of alternative fuels discouraged

The Company noted ERA's position that FUA provides no authority to consider a further exemption once the maximum time period for temporary exemptions has expired. This discourages the consideration of alternative fuels such as synthetic fuel or solar energy because expiration of a temporary exemption would require a shutdown if the proposed alternative was not available as early as was predicted. ERA has agreed with this viewpoint since expiration of an exemption would activate FUA's prohibition provisions. The Company believes that FUA should be amended to provide for further exemptions should the availability of technology or alternative fuels not develop as anticipated.

#### Mixtures exemption interpretation

The Company believes it was beyond ERA authority to require information about fuel mixtures with as little as

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1/The Company noted that it considered the collection of various environmental data excessive. For example, ERA required information on the location of historic landmarks within 25 miles of the brewery and potential impact of the brewery's waste water on aquatic life.

10 percent alternative fuel, including solar energy. Although not specifically authorized by FUA, ERA has stated that the terms and conditions provisions of FUA are sufficiently broad to allow ERA to require such information. (See p. 37.)

POTENTIAL THAT THE EXPERIENCE  
WILL BE REPEATED

The Anheuser Busch Company was the first and so far the only Company that has filed for a permanent general exemption from the prohibitions of FUA. Since the completion of this case, ERA has issued final regulations which further reduce the reporting burden and evidentiary requirements for such an exemption. Yet, many of the basic evidentiary requirements are the same as those that applied to the Anheuser Busch Company. No company, however, is likely to encounter the same changing regulatory conditions faced by Anheuser Busch.

The following table lists the exemption petitions accepted by ERA as of July, 1980, except for Anheuser Busch, for new major fuel burning installations.

<u>Type of exemption</u>	<u>Number of petitions</u>
Temporary public interest	6
Cost	2
Mixtures	20
Cogeneration	1
Temporary synthetic fuels	1
Emergency	<u>1</u>
Total	<u>31</u>

Over 20 months have passed since the FUA was enacted, and only the Anheuser Busch Company has completed the requirements for a permanent general exemption based on environmental or site limitations. ERA accepted two cost based exemptions during August 1980, and these cases should provide further insight into the cost based exemption burden. However, we did not attempt to predict how often other such exemptions will be desired because such a prediction would be subject to a high degree of speculation and would be dependent upon regulatory complexities.

Changes in ERA's regulations will also reduce the reporting burden. For example, on June 6, 1980, ERA issued

the final regulations which delete the requirement for a formally structured Fuels Decision Report. To obtain a similar exemption, a petitioner must still perform a fuels search, but the minimum number of alternate fuels which must be examined can now be determined during a prepetition conference. The fuels search is also retained when requesting an intermediate load powerplant exemption or an exemption for a scheduled equipment outage of over 28 days. However, other types of exemptions are available with far less analysis and documentation, and several types are now available through certification of eligibility.

ERA also recognized the problems industry faces when attempting to decide which alternative fuels are reasonable choices to examine. To assist in these decisions, ERA is developing a matrix of alternative fuels and technologies which can identify feasibility on such bases as industry, geographic location, unit size, or unit type. The matrix will be amended on an annual or on an as-needed basis.

#### CONCLUSIONS

The Anheuser Busch Company's experience was not representative of the effort now required to obtain a similar exemption. In the future, petitioners will face fewer uncertainties and less cumbersome and costly research and documentation than required of the Anheuser Busch Company. Yet, it is clear that those who apply for a similar exemption could be required to perform an extensive study of alternative fuels. The legal and regulatory issues raised by the Anheuser Busch Company could be analyzed further to determine if more information is required than intended by the FUA or if changes in the FUA are appropriate. However, FUA authorized a regulatory process which, to be effective, appears to require the substantive analysis of alternative technologies. Further case experience will be necessary before an evaluation of the current regulatory burden can be completed.

STANDARD AND POOR'S SECURITY  
RATING GUIDE

PREFERRED STOCK RATINGS

"AAA" This is the highest rating that may be assigned by Standard & Poor's to a preferred stock issue and indicates an extremely strong capacity to pay the preferred stock obligations.

"AA" A preferred stock issue rated "AA" also qualifies as a high-quality fixed income security. The capacity to pay preferred stock obligations is very strong, although not as overwhelming as for issues rated "AAA".

"A" An issue rated "A" is backed by a sound capacity to pay the preferred stock obligations, although it is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions.

"BBB" An issue rated "BBB" is regarded as backed by an adequate capacity to pay the preferred stock obligations. Whereas it normally exhibits adequate protection parameters, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to make payments for a preferred stock in this category than for issues in the "A" category.

"BB," "B," "CCC" Preferred stock rated "BB," "B," and "CCC" are regarded, on balance, as predominantly speculative with respect to the issuer's capacity to pay preferred stock obligations. "BB" indicates the lowest degree of speculation and "CCC" the highest degree of speculation. While such issues will likely have some quality and protective characteristics, these are outweighed by large uncertainties or major risk exposures to adverse conditions.

CORPORATE BOND RATINGS

"AAA" Bonds rated "AAA" have the highest rating assigned by Standard & Poor's to a debt obligation. Capacity to pay interest and repay principal is extremely strong.

"AA" Bonds rated "AA" have a very strong capacity to pay interest and repay principal and differ from the highest rated issues only in small degree.

"A" Bonds rated "A" have a strong capacity to pay interest and repay principal although they are somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than bonds in higher rated categories.

"BBB" Bonds rated "BBB" are regarded as having an adequate capacity to pay interest and repay principal. Whereas they normally exhibit adequate protection parameters, adverse economic conditions or changing circumstances are more likely to lead to a weakened capacity to pay interest and repay principal for bonds in this category than for bonds in higher rated categories.

"BB," "B," "CCC," "CC" Bonds rated "BB," "B," "CCC," and "CC" are regarded, on balance, as predominantly speculative with respect to capacity to pay interest and repay principal in accordance with the terms of the obligation. "BB" indicates the lowest degree of speculation and "CC" the highest degree of speculation. While such bonds will likely have some quality and protective characteristics, these are outweighed by large uncertainties or major risk exposures to adverse conditions.

These ratings may be modified by the addition of a plus or minus sign to show the relative standing within major rating categories.

LIST OF POWERPLANTS COVERED BY PHASE I  
OF THE PRESIDENT AND SENATE'S PROPOSED  
AMENDMENTS TO THE POWERPLANT AND  
INDUSTRIAL FUEL USE ACT OF 1978

State:	Company:	Station	Unit Numbers President's List	Senate List
<b>Connecticut:</b>				
	Connecticut Light & Power Co. (Northeast Utilities):			
		Devon	7	7
		"	8	8
		Montville	5	
		Norwalk Harbor	1	1
		"	2	2
	Hartford Electric (Northeast Utilities):			
		Middletown	1	
		"	2	
		"	3	
	United Illuminating Co.:			
		Bridgeport Harbor	3	3
<b>Maine:</b>				
	Central Maine Power Co.:			
		Mason	3	3
		"	4	4
		"	5	5
<b>Massachusetts:</b>				
	Boston Edison Co.:			
		Mystic	4	4
		"	5	5
		"	6	6
	Canal Electric Co. (New England Gas & Electric Association):			
		Canal	1	1
	Holyoke Water Power (Northeast Utilities):			
		Mount Tom	1	1
	Montaup Electric (Northeast Utilities):			
		Somerset	6	
	New England Power Co. (New England Electric System):			
		Brayton Point	1	1
		"	2	2
		"	3	3
		Salem Harbor	1	1
		"	2	2
		"	3	3

State: Company: Station	Unit Numbers	
	President's List	Senate List
Western Massachusetts Electric Co. (Northeast Utilities):		
West Springfield	3	1
"		2
"		3
New Hampshire:		
Public Service Co. of New Hampshire:		
Schiller	4	4
"	5	5
"	6	6
Rhode Island:		
Narragansett Electric Co. (New England Gas & Electric Association):		
South Street	12	12
New Jersey:		
Atlantic City Electric Co.:		
Deepwater	7	7
"	8	8
"	9	9
Jersey Central Power (General Public Utilities):		
Sayreville	5	4
"		5
Public Service Electric & Gas Co.:		
Bergen	1	1
"	2	2
Burlington	7	7
Hudson	1	1
Kearney	7	
"	8	
New York:		
Central Hudson Gas & Electric Corp.:		
Danskanmer	1	
"	2	
"	3	3
"	4	4
Consolidated Edison:		
Arthur Kill	2	2
"	3	3
Ravenswood	3	3
Long Island Lighting Co.:		
E. F. Barrett	1	1
"	2	2
Northport	1	
"	2	
"	3	
"	4	



State:	Company:	Station	Unit Number	
			President's List	Senate List
	Port Jefferson	-----	1	
	"	-----	2	
	"	-----	3	3
	"	-----	4	4
	Niagara Mohawk Power Corp.:			
	Albany	-----	1	1
	"	-----	2	2
	"	-----	3	3
	"	-----	4	4
	Oswego	-----	3	
	"	-----	4	
	Orange & Rockland Utilities, Inc.:			
	Lovett	-----	3	
	"	-----	4	4
	"	-----	5	5
	Delaware:			
	Delmarva Power & Light Co.:			
	Edge Moor	-----	1	1
	"	-----	2	2
	"	-----	3	3
	"	-----	4	4
	Maryland:			
	Baltimore Gas & Electric:			
	Brandon Shores	-----	1	1
	"	-----	2	2
	C. P. Crane	-----	1	1
	"	-----	2	2
	Riverside	-----	4	
	"	-----	5	
	H. A. Wagner	-----	1	1
	"	-----	2	2
	Pennsylvania:			
	Philadelphia Electric Co.:			
	Cromby	-----	2	2
	Schuylkill	-----	1	
	West Pennsylvania Power (Allegheny Power):			
	Springdale	-----	8	
	Virginia			
	Virginia Electric & Power Co.:			
	Chesterfield	-----	3	3
	"	-----	4	4
	"	-----	5	5
	"	-----	6	6

State:	Company:	Station	Unit Numbers	
			President's List	Senate List
		Portsmouth	1	
		"	2	
		"	3	3
		"	4	4
		Possom Point	3	3
		"	4	4
		Yorktown	1	1
		"	2	2
Florida:				
	Tampa Electric Co.			
		F. J. Gannon	1	1
		"	2	2
		"	3	3
		"	4	4
Georgia:				
	Georgia Power Co. (Southern Co.):			
		McManus	1	
		"	2	
	Savannah Electric & Power Co.:			
		Effingham	1	1
Illinois:				
	Commonwealth Edison Co.:			
		Collins	4	4
		"	5	5
Michigan:				
	Detroit Edison:			
		River Rouge	1	1
		St. Clair	5	5
Arkansas:				
	Arkansas Power & Light (Mid South Utilities):			
		Ham Moses	1	
		"	2	
		Ritchie	1	
		"	2	
			<hr/>	
Total Units on President's List			107	
Total Units on Senate's list			80	

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