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BY THE COMPTROLLER GENERAL

Report To The Congress

OF THE UNITED STATES

The Effects Of Regulation On The Electric Utility Industry

Many sectors of the electric utility industry have asserted that the industry's financial well-being is threatened by over-regulation and that unless some relief is obtained, the industry's ability to continue providing reliable power supplies is threatened.

GAO made this review to assess these contentions, determine how increased regulatory activities in the last 10 years have affected utility companies, and identify wherever possible the effects of regulatory requirements on the industry.

Even though electric utilities have been subject to stringent regulatory requirements, the total industry has still been able to adequately meet consumer demands. Recent regulatory initiatives reflect an awareness of the need for increased flexibility; however, regulatory and operational problems facing the industry will continue unless agencies having jurisdiction over utilities become more aggressive in redirecting regulatory emphasis and developing greater precision in their efforts.

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

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To the President of the Senate and the
Speaker of the House of Representatives

This report discusses the problems that have been encountered by the electric utility industry as a result of numerous regulatory requirements. The report recognizes that some progress has recently been made in alleviating regulatory burdens and provides observations on additional measures that may assist the industry in continuing to provide reliable service.

We are sending copies of this report to the Director, Office of Management and Budget; the Secretary of Energy; the Chairman, Federal Energy Regulatory Commission; the Chairman, Nuclear Regulatory Commission, the Assistant Secretary for Occupational Safety and Health; the Assistant Secretary of the Army (Civil Works); the Chairman, Securities and Exchange Commission; the Secretary, Department of the Interior; and the Chairman, Equal Employment Opportunity Commission.

Comptroller General
of the United States

ABBREVIATIONS

AEC	Atomic Energy Commission
ASLB	Atomic Safety and Licensing Board
COE	Corps of Engineers
CPA/UPA	Cooperative Power Association/United Power Association
CP&L	Carolina Power and Light Company
DOE	Department of Energy
DOI	Department of the Interior
EEOC	Equal Employment Opportunity Commission
EPA	Environmental Protection Agency
ERA	Economic Regulatory Administration
FERC	Federal Energy Regulatory Commission
FPC	Federal Power Commission
FP&L	Florida Power and Light Company
FWPCA	Federal Water Pollution Control Act
GAO	General Accounting Office
HL&P	Houston Lighting and Power Company
kW	Kilowatt
kWh	Kilowatt-hour
LWA	Limited Work Authorization
Mill	One-tenth of a cent
MW	Megawatt
NEPA	National Environmental Policy Act
NERC	National Electric Reliability Council
NPDES	National Pollutant Discharge Elimination System
NRC	Nuclear Regulatory Commission
NSPS	New Source Performance Standards
OSHA	Occupational Safety and Health Administration
SEC	Securities and Exchange Commission
SIP	State Implementation Plan

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COMPTROLLER GENERAL'S
REPORT TO THE CONGRESS

THE EFFECTS OF REGULATION ON THE ELECTRIC UTILITY INDUSTRY

D I G E S T

Over the past decade electric utility companies have been subjected to an increasing number of regulatory requirements by Federal and State agencies. Compliance with these requirements has been and continues to be costly. Among other things, utilities have had to add new pollution control equipment, pay premium prices for low-sulfur-content fuel, incur additional administrative costs to get licenses and permits, and pay increased construction costs due to delays caused by the regulatory process. (See pp. 10, 12, 17-21 and 47.)

There has been a growing concern that regulations are putting too great a burden on the economy. In response to those concerns, some initial attempts have been made by the administration 1/ to examine more closely the regulatory process. (See pp. 51-55.)

GAO reviewed the regulatory process as it has been applied to electric utility operations. Its review led to the following overall observations.

--Electric power projects and operations have been more costly as a result of changing regulatory requirements and delays and uncertainties associated with the regulatory process. These costs have been passed on to consumers in the form of higher rates.

--The utilities' ability to provide adequate supplies of power to their service area has not been adversely affected.

1/ "Administration" as used throughout the report refers to the Carter administration.

--Tangible benefits to ratepayers have not always been visible, although some social benefits may have been realized.

--Regulators often did not know how to best achieve their objectives or assess the results of a requirement.

--It is imperative that Government provide a balanced approach in regulating the industry so that the cost and reliability of future power services are considered along with the environmental, health, and safety concerns of the public.

--The administration and the Congress appear to be much more concerned with the economic effects of regulatory actions and with evaluating the costs and benefits of achieving a desired goal. Few of these efforts, however, are directed towards alleviating the more routine regulatory problems and they will continue unless cognizant regulatory agencies recognize them and become more aggressive in redirecting their regulatory emphasis and incorporating greater precision in their efforts. (See p. 62.)

EFFECTS OF REGULATION ON UTILITY COMPANIES

Federal regulations of some type affect virtually every facet of electric utility company operations. The historical Federal and State control over rates charged to utility customers has expanded in the 1970s to control over areas such as powerplant and transmission line siting locations, discharge of waste into the air and water, type of fuel used, and worker health and safety--areas that had been primarily management prerogatives. (See p. 3.)

The four utility companies GAO selected for examination reported actual expenditures and estimated future costs of over $1.4 billion to comply with regulations issued by eight Federal and various State agencies. The utilities estimated that in addition to these costs, annual recurring costs would amount to over $109 million. (See p. 10.)

Actual regulatory costs may be higher, however, because these estimates represent only the most identifiable examples provided by the utilities and do not include all possible regulatory costs and impacts.

GAO found that these expenditures were made to achieve the following four basic national goals. (See p. 11.)

--Protection of the environment and wildlife.

--Protection of the public interest and safe plant operation.

--Monitoring the financial and technical operations of the utilities.

--Protection of worker health, safety, and job status.

The four utilities were required, among other things, to change construction plans and operating characteristics of generating plants, and to contend with a much greater degree of regulatory and public input into their decision making process. To meet standards set by the Environmental Protection Agency, for example, the utilities often had to construct new pollution control facilities for existing plants or add them to plants under construction. They also had to burn higher priced low-sulfur-content fuel. (See p. 12.)

In some cases, utilities had to change waste discharge facilities and modify cooling-water systems. The utilities reported spending

nearly $500 million to comply with current environmental provisions, and estimated that $194 million may be necessary in the future to construct facilities to meet requirements. (See p. 13.)

Power projects were delayed because utilities had difficulty obtaining the necessary permits. Legislative actions required that permit applications to the Corps of Engineers be reviewed by other agencies that could recommend attachment of additional conditions to the Corps permit.

A utility application for Corps approval to install a water intake structure, for example, was approved only after the utility agreed to a Fish and Wildlife Service request that a segment of utility property be designated as a wetlands area and therefore unavailable for utility use. (See p. 47.)

Utility companies attributed most of the costs of protecting the public interest to construction delays caused by the lengthy and often-times complicated Federal and State regulatory process. Three of the four utilities reported additional costs of about $88 million with two utilities projecting another $400 million due to nuclear unit construction delays. (See pp. 18-21.)

Utility companies in general have not been prepared to account for the total costs of regulation. Although they can identify and isolate many administrative and operational costs of regulation, they generally have not done so. As a result, the effects on consumer rates--while real, and in some cases relatively large--are nearly impossible to assess accurately. (See p. 25.)

Major capital costs for pollution control facilities are much easier to identify and GAO projected a potential increase in consumer costs due to one major capital addition. Because consumers may receive electricity from any one of a number of generating units in a system and unit costs are aggregated throughout the entire system, the incremental consumer costs incurred due

to regulations are not identified with a particular unit or powerplant. Based on 1979 costs of complying with environmental requirements, GAO estimated that operating costs at one utility were increased about 6 percent and at another utility by about 9 percent. (See p. 27.)

REGULATORY REQUIREMENTS WERE OFTEN LEGISLATIVE MANDATES

The regulatory requirements that led to increased utility costs were generally developed in response to stated or perceived congressional objectives outlined in the legislation. These objectives were often oriented towards social issues. Some were specific and limited the agencies' flexibility in promulgating regulations and enforcing compliance. (See p. 34.)

The costs were frequently ignored by regulators, and usually the cost of compliance as compared to possible benefits was not a factor in issuing regulations. In some cases, cost-based regulations were prohibited by law. In other cases, a cost/benefit analysis was not feasible because presumed benefits could not be quantified. (See p. 47.)

CHANGES BEING MADE IN REGULATORY PROCESS

The regulatory process is in the midst of changing. Several factors have emerged that have begun to change the somewhat unyielding regulatory demands of the past and promise to further alter the regulatory process so that objectives, costs, and achievements will be in greater harmony. These changes are originating from both the administration and proposed legislation directed at regulatory reform. Much more attention is being given to the economic effects of new regulations, overlap and duplication of regulatory requirements, and the development of regulations that fit the scale and resources of organizations that have to

comply with them. Few of these efforts, however, are directed toward alleviating the most common regulatory problems routinely faced by the industry. (See p. 50.)

FUTURE INDUSTRY VIABILITY IS DEPENDENT ON REGULATORY RESPONSIVENESS

A number of regulatory uncertainties exist that unless appropriately resolved could affect future power supplies. For example, the relatively long time period normally required to plan and build a generating plant is further extended by lengthy and complicated regulatory proceedings as well as changing regulatory requirements. (See p. 56.)

The regulatory and operational problems facing the electric utility industry will continue unless regulatory agencies recognize these difficulties and re-direct their regulatory emphasis to reduce costs and increase operating flexibility. The Department of Energy, which is responsible for reliable power supplies and other facets of utility regulation, has no central policy to mitigate regulatory difficulties or assure that the Nation has adequate, reliable long-term supplies of electric power. (See p. 60.)

AGENCY AND UTILITY COMPANY COMMENTS

Draft copies of the report were submitted to the utility companies and most Federal agencies cited in the report for their review and comment. The Equal Employment Opportunity Commission and the Securities and Exchange Commission did not have the opportunity for comment because they were cited as only having minimal impact on the utilities' operations. All of the utilities and most of the Federal agencies responded to the draft report, either verbally or in writing. The agencies that commented on the report generally agreed with the observations, but differed in some instances in the perspective of the case examples. The utility companies did not

have the opportunity to comment on the observations, but agreed that the report fairly presents the facts relating to the examples discussed in the report. These technical and narrative comments were considered and changes were made in the report where appropriate. Pertinent comments and GAO's evaluation are included in chapter 5. (See p. 62.)

MATTERS FOR THE CONSIDERATION OF THE CONGRESS

Several regulatory reform initiatives designed to provide greater regulatory flexibility were proposed in the last Congress. Some portions of these proposals were incorporated into the Regulatory Flexibility Act (P.L. 96-354) which was signed by the President on September 19, 1980. The act, which became effective January 1, 1981 and applies primarily to small businesses and local governments, directs Federal agencies to better match the regulatory and informational requirements with the scale of the entity.

GAO has generally supported the major elements of these initiatives and believes that the momentum for these actions should be maintained and expanded in scope. Greater flexibility should be incorporated into congressional legislative efforts which would allow agencies to consider the costs of their regulations in developing regulatory programs. Congress should also require the agencies to justify their actions early in the development of regulatory programs so that the financial impact of their requirements are no longer ignored as in past programs. Once the increased awareness of regulatory impact is incorporated into future legislation, the regulatory emphasis and precision that GAO found to be lacking should become evident.

CHAPTER 1

INTRODUCTION

The electric utility industry had its beginning in the late 1800s when Thomas Edison formed the Edison Electric Illuminating Company in New York City with a power load of about 10 kilowatts (kW) serving 85 customers. From that small plant, the industry has grown to the point where it now has a generating capacity of over 600,000 megawatts (MW). It has been estimated that before the year 2000 the generating capacity of the Nation will exceed 800,000 MW.

The electric utility industry has grown to a system comprising about 3,400 utility companies which furnish electric power to more than 80 million households, commercial establishments, and industrial operations. While about 30 percent of the Nation's households are heated with electricity, other more diversified uses of electricity have been developed such as mass transit railways, complex computer systems that perform vital but mundane daily functions, and sophisticated communication systems.

A good example of life without electricity was the 25-hour blackout of New York City in the summer of 1977. It has been estimated that property damage resulting from the blackout was in the hundreds of millions of dollars; yet this estimate does not include more far-ranging social costs that were incurred from situations such as reduced public safety, snarled traffic caused by inoperable electric signals and control systems, persons trapped in elevators which relied on electric power, loss of street lighting which is a deterent to looting and offers some measure of personal safety, and water pumps which could not function without electric power. Clearly, our society often takes reliable electric power for granted, but is rendered motionless without it.

To generate this large quantity of electricity, the utility industry consumes nearly 29 percent of all primary energy supplies as fuel for steam generating plants. Coal is used to produce about 47 percent of the electricity generated, and about 70 percent of all coal produced is sold to the electric utility industry. Oil is used to generate about 16 percent of the Nation's power, with natural gas contributing approximately 12 percent. Nuclear powerplants provide about 14 percent of the electric power needs, and the remaining 11 percent is generated using hydroelectric facilities or unconventional methods such as pumped storage.

Through the years the utility industry has grown until it is one of the Nation's largest and most capital intensive. The need for large utility investments will continue in the future if planned construction projects for new generating units are completed. Based on the projections of the Regional Electric Reliability Councils, the Department of Energy (DOE) reported in October 1979 that for the period 1979-1988, a net total of 372 generating units--representing over 273,000 MW of capacity--would be added to service. This projected expansion of generating capacity, however, is contrasted against predictions of an annual demand growth rate that is about half of the pre-1973 growth rate of 7-8 percent. As electric power costs continue their upward spiral in the future, many economists foresee no significant advance in the demand for electricity; in fact, many projections call for a demand increase stabilization of about 3 to 3.5 percent a year, in which case all the projected capacity additions may not be needed as soon.

REGULATORY RESPONSIBILITY

Each electric utility company is given a monopoly franchise to construct facilities and provide power to a specified service area. This approach was adopted to reduce the possibility of high costs of providing duplicate generating and transmission line facilities that would result under free market competition. Along with the monopoly franchise, however, came regulatory control over entry and exit from the marketplace, over rates that could be charged to consumers, and over the amount of profit that could be earned. This regulatory control has been exercised at two levels--the wholesale market, or sales for resale, and the retail level, or sales to end users. Although there are about 3,400 utility systems in the contiguous United States, Federal jurisdiction extends only to the largest wholesale systems--211 as of the end of 1979--which generated about 16 percent of all kilowatt-hour (kWh) sales and about 11 percent of the revenues produced by electric utilities during 1979.

Federal

The Federal Power Act of 1935 (16 U.S.C. 791a), as amended, authorized the Federal Power Commission (FPC) to (1) license all hydroelectric projects undertaken by private electric utility companies, (2) order interconnections and wheeling of electric power under specified or emergency conditions, and (3) set rates that can be charged at

wholesale and in interstate commerce. In October 1977 DOE and its related organizations were established with a resultant change in regulatory responsibilities. The hydroelectric licensing and rate-setting responsibilities, as well as interconnection and wheeling authority, were given to the Federal Energy Regulatory Commission (FERC); DOE's Economic Regulatory Administration (ERA) was given authority to order interconnections and wheeling in emergency situations. Regardless of the division of responsibility and authority, the basic charge of the Federal Power Act--that a reliable supply of electric power at reasonable prices be provided to the country--continues in force.

State and local

All activities of the electric utility companies falling outside the purview of Federal jurisdiction are subject to regulation by each State. Such regulation has generally been assigned to a public service or public utility commission. In addition to setting rates for other public services such as water, sewage, and transportation, these commissions also set retail rates for electricity. Generally, the membership of these commissions is either elected by the local constituency or is appointed by the Governor of the State.

THE CHANGING WORLD OF ELECTRIC UTILITY OPERATION

For over three decades following the passage of the Federal Power Act, utility regulation other than for setting rates was minimal at both the Federal and State levels. Decisions on powerplant siting and construction, fuel usage, and transmission line routing and construction were generally left up to utility company officials. Taking advantage of economies of scale, the utilities built larger and larger generating units, and expanded the scope and size of the transmission and distribution networks. These circumstances actually led to periods of electricity rate reductions during the late 1950s and early 1960s and encouraged utilities to promote heavily the use of electric power. This increased demand fostered the need for additional capacity, and the cycle of utility expansion resumed.

Beginning in the late 1960s, however, a different operating environment began to emerge for the utility industry. Just as the size of the electric utility industry had increased, so had the numbers of varying regulatory agencies and their requirements. Initially

the electric utility industry was subject to regulations which were of a financial reporting nature. With the institution of "creeping regulation"--additional regulatory requirements from more regulatory agencies--the utility industry must now report to over 50 Federal agencies and numerous State and local regulatory organizations. Public and congressional concern over air and water pollution, worker health and safety, and protection of wildlife, among other things, resulted in new legislation which established additional regulatory agencies that began to significantly affect the utility decisionmaking process. The concern and actions taken at the Federal level spread to the States, and--either independently, or as an extension of Federal programs--State commissions, energy offices, health agencies, and other organizations magnified their influence on utilities' decisions regarding air emissions, water discharge quality, plant sitings, transmission line rights-of-way, types of fuel used, and so on.

A good example of the monumental regulatory hurdle that faces the electric utility industry is the fact that recently in California, a utility was required to obtain 91 permits from 43 agencies to build one nuclear generating plant.

In another instance, one study has estimated that cost increases associated with regulation are about three times what they would have been due to inflation alone. 1/

In addition to major legislation which has a direct impact on utility operations, 2/ lengthy delays in obtaining construction permits and licenses have occurred as a result of the expanded scope of regulatory proceedings and regulators' sensitivity to public input. All of these factors have combined to increase the complexity of providing adequate and reliable supplies of electric power, and have contributed to the evolution of electricity pricing from yesterday's declining rates to today's rapidly increasing rates.

1/ EBASCO Services, Inc., "Dramatic Changes in the Costs of Nuclear and Fossil-Fueled Plants," Sept. 1978.

2/ National Environmental Policy Act, Federal Water Pollution Control Act, Fish and Wildlife Coordination Act, National Historic Preservation Act, National Trails Systems Act, Water Resources Planning Act, Wilderness Act, Archeological and Historic Preservation Act, Energy Policy and Conservation Act of 1975, National Energy Act, Federal Land Management Act, and the Endangered Species Act.

CONCURRENT GAO WORK

Several of our other reports address various aspects of the operations of the electric utility industry. In one report, "Electricity Planning--Today's Improvements Can Alter Tomorrow's Investment Decisons" (EMD-80-112, Sept. 30, 1980), we address the problems encountered as a result of inadequate demand forecasts for electricity, the need for more direct Federal leadership to improve the electricity planning process, and the need to consider alternatives to conventional generating facilities in the future. In another report, "Construction Work In Progress Issue Needs Improved Regulatory Response for Utilities and Consumers" (EMD-80-75, June 23, 1980) we discuss the effect on financial integrity of construction work in progress in the rate bases of privately owned electric utility companies. "Electric Powerplant Cancellations and Delays" (EMD-81-25, Dec. 8, 1980), discusses the reasons why electric powerplants are cancelled or slip in their construction schedules.

OBJECTIVES, SCOPE, AND METHODOLOGY

There has been increased concern expressed by regulatory reform groups, industry spokesmen, investment firms, and the administration 1/ that the regulatory climate that has developed since 1970 has become too onerous, exceeded initial intentions, and become too costly in terms of observable benefits. Many sectors of the electric utility industry have asserted that the financial viability of the industry is being threatened by overregulation, and unless some relief is obtained, its ability to continue providing reliable power supplies in the future is threatened.

The objectives of this study, then, were to (1) assess these contentions, (2) determine how four utility companies we selected have fared during the last decade under more stringent regulatory controls, and (3) identify wherever possible the costs and benefits that have been associated with the regulatory costs and requirements that were provided by the utilities. In addition to this historical perspective, we attempted to ascertain where the industry stands today and what the prospects for the future are in terms of its ability to meet the demands for reliable power supplies. We also wanted to identify where opportunity exists for a revised regulatory approach--which might

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1/ "Administration" as used throughout the report refers to the Carter administration.

reduce electric power costs while at the same time protect the social benefits that have been achieved.

This study is the result of a wide range of information obtained from electric utilities, State commissions, Federal agencies, investment analysts, and industry organizations. We also reviewed current literature on the electric utility industry. The basic approach of the effort was to obtain information from four utilities regarding the costs and operational problems that they have encountered in complying with regulatory requirements imposed since 1970. We sought to identify the incremental costs associated with these requirements that were passed on to consumers, and determine the benefits that were associated with those requirements.

The four utility companies involved in this segment of the study were Carolina Power and Light (CP&L), Florida Power and Light (FP&L), Houston Lighting and Power (HL&P), and the Cooperative Power Association/United Power Association (CPA/UPA) 1/ in Minnesota. Three of the companies are investor-owned electric utilities with long records of regulatory control. The Cooperative Power Association and United Power Association are rural electric cooperatives who were included as a result of a congressional request.

After determining the nature and effects of the regulatory requirements affecting the companies, we obtained the perspective of the applicable State agencies on these and other issues. Where discrepancies existed, we attempted to determine the rationale and logic behind the requirements, and the benefits that were perceived to be associated with those requirements. To round out this information obtained from the utilities and the State agencies on the case examples, we contacted the appropriate Federal agency to determine the overall regulatory mission of the agency. For examples provided by the utilities, we reviewed the methods used to develop and implement regulatory requirements, and the specific resultant impacts and intentions of the regulations as they ultimately affected the utility and its consumers.

In order to obtain a broader perspective of the financial and operational posture of the utility industry, we performed a thorough literature search, contacted utility

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1/ Although these are two separate companies, the applicable regulations and costs apply to a jointly constructed powerplant. Therefore, we have considered them as a single utility.

investment analysts and counselors, and obtained input from organizations representing the electric utility industry. Our assessment of the current actions designed to streamline the regulatory system and make it more effective included contacts with applicable groups in the regulatory agencies responsible for these efforts, as well as at the executive branch level with officials who are charged with the overall coordination of these review activities.

While we believe that many of the major utility companies have regulatory costs comparable to those identified at the participating utilities, we have not tried to project the total cost for the industry from our limited review. We also limited our examination of the regulatory process to six Federal agencies identified as having the greatest cost impact on the utility companies. Furthermore, since most of the actual and estimated costs identified resulted from regulations promulgated in the early 1970s, we concentrated our review efforts toward assessing the process used by the agencies during that period.

CHAPTER 2

REGULATORY COMPLIANCE IS COSTLY BUT ADVERSE EFFECTS HAVE BEEN MINIMAL

We found that electric utility company compliance with regulations has added to the cost of both building new plants and operating existing units. It has also caused delays in constructing new generating units. We found no indication, however, that the utilities' ability to provide adequate supplies of power to their service area has been adversely affected or, when compared with other facets of utility operations, that utility rates have been disproportionately increased as a result of regulatory compliance. It must be pointed out, however, that during this period the utilities were experiencing significant reductions in load growth due to the aftereffects of the 1973 Arab oil embargo. Of the more than $9 billion spent for capital additions to the utility plants during the 1970-1978 period, at the four electric utilities in our study, the actual capital expenditures during this period and estimated future capital costs resulting from compliance with regulatory requirements could be over $800 million, or almost 9 percent above the amount required otherwise.

The actual regulatory costs may be higher, however, because these costs represent only the most identifiable examples provided by the utilities and do not include all possible regulatory costs and impacts that may exist. If the capital costs presently projected actually occur, or if estimated replacement power costs due to construction delays materialize, customer rates could be more adversely affected than has been experienced in the past.

Increased costs resulted from utility compliance with a number of different agency regulations. Compliance with regulations affecting the environment and delays and uncertainties associated with the Nuclear Regulatory Commission's (NRC) regulatory proceedings on proposed nuclear power plants have been the most costly. Environmental concerns have centered around minimizing or eliminating air and water pollution. For the utilities, this has meant complying with Environmental Protection Agency (EPA) regulations requiring the installation of anti pollution devices--such as flue-gas scubbers for the removal of sulfur and other pollutants and precipitators to remove the fly ash--or burning more expensive low-sulfur fuel. It has also meant installing cooling systems to prevent the discharge of heated water into the public waterways.

Regulatory compliance can affect the basic responsibility of an electric utility company--to provide reliable power supplies to its service area at just and reasonable rates. Service reliability can be affected by a number of conditions, such as the inability to build new generating capacity, lengthy delays in completing construction projects, or power supplies diverted from customer service to operate pollution control devices. Consumer rates are affected by nearly all utility company expenditures, whether they result from normal expenditures or from compliance with regulatory requirements. From an economic viewpoint, consumers may not consider these costs to be reasonable if they are increased by unnecessary regulatory requirements or by higher fuels costs resulting from the utility's inability to construct more efficient generating units.

REGULATORY COSTS AT FOUR SELECTED UTILITIES

At the four utilities we visited, we identified actual and estimated future regulatory costs amounting to over $1.4 billion that were or will be incurred by the utilities in complying with regulations promulgated by eight Federal agencies and various State agencies. In addition, the utilities estimated that regulatory compliance would result in over $109 million in annual recurring costs. As shown in the following table, over 92 percent of the initial costs resulted from EPA, NRC, and State regulations.

Table 2-1

ACTUAL/ESTIMATED REGULATORY COSTS
FOR FOUR UTILITY COMPANIES—BY AGENCY

Agency	Number of regulatory examples	Costs		
		Actual capital	Estimated annual recurring	Estimated future
		(in millions)		
Environmental Protection Agency	36	$473.56	$57.89	a/$194.00
Nuclear Regulatory Commission	10	43.79	-0-	b/409.82
Occupational Safety and Health Administration	9	.45	.07	c/4.47
Securities and Exchange Commission	5	1.12	.03	-0-
Federal Energy Regulatory Commission	7	6.77	1.47	-0-
Corps of Engineers	4	41.78	-0-	-0-
Department of the Interior	4	1.66	-0-	-0-
Equal Employment Opportunity Commission	2	.15	.13	-0-
State regulations	16	83.20	d/49.73	e/155.00
Total	93	$652.48	$109.32	$763.29

a/Costs for installing flue gas scrubbers.

b/Increased power costs resulting from construction delays caused by intervenor actions.

c/Contingent upon implementation of proposed standards.

d/Expected annual cost differential resulting from the use of low-sulfur oil from 1980 to 2000.

e/Expected cost differential of the increased use of oil which is attributable to a 14-month delay in construction.

The agencies' missions vary widely, but we believe their primary focus can be linked to four basic national goals. A breakdown of the above costs, in terms of these goals is shown in the following table.

Table 2-2

ACTUAL/ESTIMATED REGULATORY COSTS FOR FOUR UTILITY COMPANIES--BY REGULATORY GOAL

Regulatory goal	Regulatory Costs		
	Actual capital	Estimated annual recurring	Estimated future
	--------(in millions)---------		
Protection of environment and wildlife	$532.12	$107.62	$194.00
Protection of the public interest and safe plant operation	111.87	-0-	564.82
Monitoring the financial and technical operations of the utilities	7.88	1.50	-0-
Protection of worker health, safety, and job status	.61	.20	4.47
Total	$652.48	$109.32	$763.29

Efforts to achieve these goals have placed new constraints on electric utility management that are not always easy to to operate within. The utilities are required, among other things, to change construction plans and operating characteristics of generating plants and to contend with a much greater degree of regulatory and public input into their decision making process. We use these examples not necessarily to assess their reasonableness but to demonstrate the types of regulatory costs and requirements for which utility customers are paying.

The protection of the environment and wildlife

We found that utility company compliance with EPA and NRC environmental requirements resulted in the greatest regulatory costs. Compliance with the Department of the Interior's Fish and Wildlife Service requirements did not result in significant direct costs, but indirect costs were incurred because lengthy delays were encountered in determining whether or not right-of-way permits for transmission lines would be granted to cross wildlife habitats.

Costs of meeting air emission standards

To meet EPA standards for air and water quality, the utilities often had to construct new pollution control facilities for existing plants or add them to plants already under construction. Limiting smokestack emissions generally meant installing electrostatic precipitators to remove fly ash, flue-gas scrubbers to remove sulfur dioxide and other pollutants, or burning higher priced low-sulfur content coal or oil to limit emissions to EPA standards.

Prior to 1968, the Carolina Power & Light Company was using mechanical collectors which removed 85-90 percent of the total suspended particulates from smokestacks at their coal-fired plants. To meet EPA's particulate emission limitations, CP&L began installing electrostatic precipitators at its plants. These units are designed to collect in excess of 99 percent of the particulate matter. CP&L spent approximately $80 million through 1979 for installation of and modifications to these precipitators. The cost to operate and maintain the electrostatic precipitators in 1977 was over $1.4 million, of which about $900,000 was the cost of power to operate them.

In accordance with EPA requirements, CP&L is also installing electrostatic precipitators on one of its new plants under construction. These precipitators replace the mechancial collectors which would normally have been used. CP&L estimates the incremental cost of removing the extra particulate matter which will be captured by the new precipitators at about $16 million.

The Florida Power and Light Company was planning to start construction of its first coal-fired generating plant at the time of our audit. Initial construction estimates made in March 1979 included $34 million for electrostatic precipitators required by EPA to reduce particulate emission from the two coal units.

Houston Lighting and Power Company officials are anticipating even higher compliance costs than those projected by FP&L for four powerplant units at one of their coal-fired plants. Based on EPA air emission standards, HL&P estimates it will have to spend as much as $126 million for air-cleaning devices to meet EPA requirements.

EPA air emission standards also limit the quantity of sulfur dioxide that can be released in the combustion process. To date, CP&L, FP&L and HL&P have met the emission criteria by using low-sulfur oil and coal. CP&L officials said that they spent about $17.5 million more in 1977 for low-sulfur coal than they would have if a higher sulfur coal could have been used. FP&L uses low-sulfur oil to meet EPA emission standards, and the cost differential between low and high sulfur oil has increased by 500 percent since 1975. In 1978, for example, FP&L paid a premium of over $32 million for its low-sulfur oil supplies.

The Cooperative Power Association and United Power Association incorporated the necessary air quality control systems to meet EPA emission standards in their nearly completed coal-fired plant in North Dakota. A comparison of these controls with environmental controls required in the late 1960s showed that CPA/UPA incurred differential costs amounting to nearly $78 million for equipment to limit sulfur dioxide and particulate matter emissions and for a waste-handling system. This cost differential is about 10 percent of the total cost of the plant.

Costs of controlling chemical effluent and waste heat discharge

Improving or maintaining water quality generally involved controlling the chemical content or temperature of discharge effluents. Controlling the chemical content required extensive retrofitting of existing plant discharge systems. Limiting discharge temperatures required changing operating procedures from a once-through cooling system to a closed-cycle system using either cooling ponds or towers.

EPA has established effluent limitations for specific categories of waste water discharges from several industrial operations. For the electric utility industry, the regulated discharges are produced from activities such as metal cleaning, cooling water treatment, and boiler maintenance.

Prior to EPA's issuance of technology-based regulations in 1974, both CP&L and HL&P combined their individual chemical waste streams before treatment and discharge. The two

utilities did not believe they could meet EPA's monitoring requirements for each individual chemical component with their current systems, so they elected to replace them. Because the regulations did not provide exemptions for existing plants, both utilities had to retrofit existing plants with separate waste stream treatment and monitoring facilities. HL&P spent over $28 million to replace existing systems in nine plants, and CP&L spent $6.4 million for drainage revisions at seven of their operating plants.

One of the most costly operational changes required by regulation has been the modification of once-through cooling systems to closed-cycle systems. Prior to the promulgation of legislation and regulations that limited its use, the utility companies generally used the once-through cooling system to remove excess heat from the generating units. Under this system, water was drawn into the cooling system from a nearby body of water, passed through the generating system to pick up excess heat, and was discharged into the same or another body of water. The system was efficient and had minimal maintenance costs.

Mounting concerns at the Federal and State levels in the late 1960s over the possible adverse effects on marine life of heated discharge water led to the promulgation of legislation and regulations 1/ that defined heated water as a pollutant and subject to approved discharge level standards. The alternative to the once-through cooling system is a closed-cycle system. Under this method of cooling, water is drawn from a supply reservoir, circulated through the powerplant, and either discharged into an artificial cooling pond or into large cooling towers where the heat is dissipated. All heated water is thus contained within the utility's water system.

The new stipulations required utilities with once-through systems which did not meet the discharge temperature standards to install closed-cycle cooling systems. HL&P, for example, spent over $22 million to construct five cooling towers at one of their plants after building a cooling system that failed to meet EPA standards. CP&L faced similar problems because it had two operating powerplants using once-through cooling--the Cape Fear powerplant withdrawing and discharging water from the Cape Fear River and the Roxboro plant using a manmade

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1/ The Federal Water Pollution Control Act, (commonly referred to as the Clean Water Act) (33 U.S.C. 1251,1326); and 40 C.F.R. 401.11(f).

lake for cooling. Because the waste water discharge from the Cape Fear powerplant exceeded the standards set by the State during the June-November period, CP&L installed cooling towers costing approximately $6 million with annual operating expenses estimated to be $235,000. At the Roxboro plant, CP&L retrofitted one of its units with a cooling tower and is constructing a second tower for another unit because discharging water from all the units directly into the lake will raise the the temperature of the lake above water quality standards. These towers are costing CP&L nearly $14 million.

Newer plants are being designed with cooling towers as a practical measure to ensure compliance with water quality standards. Although a once-through system was possible, the CPA/UPA plant in North Dakota incorporated cooling towers rather than using once-through cooling because utility officials believed it would eventually be required. This decision added nearly $12 million to the plant cost.

FP&L had to change its cooling systems at its St. Lucie and Turkey Point plants, but was not required to construct cooling towers. At St. Lucie, Federal, State, and local opposition to the planned use of the Indian River for cooling water led FP&L to redesign its system and take water from the Atlantic Ocean instead. FP&L's engineering contractor estimated this change increased the plant cost by $17 million. At the Turkey Point plant, FP&L used Biscayne Bay as an intake and discharge point for cooling water for units 1 and 2, which are oil-fired. In 1968, however, FP&L was cited by county authorities for exceeding established water discharge temperatures. In 1969, to avoid future problems when the nuclear units 3 and 4 were added to the Turkey Point power plant, FP&L began to build a 5-mile long discharge canal to Card Sound. In March 1970, however, the United States filed suit against FP&L to stop this construction and to obtain temporary and permanent injunctions to prevent further discharges. The Court ruled against the United States with regard to its request for a temporary injunction and FP&L continued work on the long cooling canal. In settlement negotiations, FP&L agreed to construct a costly closed-cycle system rather than proceed with the original plan, in order to prevent the controversy from delaying the operation of the plant.

The system required the purchase of 21,000 acres of land on which to build an immense "radiator" consisting of 168 miles of cooling canals with a large water surface area. The capital costs associated with this system amount to about $38 million plus incremental annual operations and

maintenance costs of over $1 million. In addition, FP&L estimated that replacement power costs required because of the higher intake water temperatures in the closed system were $1.5 million in 1975 and $1.3 million in 1976.

Costs of protecting marine life at water intake points

To minimize the possible adverse effects on marine life resulting from powerplant operations, HL&P and CP&L were required to modify the water intake structures as well as control the discharge of heated water. At HL&P's Cedar Bayou powerplant, for example, water was being taken from the bayou in such large quantities and high velocity that large numbers of fish were being drawn into the intake structure and killed. To limit this occurrence, HL&P agreed, in a Federal court settlement over the matter, to (1) install a low-velocity intake structure on generating unit 3, (2) install a fish bypass system, (3) convert intake screens on units 1 and 2 to continuous fish-cleaning operations, (4) develop and implement an ecological monitoring and sampling program, and (5) continue and expand scientific studies. Through 1977, HL&P spent over $13 million in compliance with the court settlement.

CP&L faced a similar problem at its Brunswick powerplant. Although no final decision has been made, CP&L could be required by EPA to construct cooling towers costing $118 million to reduce harm to marine life in the existing intake system. 1/ (See p. 29.)

Air and water monitoring and control costs

In addition to the capital cost of constructing environmental protection facilities, the utilities were also required to install monitoring devices to measure the actual pollutant levels in the air and water surrounding each plant. HL&P reported spending nearly $14 million to monitor air quality at both existing units and at one powerplant unit under construction. The company has also spent $134,000 for equipment to monitor the quality of waste water discharge at 9 powerplants. CP&L reported spending approximately $60,000 in 1977 to meet State and Federal air quality monitoring requirements and about $97,000 in 1977 for required waste water monitoring equipment.

1/ Based on requirements in the Federal Water Pollution Control Act of 1972 (FWPCA).

Regulatory delays encountered during transmission line construction

In addition to increased construction and operating costs due to regulatory requirements, two of the utility companies reported delays in constructing transmission lines due to Department of the Interior (DOI) restrictions on crossing wildlife refuge areas. FP&L spent over 5 years negotiating with DOI for a permit to construct transmission facilities across a small undeveloped portion of the Loxahatchee National Wildlife Refuge in southern Florida. FP&L was constructing the line to bring power from a new powerplant under construction to the Dade County (Miami) area. The preferred right-of-way through the refuge was not only the shortest route--with lower construction costs--but also avoided crossing prime agricultural lands. After numerous discussions with DOI officials and the preparation of environmental impact statements, FP&L's permit request was denied because it was not compatible with the purposes of the refuge. After filing a complaint for a declaratory judgment and injunctive relief in the U.S. District Court for the Southern District of Florida, FP&L finally abandoned its efforts to obtain the permit and began constructing the line using a longer alternative route. The longer route is estimated to cost $1.2 million more than following the preferred route through the refuge.

CPA/UPA faced a similar situation in constructing transmission lines across Minnesota and North Dakota. The line routing selected by the Minnesota Environmental Quality Council crossed a wildlife management area that covered the width of the designated route. CPA/UPA's initial request for the necessary permit to build the line across the center of the area was denied by the Service. Since the utilities could not construct their line outside the route selected by the Council, they had to continue pressing their case with the Service. After about 13 months, CPA/UPA finally obtained the necessary permit to proceed with the line construction, although the direct routing initially proposed had to be changed to cross the wildlife management area at the very edge of the designated wildlife area.

In North Dakota, CPA/UPA was required to move part of an existing Bureau of Reclamation power line that crossed a coal mining area. The only feasible route put the line within one-quarter of a mile of a wetlands area--Weller Slough. The North Dakota Public Service Commission and the Bureau of Reclamation approved the route, yet the

Service and North Dakota's Department of Natural Resources feared that migratory birds would be killed if the line were that close to the slough. Service approval was reluctantly obtained after the utilities financed a $30,000 study that supported the utilities' contention that bird kills would not increase if the line were built as proposed.

Protection of the public interest and assuring safe utility plant operation

The utility companies attributed most of the costs in this category to construction delays caused by the lengthy and often-times complicated Federal and State regulatory process. Changing NRC requirements for nuclear reactors and resolution of issues raised by intervenors in NRC proceedings were significant factors affecting the regulatory process. Lengthy State proceedings were also a source of considerable delay. At three of the four utilities, these problems were estimated to cost consumers $88 million. In addition to these costs, two of the utilities estimated that delays in completing planned nuclear units will necessitate using higher priced fuel that could add another $400 million to consumer power costs before the nuclear units become operational.

The following examples illustrate the problems and costs that were experienced by the utilities in the area of public interest and safety.

Florida Power and Light Company

The construction of nuclear generating unit 2 at FP&L's St. Lucie power plant site was delayed several years as a result of changing NRC requirements for nuclear units and the resolution of issues raised by intervening parties. The State siting process took twice as long as the maximum specified under Florida law. FP&L estimated that the deferral of the State siting decision and the time required to settle the major intervenor's issue cost consumers $63 million. Construction could not proceed, machinery and equipment had to be stored and secured, and costs for additional labor and materials were incurred when construction resumed. Based on current projections for 1983, FP&L estimates that the differential fuel costs between producing nuclear power from unit 2 and oil-fired replacement power for the 21-month period could amount to over $232 million, which will be passed on to consumers.

The 14-month delay in the State siting process occurred because of indecision during the State proceedings over whether radiological health and safety issues relating to

nuclear plant construction were legitimately within the State purview or had been preempted by the Federal Government. Although the Florida Electrical Power Plant Siting Act specifies a maximum of 14 months to act on a siting application, differences between the Florida Department of Pollution, the State Hearing Officer, and the Governor extended the proceeding to 28 months. Consequently, although FP&L had received a Limited Work Authorization (LWA) on March 17, 1975, from NRC, the company could not begin work on the second generating unit until the Governor approved the State's site certification which was received on May 18, 1976.

Plans for plant construction at St. Lucie date back to January 1968, when FP&L purchased about 1,100 acres of land on which to construct at least two generating units. FP&L had obtained a construction permit on July 1, 1970, from the Atomic Energy Commission (AEC) for unit 1. A permit application for unit 2 was submitted to AEC on May 1, 1971, but because of uncertain power demands, delays on other nuclear units, and financing problems, plans for unit 2 were deferred until mid-October 1972. Following FP&L's decision to reactivate plans for unit 2, the company prepared the required preliminary documentation and on May 14, 1973, formally filed its application with AEC. FP&L filed its final environmental statement to AEC in May 1974.

In subsequent discussions between FP&L and AEC, however, it was determined by AEC that although unit 2 was identifical to unit 1, changing requirements for nuclear units since the application was approved for unit 1 necessitated considering unit 2 as a new facility and subject to additional operating modifications and requirements. On February 28, 1975, the Atomic Safety Licensing Board (ASLB) ordered NRC to issue a LWA. Consequently, FP&L was not allowed to conduct limited work at the site until March 17, 1975.

On July 3, 1975, intervenors filed an appeal with the Atomic Safety and Licensing Appeal Board covering 44 exceptions to the LWA including a claim that alternate sites for the second unit had not been considered by the ASLB. In June 1976, the Appeal Board denied 43 of the intervenors' exceptions, but remanded the issue of alternate sites back to the ASLB for further hearings. The Appeal Board decision did not, however, withdraw the LWA previously granted to FP&L. The intervenors subsequently filed a petition to review the Appeal Board decision with the U.S. Court of Appeals for the District of Columbia to stop work on the site. The Court decided that site work should not continue

while the ASLB was rehearing the siting issue and stopped the work effective November 8, 1976. In early December 1976, the ASLB held additional hearings on the alternate site issue. Based on these hearings, the Board approved the St. Lucie site for unit 2 and approved a construction permit on May 2, 1977. The Court of Appeals dissolved its stay of construction on May 12, 1977, and FP&L resumed construction on June 1, 1977.

Houston Lighting and Power Company

HL&P has also experienced a lengthy delay in obtaining a construction permit for a nuclear plant. The utility initially filed an application with AEC in August 1973 to build a two-reactor plant at Allens Creek. The application was published as a notice in the Federal Register and environmental hearings were held. At that time, only one petition to intervene--from the State of Texas--was filed.

In September 1975 HL&P delayed further action on the proposed plant because of financial problems. The application was resubmitted to NRC a year later, but this time only one reactor unit was proposed by the utility. HL&P used the time between September 1976 and August 1977 to update its Preliminary Safety Analysis Report and submit it to the Commission. NRC's review took until March 1979.

In May 1978 the Chairman of the ASLB placed a notice in the Federal Register to alert the public that hearings on Allens Creek were being resumed. Petitioners to intervene were only allowed to contend changes in design made since September 1975. In September 1978 a new ASLB Chairman put another announcement in the Federal Register and opened the hearings to any new information developed since 1975, including design changes.

Thirty individuals subsequently filed petitions to intervene raising 212 questions on 54 issues. Questions varied from concern over nuclear safety to problems with NRC regulations and specifics of the powerplant design. Preliminary hearings were held in November 1978. On February 9, 1979, the ASLB ruled that four petitioners had standing to intervene. They raised nine issues, seven of which are essentially environmental questions. The remaining two require HL&P to provide additional information on whether the proposed plant will meet certain NRC requirements.

The reasons given for rejecting the other contentions were varied. Some were erroneous, unsupported, and did not pertain to the Allens Creek project. Some petitioners had no present interest in the proceedings. Other petitions contained no new information. The ASLB subsequently ruled,

however, that contentions dismissed only because they were not based on new information or design changes should be considered by the Licensing Board. According to the HL&P officials, if NRC had been able to maintain the hearings and review schedules that had been established when the construction plans for Allens Creek were submitted, the utility probably would have received its construction permit in October 1978. The utility may be facing more protracted delays in obtaining the construction permit, however, because of the recent ASLB decision.

HL&P has already spent over $700,000 in personnel costs and legal fees to obtain the necessary permit. The company estimates over $1.3 million more will be spent for similar service before it is through with the permit process. The largest expected costs resulting from the delay relate to escalated construction costs and replacement power costs. HL&P estimated that based on 1 year of delay and using an escalation rate of 7 percent on (1) all procurement activity with delivery dates after 1980, (2) all prime and sub contractor activity, and (3) all field purchasing, the plant costs would increase by nearly $130 million. According to the company, if HL&P needs to buy power because of the Allens Creek construction delays, consumers could be billed for nearly $220 million more than they would have paid if power from the nuclear unit had been available as scheduled. For each year the plant is delayed--and NRC's latest estimate for merely determining whether the plant should be constructed is now targeted for late 1980--consumers' bills could increase by this amount or more as fuel prices escalate.

Cooperative Power Association/
United Power Association

The regulatory process governing the siting and construction of electric power transmission lines in , Minnesota and subsequent acts of vandalism when the project was approved by the courts added at least $45 million to the the estimated $165.8 million project. The utilities were exempted from Minnesota's powerplant siting legislation which was passed after the project started, so the transmission line routing was planned with no State or citizen input. Citizen resistance to granting the utilities the necessary rights-of-way in the counties along the proposed transmission route, however, forced the utilities to request coverage under the State siting process which widened the opportunity for public participation in the project hearings. Extended public hearings, as well as appeals of regulatory decisions to the courts, led to more costly design changes and delayed construction activities which combined to add about

$39 million to the line costs. State regulatory agency and final court decisions eventually upheld the proposed transmission project and the line was constructed. Public dissatisfaction with the results of State agency actions and court decisions favoring the utilities' position, however, led to acts of vandalism which added another $6 million to project costs for replacement parts, equipment damage, and security forces.

Monitoring the financial and technical operations

Electric utility companies have been regulated by Federal and State agencies since the 1930s. Through the years, numerous reporting requirements were established so that the regulating agencies could adequately monitor utility operations and ensure that they were complying with regulatory requirements.

The reporting requirements cited by the utilities were promulgated by FERC and the Securities and Exchange Commission (SEC). CP&L and FP&L were the only utilities that identified these costs and reported expenditures of nearly $7 million to comply with FERC requirements and over $1 million to meet SEC requirements. CP&L incurred the largest cost when FERC required it to develop a Fixed Asset Accounting System to properly maintain property records and categorize costs. CP&L had used a manual system prior to 1975, but in response to an FPC audit in 1971, the utility developed new property accounting systems at an incremental cost of over $2.2 million, with annual operating costs of over $500,000. In addition, to these system costs, CP&L incurs annual expenses of over $110,000 to prepare other assorted reports for FERC on utility operations.

The largest identified SEC cost was also reported by CP&L--$1,013,000 for preparing prospectuses for stock/bond issues. From 1976 through 1978, CP&L printed prospectuses on seven different stock/bond issues as required by the SEC. Four of these issues were made to the public, with the other three offered only to CP&L employees. Although SEC required CP&L to provide a prospectus for all seven security issues, a CP&L official stated that a prospectus would not have been provided for the offering made only to the employees because they all receive copies of the annual report, which in many cases is a duplication of information provided in the prospectus. Because the additional prospectuses were required, incremental costs of over $434,000 for outside legal and accounting fees, printing and postage, and in-house labor can be attributed to these regulations.

Protection of worker health, safety, and job status

Perhaps the most difficult costs for the utilities to quantify, and less subject to independent verification, are costs to protect the health and safety of employees. Although all four utility companies were subject to Occupational Safety and Health Administration (OSHA) regulations, only CP&L spent the time necessary to quantify some of the compliance costs it incurred. One-time costs for safety equipment, modifications to existing buildings and other facilities, and powerplant design activities cost over $383,000. Annual recurring costs of about $70,000 were incurred by CP&L for administrative functions such as attending seminars, public hearings on OSHA matters, task force meetings, and recordkeeping.

Protecting employees' job status and regulating employment practices in compliance with Equal Employment Opportunity Commission (EEOC) regulations cost CP&L over $150,000; about $130,000 is annual recurring costs for additional administrative expenses, personnel salaries, legal assistance, reporting and recruitment expenses, and costs for designing CP&L's Employee Information System.

THE EFFECTS OF REGULATION ON RELIABILITY AND CONSUMER RATES

Although the four utility companies encountered operational problems and construction delays that were attributed to regulatory compliance, we found no evidence that such compliance precluded the utilities from providing reliable service to their customers. Quite to the contrary, our assessment of the reserve margins 1/ maintained by the three investor-owned companies for the 1974-1978 period showed that CP&L and FP&L actually increased their reserve margin while HL&P reported that in its judgement the reserve margin was maintained at a sufficient level for its service area. It must be pointed out, however, that during this period the utilities were experiencing significant reductions in load growth due to the aftereffects of the 1973 Arab oil embargo.

Because load growth in the service area has been lower than forecast, CPA/UPA have been able to continue purchasing electric power; therefore, the 1-year delay in bringing their

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1/ Reserve margin is installed capacity minus peak demand, with the difference expressed as a percentage of peak demand.

newest powerplant on line did not adversely affect their ability to serve their customers.

There is little doubt that utility customers have paid higher rates as a result of the regulatory expenditures made by the utility companies. While difficult to quantify because (1) the actual costs are not always clearly identified, and (2) the rate-making process does not always distribute costs equally to all customers, even a single large regulatory cost--such as the cost for cooling towers--can increase the average residential customer's bill to some extent. The combined effect of all regulatory costs could, therefore, add a relatively large incremental cost to the average customer's electric bill.

Impact of regulation on reliability of service

The ability of an electric utility company to provide reliable electric power is influenced by factors such as its ability to (1) charge high enough rates to ensure continued financial viability for growth, (2) site and construct generating and transmission facilities in the most appropriate locations, (3) operate in a flexible manner and adapt to the varying demands placed upon it, and (4) accurately forecast demand and plan and implement facilities to be in service in time to meet growth. While we did find examples indicating that regulations had adversely affected one or more of these these factors, each company in our study has been able to meet the consumer demands placed upon it to date. In fact, two utilities--FP&L and CP&L--have increased their reserve margins in the last few years to the point where it is higher than the generally accepted level of 25 percent. The reserve margins for the three investor-owned utilities are shown in the following table.

Table 2-3

Reserve Margin Percentage by Year

	Year				
Company	1974	1975	1976	1977	1978
CP&L	17.9	14.3	a/29.3	a/33.9	a/35.4
FP&L	20.7	23.4	13.8	17.5	29.7
HL&P	b/26.4	b/31.1	b/22.8	b/20.4	b/18.8

a/Does not include 60 MW of capacity available from Fayetteville, N.C.

b/Does not include power purchases available.

Even though HL&P is below the 25-percent level, utility officials reported to SEC that their current construction program should allow them to maintain a 15-percent reserve margin over peak demand through 1981. Additional capacity is available through interconnections with other systems, and methods for obtaining additional power during the 1982-85 period are being evaluated.

Although regulatory compliance has not yet adversely affected reliability, the effects of this compliance may be different in the future. The electric utility industry operates on many assumptions involving long periods of time. Estimates for today's electrical demand were made by utility planners years ago and powerplants were constructed to provide this anticipated level of service. Part of the favorable reserve margins at this time are due to a decreased growth in demand that was not forseen by utility planners, which has to some extent offset the impact of regulatory requirements.

Regulatory compliance operates in a similar manner. Regulations and standards were promulgated years ago, but often their impact is not felt until years later. Utilities face construction delays, plant cancellations, and operating constraints brought on by regulatory requirements and conditions described earlier, and we found regulatory officials expressing concern over the continued ability of the industry to meet consumer demands.

In North Carolina, for example, an analysis of the cooling tower requirement at the Brunswick plant, performed in the mid 1970s by the Chairman of the North Carolina Utilities Commission, showed a possible adverse effect on CP&L's ability to meet power needs during peak periods of demand. Not only would an estimated $72 million in capital funds be required, but power needs for the cooling towers would require 3-5 percent of the generating capacity of the plant. The Chairman estimated it would cost consumers about $1.2 million to replace the lost power and, because the overall plant capacity would be reduced, during periods of high consumer demand the utility may not have sufficient capacity and may have to temporarily disconnect some customers from electric service.

Other devices required to improve the environment, such as electrostatic precipitators and scrubbers, also require that a portion of the utilities' generating capacity be used in-house. According to utility officials, these devices use between 6 and 10 percent of the power generated by the utilities. In addition, utility representatives

estimate that forced outages of the plants because of the unreliability of emission control devices place additional reserve capacity requirements of from 7 to 10 percent on the facilities. Consequently, a coal-fired generating plant using cooling towers and air emission control devices could use between 9 and 15 percent of its capacity just to satisfy regulatory requirements. If these additional capacity requirements are not accounted for in designing the plant, or if outside power supplies are not available when needed, utilities with marginal reserve levels may not be able to meet the peak demands placed on their system.

The impact of regulation on consumer rates

The regulatory costs incurred by utility companies are usually passed on to consumers--either directly as operational costs or in increments through an annual depreciation expense and as part of the rate-of-return on the utility's rate base. Costs to comply with FERC, SEC, OSHA, and EEOC requirements, for example, are generally administrative in nature or require minimal expenditures, so they are expensed as they are incurred.

Certain operational and maintenance requirements, such as monitoring effluent discharges and stack gas emissions, disposing of electrostatic precipitator and scrubber waste, providing power for pollution control devices, and higher costs for lower sulfur content fuel are also charged to consumers as they are incurred. Although utility companies can identify and isolate many of these costs, they generally have not done so. As a result, the effect on consumer rates of this kind of regulatory compliance--while real, and in some cases relatively large--is nearly impossible to aggregate and accurately assess.

Major capital costs for items such as cooling facilities, precipitators, and scrubbers are much easier to identify. These capital items are added to the utilities' rate base and the costs are recouped over a period of time as depreciation expense. Because these individual costs can also be identified with a specific plant or generating unit, their impact on the cost of generating power is more readily determined. As an example, we can look at CP&L's Brunswick powerplant discussed earlier in the chapter. CP&L faces the prospect of adding cooling towers to the Brunswick plant at a current estimated cost of $118 million. Utility officials estimate that the cooling towers will result in a loss to consumers of 70 MW of Brunswick's capacity which is valued at an additional $34 million. Using CP&L's annualized capital cost factor of 14.311 percent, CP&L will need to

recoup $21.8 million each year from consumers to repay these capital costs. Recouping the operational costs attributed to the cooling towers amounts to an additional annual cost of $6.6 million, for a total addition to power costs of $28.4 million.

Although the above method can be useful for demonstrating the effects of regulation on the generating costs at a particular plant, it may not be as applicable in relating regulatory costs to consumer rates. Tying an incremental regulatory cost to customers' electric bills is complicated by the averaging method used by the utilities in recovering their total costs from their customers. Many utility companies operate multiple generating units which are interconnected to form one unified system. The electricity used by a customer may come from any unit in the system. For billing purposes the costs for each unit are aggregated and an average cost of providing power to consumer classes is computed. This average cost serves as a basis for authorized electric rate schedules.

As a result of the averaging method for rate purposes, the incremental costs incurred due to regulations are not identified with a particular unit or powerplant. Furthermore, the incremental costs themselves may be spread out over a period of years, particularly if the utility is allowed to begin recovering its capital costs as they are incurred.

Total expenditures attributable to regulations are needed to identify the effects of regulatory cost on consumer rates. As we pointed out earlier, these costs are generally not specifically identified. In 1976, however, FERC required electric utility companies with an annual electric operating revenue of $1 million or more to begin reporting their annual expenditures for complying with environmental requirements. Using the reported data, we were able to compute the approximate increase in consumers' costs at CP&L and FP&L that were directly related to regulatory requirements for an entire electric power system.

In 1979 CP&L reported to FERC that it had incurred expenditures of $48.5 million for environmental compliance. Based on CP&L's net generation of 30.3 billion kWhs, we determined that 1.6 mills 1/ per kWh (or about 6 percent) were added to total operating costs of about 24.9 mills per net kWh generated.

1/ One mill equals one-tenth of a cent.

By using the same technique on FP&L's reported data, we determined that their environmental compliance increased operating costs by 2.6 mills (or about 9 percent) per kWh for the same period. FP&L's total operating expenses were 29.9 mills per net kWh generated.

BENEFITS FROM REGULATION ARE NOT READILY DEFINED

The concept of applying the results of a cost/benefit analysis to the development and promulgation of regulatory requirements has received increasing attention in recent years and arguments for and against its use have been presented. Those concerned with this issue generally agree that many of the regulations promulgated during the 1970s do not lend themselves to such an analysis. However, proponents of the concept argue that cost/benefit analysis should not be disregarded simply because it is difficult to do and the possible benefits of a regulation are not quantifiable.

Early legislation did not address the cost/benefit issue for several agencies included in our review. Costs were not mentioned as a factor for setting standards and promulgating regulations. However, later legislation, for example the Clean Air Amendments of 1977, allowed agency officials to consider the costs and economic effects of regulation.

The benefits of regulation are obviously in the eye of the beholder. From the utility executive's perspective, many compliance costs far out weigh any tangible benefits to customers, and it is therefore possible that few--if any--of the incremental environmental controls or health and safety measures would have been incorporated in the industry's operations without regulations. Conversely, the environmentalist, the special interest group, or the company employee may see positive benefits to be achieved in reducing air and water pollutants, in becoming a part of the utility decisionmaking process through intervention, or in putting the burden of worker health and safety on the employer. It is difficult, however, for either side to produce hard statistical data to support its position.

Our examination of some of the actions taken and costs incurred by the utilities showed that seldom was there a clear case of unreasonable resistance by the utilities or unreasonable requirements by the regulators. Instead, as illustrated in the examples we presented earlier in this chapter, we found apparent conflicts between Federal and State requirements, a reluctance to compromise, and in some

cases, a lack of support for regulatory requirements because utility officials were unsure of what would actually be achieved by the expenditure of large sums of money needed to comply with the regulatory stipulations. Given the responsibility of the utilities to provide electric power at the most economic cost and that of the regulators to comply with legislative mandates, we believe that on balance, each party acted equitably.

Water requirements posed particular operating difficulties

The use of closed-cycle cooling systems at the utilities in our study is a good example of the problems faced by most utilities using this cooling system, particularly those located in coastal areas. As discussed earlier, the utilities preferred the once-through cooling system because of its lower cost. Environmental concerns over the effects of heated discharge water on marine life, however, led to the promulgation of standards for discharge water temperature. As these standards were enforced, the utilities found their previously approved cooling systems were no longer acceptable and costly changes were required.

Once-through vs. closed-cycle cooling

The closed-cycle system was also required as a means of reducing the damage to marine life at the water intake structure where high water flow rates are common in once-through systems. A number of the regulatory problems that prevailed in the early 1970s are probably best illustrated by the experience of CP&L with its Brunswick plant. This two-unit nuclear plant was started in the late 1960s with the necessary cooling water to be taken from and discharged back into the Cape Fear River. In early 1969, however, Department of the Interior officials expressed concern over the possible adverse effects on marine life in the river from the heated discharge water. As a result, CP&L agreed to discharge the water into the Atlantic Ocean through a 5-1/2-mile-long canal. Construction began in 1971, and CP&L is currently using this system.

Before CP&L completed the canal, however, the Federal Water Pollution Control Act Amendments were passed in 1972 which required the use of the best available technology for cooling-water intake structures in order to minimize adverse environmental effects. In January 1974 AEC issued an environmental impact statement which stated that it appeared the location of the intake structure would cause unacceptable environmental damage to marine life in the estuary. AEC therefore concluded that cooling towers must

be built. EPA agreed, and in December 1974 required CP&L to construct and operate the towers by mid-1978. An EPA official said that the FWPCA requirement for the use of best technology necessitated the agency's reconsideration and subsequent reversal of its decision from the once-through system to the closed-cycle system.

CP&L officials disagreed with the new requirement and proposed delaying system modifications until more adequate biological data had been gathered and assessed. Although EPA and NRC rejected CP&L's position, the utility began biological studies. When preliminary data seemed to indicate less biological damage was actually occurring than predicted by EPA, CP&L appealed the requirement and contended that further study was needed before EPA's final decision was made. In June 1976 hearings were held at which CP&L presented its findings that showed in all likelihood the damage to the adult marine population resulting from the existing cooling system was undetectable. CP&L also projected that the costs to consumers of constructing and operating the cooling towers towers would be over $20 million per year, against an estimated loss of commercial marine life due to the once-through cooling system of $92,000 to $184,000 per year. In light of this, the utility proposed a more comprehensive biological study spanning 2 years to obtain adequate data concerning the impacts of the existing once-through cooling system. EPA witnesses disputed this proposal, however, and stated that the damage could never be measured. The witnesses also contended that any adverse impact must be minimized and that costs are irrelevant if there is a technological means to reduce impact which will not essentially bankrupt CP&L.

CP&L's position was supported by State officials, the Corps of Engineers (COE) and the Service. The Service later reversed its opinion, however, based on an assessment by two biologists who examined CP&L's proposed study and decided any results would be meaningless. Although we attempted to obtain the basis used by the Service to reverse its position, we could find little more than a letter to the Service from EPA suggesting that this case could be a major test of the provisions of the National Environmental Policy Act and, therefore, a unified position should be adopted by the Federal agencies involved in the case.

The final decision has been bounced back and forth between the Regional Adminstrator and the EPA Administrator in Washington for over 2 years. Until a final decision is reached, CP&L is continuing to use its once-through cooling system although it began construction of the cooling towers

because NRC would not give CP&L an operating license until it had done so. The utility has stopped construction of the towers, however, pending the final decision by the EPA Administrator.

Thermal pollution

HL&P faced similar problems with one of its cooling systems because of apparent conflicts between State and Federal requirements. Until 1970, HL&P used a State-approved once-through cooling system at its P.H. Robinson plant near Galveston Bay. In 1970, the State requested that HL&P lower the temperature of the water discharge, so the utility built a dilution cooling bypass system. Prior to completion of the system, EPA notified HL&P that dilution was not an acceptable cooling system under the best available technology criteria. HL&P abandoned its dilution bypass system and built five supplementary cooling towers because the scarcity of land precluded the use of a cooling pond.

Texas Water Resource Board officials said they did not believe cooling towers were needed and that studies indicated there was no substantial degradation of Galveston Bay resulting from uncooled discharges. The Board later joined in a court suit seeking, among other things, review of EPA's national thermal pollution guidelines. The court remanded all thermal effluent guidelines to EPA and directed it to consider several factors set out in the decision. The revised guidelines have not yet been issued by EPA.

EPA officials contend that cooling towers are needed to protect the estuarine water of the Bay; they also said that the State of Texas had set a 95-degree water temperature standard which EPA was merely enforcing through the permitting process. EPA officials also stated that HL&P had proposed the cooling towers to get the necessary permit to operate the plant, and EPA had simply agreed with the utility proposal.

Treatment of chemical waste

Chemical waste discharge treatment and pollutant monitoring requirements were also cited by HL&P as having questionable value. HL&P officials believe that combining all in-plant chemical wastes for treatment is more economical than separating each waste chemical and treating it individually. EPA regulations allow for combined chemical waste treatment, but HL&P officials contend that EPA's requirement for the monitoring of individual chemical products after treatment precludes its use.

State officials said they have always allowed the co-mingling of chemical waste streams for treatment and agreed that low-volume chemical waste could be mixed and treated in bulk. The State officials also contend that EPA's more stringent requirements preclude utility compliance with the State's interpretation. EPA officials responded by stating they have encouraged and approved combined chemical waste treatment systems, and stated that HL&P is using the separate chemical waste treatment system because the utility proposed this type of system when it applied for the chemical discharge permits. The officials said they do not require specific means of achieving the discharge standards and will work with whatever the companies want to do as long as the pollutants are reduced to the required level.

This same problem occurred at CP&L where separate chemical discharge streams were installed. Utility officials pointed out, however, that the level of the chemical waste discharge was not changed by the installation of the system--the only result was more accurate monitoring of each chemical being discharged.

Wildlife protection predominate in land use decisions

The benefits derived from precluding the routing of transmission lines through wildlife habitats managed by the Service were also seldom demonstratable. The refusal of the Service to grant FP&L a permit to cross a portion of the Loxahatchee National Wildlife Refuge was largely predicated on the designation of the proposed area as a critical habitat for an endangered species, the Florida Everglades Kite. Although there were about 100 Kites inhabiting another sector of the refuge area at the time, the area proposed for power line use was not inhabited by the Kite and could not be used until extensive changes were made to propagate the Kite's only food supply, the apple snail, and transport the Kite to the new area. The Department of the Interior has had a habitat development plan for the area since 1967, but no work had been done at the time of FP&L's request; in fact, the proposed development work has been conducted over the past 2 years.

Beginning in late 1972 and for about 5 years thereafter, FP&L attempted to build the transmission line across the refuge in order to avoid crossing agricultural lands. Utility officials estimated that had the utility been allowed to construct the line as planned, a savings of over $1.2 million could have been realized because the proposed line was shorter. The company even offered to provide a comparable section of land to replace the area

marked for development and funds to help develop it as a suitable habitat for the Kite. This proposal was rejected by DOI as an alternative because an agency biologist determined that the transmission line would restrict the the movement of the Kites and could lead to their injury or death from flying into the towers. A DOI official acknowledged, however, that hunting is allowed in the refuge, and admitted that the Department had not conducted a study to determine the offsetting probabilities of Kites being killed by hunters or from flying into the proposed transmission towers. The 1979 operating report for the refuge indicates that 115 cases for violations of Federal and State hunting and fishing regulations were developed during the year, including two cases in which protected birds were killed by hunters.

According to estimates made by FP&L officials, not only was the reliability of electric service affected by this action, but the costs associated with the alternatives taken by the utility to protect the Kites amounted to at least $10,000 per bird even though the birds did not live in the proposed area.

Service officials said that they are very serious about their legislative mandate which allows refuge areas to be opened for other uses only if the proposed use is compatible with the purpose of the refuge. Their position is that if there is an alternate route that a proposed facility can take to avoid the refuge area, then permits to cross the refuge will generally be denied. In the Florida Kite case, the utility company could construct the line around the refuge, so the requested permit was denied. The utility ultimately constructed the line using an alternate route adjacent to the refuge.

CHAPTER 3

THE NATURE OF REGULATORY STRATEGY

The requirements promulgated by regulatory agencies that resulted in most of the costs identified in chapter 2 were generally developed in response to stated or perceived congressional objectives. These objectives were often oriented towards social issues, such as environmental protection, which became prominent in the late 1960s and early 1970s. The utility industry was particularly affected by these congressional concerns primarily because of the nature of its operation. As large stationary sources of air and water pollution, powerplants were a visible target on which the newer regulatory agencies could focus their attention, and the resulting regulations rarely had provisions for excluding existing powerplant facilities from regulatory compliance. As a result, many of the identified costs were incurred to retrofit plants already in operation, or to redesign plants just being built.

The development and enforcement of new regulations in the early 1970s was a composite of adopting and/or defining existing Federal or State requirements and setting new standards required by legislative decree. This operating environment often fostered conflicting Federal and State requirements, which in turn led regulators and electric utilities to be reluctant to compromise in their positions regarding regulatory requirements because of the uncertainty that positive results would be derived from compliance. The fact that compliance would be costly and the quantification of benefits difficult, or that standards set often lacked scientific support, however, was no deterrent in promulgating the regulations. While the decisionmaking process was generally retained at agency headquarters, enforcement of the regulations was generally delegated to State or regional levels.

We believe that although the regulatory requirements promulgated in the early 1970s may have been difficult for the utilities to comply with, and more costly than necessary, they did serve to focus attention on the need to solve some pressing social problems. We also believe that while there is a continuing need to emphasize improvements in environmental matters, this should be accomplished within the framework of a more balanced regulatory climate. Regulators need to continue the trend that has been started toward (1) improving economic

cost assessments associated with regulatory requirements, (2) developing and using cost/benefit analyses in assessing alternative methods of compliance, and (3) reviewing existing regulations for continued applicability.

REGULATIONS REFLECTED SPECIFIED LEGISLATIVE OBJECTIVES

Over 99 percent of the identified regulatory costs incurred by the four utilities resulted from compliance with regulations developed by the States and six Federal agencies. Three of the Federal agencies, EPA, NRC, and OSHA, were established in the early 1970s to carry out specific legislative programs. The other three agencies, DOI, COE, and FERC, are long-established agencies that operated under more general regulatory mandates.

Environmental Protection Agency

EPA is the Federal agency primarily responsible for implementing, among other things, air and water pollution control laws. The President created EPA by Reorganization Plan Number 3 of 1970 to coordinate governmental efforts to protect and enhance the environment.

The electric utility industry, in particular, has been greatly affected by EPA actions. Electric generating plants have been one of the major sources of air and water pollution because emissions of sulfur dioxide, particulate matter, heat, and nitrous oxides have been viewed as a continuing national problem. For example, in 1976--4 years after standards of performance to limit emissions were promulgated--steam electric generating units contributed 65 percent of the sulfur dioxide, 29 percent of the nitrous oxide, and 24 percent of the particulate matter emitted on a national basis. The large volumes of water needed for cooling purposes has also led to thermal pollution as heated water was discharged into public waterways.

Air pollution legislation and objectives

Federal policy dealing with air and water pollution culminated in four comprehensive pieces of legislation--the Clean Air Act Amendments of 1970 and 1977 and the Federal Water Pollution Control Act Amendments of 1972 and 1977. This legislation substantially strengthened the regulatory and subsidy parts of environmental policy and committed the Nation to ambitious goals for clean air and water.

The Clean Air Act (42 U.S.C. 7401), and in particular the Clean Air Act Amendments of 1970 the (P.L. 91-604) provided the legislative authority for promulgation of regulations that cost the four utility companies about $700 million more than they might have otherwise spent for controlling air emissions. Among other things, the 1970 Amendments (42 U.S.C. 7409-7413) empowered EPA to establish and enforce national ambient air quality standards to promulgate air emission standards for new and existing fossil-fuel-fired stationary sources of air pollutants. The need for this action was based on congressional findings that a large part of the Nation's pollution had spread across local and State jurisdictional lines and that growth in the amount and complexity of air pollution was resulting in mounting dangers to the public health and welfare. As a result, the Congress found that air pollution prevention and control should be established "to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population."

EPA was required by the act (42 U.S.C. 7409(a)(1)(A)) to promulgate both primary (health protection) and secondary (welfare protection) ambient air quality standards. The Administrator was guided in setting the primary standards by 42 U.S.C. 7409(b)(1) which states:

> "National primary ambient air quality standards. . . shall be ambient air quality standards the attainment and maintenance of which in the judgement of the Administrator, based on [air quality] criteria and allowing an adequate margin of safety, are requisite to protect the public health."

The margin-of-safety question is discussed in the act's legislative history which indicates that the intent of the act is to protect the most susceptible group in the general population. However, the legislative history points out that the exact relationship between adverse health effects and concentrations of pollutants will be unknown.

EPA was also required to promulgate standards of performance (emission limitations) for new fossil-fuel-fired stationary sources of air pollutants. These new source performance standards (NSPS) were to be developed to reduce the possibility that new sources of air emissions might contribute significantly to pollution that endangers public health and welfare.

Water pollution legislation and objectives

The nearly $300 million in water pollution costs claimed by the utility companies in our study stemmed from the requirements of the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1251). These amendments attacked a number of problems that had existed in the national strategy for controlling water pollution prior to 1972. This strategy based clean-up requirements on the desired uses of effluent-receiving waters as determined by individual State governments. According to EPA, this approach was generally ineffective due to a number of political, technical, and legal weaknesses.

The revision to the act in 1972 was predicated on the philosophy "that no one has the right to pollute * * * and that pollution continues because of technological limits, not because of any inherent right to use the Nation's waterways for the purpose of disposing of waste." The act established a national goal of totally eliminating pollutant discharges by 1985 and directed "that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983."

The definition of pollutant discharges in the act included chemical waste and heat--both of which result from operating steam electric generating plants. In addition to controlling these effluent discharges, the act also specified that cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.

To carry out the objectives of the act, EPA was charged with three major tasks.

--Develop and publish water quality criteria accurately reflecting the latest scientific knowledge on the kind and extent of all identifiable effects on health and welfare which may be expected from the presence of pollutants in any body of water and give the criteria to the States for use in developing their water quality standards as specified in section 303 of the act.

--Promulgate effluent guidelines so that by July 1, 1977, effluent limitations would be achieved for all specific sources of pollutants, other than publicly owned treatment plants, using the best practicable control technology and achieve further effluent limitations no later than July 1, 1987, using the best available technology with EPA defining the technology to be used.

--Set standards of performance for all new sources of pollution.

EPA was also given authority to issue pollutant discharge permits and prescribe conditions for such permits to ensure that provisions of the act are carried out. The act also provides that such authority can be exercised by individual States instead of EPA, subject to EPA review and approval.

Nuclear Regulatory Commission

Regulations promulgated by NRC were cited by three of the utility companies as the basis for costs totaling over $460 million. These costs were incurred in designing, building, and operating licenses for nuclear plants, and in handling and safeguarding nuclear fuel.

The process of promulgating regulations, developing Regulatory Guides, and issuing construction permits and operating licenses for nuclear plants had its origin in the Atomic Energy Act of 1954. This act assigned AEC the responsibility for promoting and regulating peaceful uses of atomic energy. AEC's primary concerns were to protect the public health and safety from the radiological effects of nuclear facilities and to preserve the common defense and security.

The National Environmental Policy Act of 1969 (NEPA) and the 1971 court decision in the Calvert Cliffs case 1/ broadened the public safety issue to include much more than radiological concerns.

The court's interpretation of NEPA expanded the scope of nuclear licensing and regulation to include consideration

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1/ Calvert Cliffs Coordinating Comm., Inc. v. AEC, 449 F. 2d 1109 (D.C. Cir. 1971).

of air and water pollution, noise, fish and wildlife, ecological, asthetic, sociological, and economic factors, and the protection of historic and cultural resources.

NRC was established under the Energy Reorganization Act of 1974 when the Congress separated the promotional and regulatory functions of AEC. NRC assumed the responsibilities of AEC as they relate to (1) the licensing and regulation of nuclear facilities and materials; (2) research in support of the regulatory process; (3) protection of public health, safety, and the environment; and (4) safeguarding materials and powerplants in the interest of national security.

Occupational Safety and Health Administration

The utility companies contend that although the dollar costs of complying with OSHA regulations are not large, they do require staff time, resources, and procedural requirements that are unnecessary and restrictive. These regulations were promulgated by OSHA under authority provided in the Occupational Safety and Health Act of 1970.

The 1970 act implemented a lengthy history of Federal concern and involvement in worker safety that goes back to 1890. This concern was emphasized in proposed bills to establish general national occupational safety and health standards that were frequently introduced in the Congress beginning in 1951 and continuing for nearly 15 years. In passing the 1970 act, the Congress found:

> "Personal injuries and illnesses arising out of work situations impose a substantial burden upon, and are a hindrance to, interstate commerce in terms of lost production, wage loss, medical expenses, and disability compensation payments."

The goal of the act was to "assure so far as possible every working man and woman in the Nation safe and healthful working conditions * * *." 1/ A Senate committee report stated that the purpose of the act was "to reduce the number and severity of work-related injuries and illnesses." 2/

1/ OSHA Act, 42 U.S.C. 651(b).

2/ U.S. Senate Committee on Labor and Public Welfare, S. Rep. No. 1282, 91st Cong. 2d Sess. 1 (1970).

An OSHA official said that the objective of the agency in carrying out the intent of the act is to shift the social impact of worker safety and health--and its consequences--from the worker onto industry, where it belongs. He said that workers should not have to suffer or accommodate themselves to adverse conditions resulting from the work environment.

The Department of the Interior

The various mandates that have been placed upon the Department of the Interior affect the operations of the electric utilities to different degrees, depending on their locations and methods used to generate and transmit power. The wildlife and land use stipulations of the Department's Fish and Wildlife Service often caused compliance difficulties for the electric utilities that participated in our study. Because of the environmental and wildlife protection mandates that have been placed upon the Service, electric utilities frequently encounter difficulties in securing right-of-way easements for power lines or altering the land to accommodate the construction of roads or other facilities, or in operating in areas where endangered wildlife may be affected. Many of the problems appear to be caused by one primary objective of the Service--any requested right-of-way or use must be "compatible" with the purposes established by the Service for those lands or areas under its jurisdiction.

Major legislative authority

There are over 100 acts and treaties associated with the conservation of fish, wildlife, and plants which provide direction for the work of the Service. Major legislative enactments that give the Service authority to act in a wide range of capacities are summarized below. Although appearing to come from diverse and unrelated origins, their common goal is the protection of wildlife and the environment.

The Fish and Wildlife Act of 1956--The Fish and Wildlife Act of 1956 not only provides the most basic and general authority of the Service, but also establishes a comprehensive national fish and wildlife policy. In addition, the act directs a program of continuing research, and provides for extension and information services on fish and wildlife matters at national and international levels. While other acts governing the Service may be specific in their nature and requirements, the act of 1956 is more all-encompassing and sets the tenor for general regulation and requirements under the Service.

The National Wildlife Refuge System Administration Act of 1966--In 1966 the Congress established the National Wildlife Refuge System Administration Act which organized the previously scattered refuge parcels into a national refuge system. The act also provided guidelines and directives for administration and use of all areas in the system as long as "such uses are compatible with the major purposes for which such areas were established." Although these refuges are oriented toward land management for the benefit of wildlife, other "compatible" uses of the land are allowed when it is determined that the proposal or land use will not interfere with or detract from the purposes for which the refuges were established. The determination for allowance or denial of land use is supported by an Environmental Assessment and is based only on wildlife values, regardless of broader social or economic concerns.

The Fish and Wildlife Coordination Act--The main impact of the Fish and Wildlife Coordination Act has been water-related because it requires that the Service be consulted when the waters of any stream or other body of water may be diverted, channeled, or otherwise modified by any Federal agency, or a private agency under Federal permit or license. This law is designed to prevent the loss of, or damage to, wildlife resources which may be related to proposed water projects. Although COE would have to issue the permit to divert or alter the flow or characteristics of the Nation's waters, the Service has to be consulted first on these matters for its recommendations.

The Endangered Species Act 1973--The Endangered Species Act was passed in 1973 to provide for the conservation of threatened and endangered species of fish, wildlife, and plants by Federal agencies or by organizations under their jurisdiction. The act also encouraged the establishment of State programs for the same purpose. Although the specific provisions of the act are varied and numerous, when an endangered species issue arises, other agencies are required to coordinate with the Service--which is the lead agency--in protecting the species in question.

Corps of Engineers

Regulatory costs incurred by utility companies include the cost of construction permits and compliance with permit conditions required by COE. The permit program has its basis in the River and Harbor Act of 1899 which has the objective

of avoiding obstructions in navigable waters. Changes in the 1899 act and the promulgation of the FWPCA, however, have expanded the original permit program objective.

Under section 10 of the River and Harbor Act of 1899 and section 404 of the Federal Water Pollution Control Act Amendments of 1972, permits and regulations now have four basic objectives,

--to protect the quality of our Nation's water resources;

--to maintain water quality by protecting marshes, swamps, and similar environmentally valuable wetland resources;

--to prevent alteration or obstruction of navigable waters of the United States; and

--to control dumping of dredged material into ocean waters.

The Federal Energy Regulatory Commission

FERC regulates wholesale electric power transactions and therefore has oversight responsiblility for the activities of many of the Nation's electric utility companies. Through this oversight role, FERC prescribes forms and statements to be filed with the Commission and establishes records to be maintained by the utility companies. These required actions do increase costs somewhat, and the resulting costs are passed on to the utilities' customers.

FERC's authority to promulgate rules and regulations comes from provisions in the Federal Power Act. The need for new regulations, or changes to existing ones, however, comes from different sources, including utility companies, court decisions, and FERC staff members.

UNCLEAR REGULATORY PROCESSES LED TO UTILITY UNCERTAINTY

The development and enforcement of new regulatory requirements was often a composite of adopting existing requirements and developing new requirements as needed to meet congressional objectives. This was particularly true with EPA, OSHA, and COE. In addition, EPA and OSHA officials were required to encourage greater State agency

participation in achieving the prescribed national goals. Whereas agencies like the Service, FERC, and COE retained a greater degree of Federal control throughout the regulatory process, the various levels of authority and responsibility within the agencies and between Federal and State offices, and the initial conflicts between State and Federal standards, caused a great deal of uncertainty for the utility companies in our study. Even though the regulatory process often led to uncertainty, given the responsibility of the utilities to keep costs down and that of the regulators to comply with legislative mandates, on balance each party acted equitably.

Development of regulatory requirements

The utility companies experienced their greatest difficulties in complying with regulations developed by EPA and OSHA, principally because the new requirements touched on utility operational areas that had previously been largely under State purview--and largely unregulated--or had been on a voluntary basis. Federal concern over the effects of air and water pollution, for example, was slow in developing with the first Federal water pollution control law becoming effective in 1948, and the first Federal air pollution control act passed in 1955. Control of intrastate water pollution was left to the States, however, and air pollution control was largely directed at mobile sources. The efforts to control air and water pollution under these and subsequent legislative enactments were generally unsuccessful. By 1970, no State had a complete set of ambient standards and an implementation plan. By 1971, most States had set water quality standards but had no enforceable regulations. As a result, utility operations with respect to air and water pollutants were essentially unregulated.

The Clean Air Act Amendments of 1970 and the Federal Water Pollution Control Amendments of 1972, while building on earlier pollution control programs, introduced two new areas of regulation. The addition of stationary sources of pollutants to regulatory control required utility operational compliance with air standards for the first time. The 1972 amendments to the FWPCA created the National Pollutant Discharge Elimination System (NPDES) permit program which meant that all existing and new generating units had to obtain permits for the discharge of pollutants. Although administration of and compliance with a permit program is not costly in itself, compliance with the operating conditions and requirements specified in the permit is

costly. Utility companies frequently had to install new equipment, change operating procedures, or redesign facilities under construction.

The EPA staff relied heavily on work that had been done by State agencies in setting air quality standards for particulate matter and sulfur dioxide emissions prior to 1970. The standards finally developed were based on federally prepared air quality criteria documents that outlined what was needed in setting the standards. These criteria were based on literature searches, scientific opinion, and committee agreement.

The attainment of the air quality standards was the responsibility of the individual States. This was to be accomplished through State Implementation Plans (SIPs) that indicated how the State intended to achieve the standards. Typically, each implementation plan is a compilation of State air pollution statutes, regulations, and pollution control strategies that include emission limitations, land use controls, and transportation controls. EPA is required either to approve the SIPs (thus making them part of the Federal law) or amend them in conformance with its criteria for attaining ambient air standards.

The flexibility in requiring comformance to the standards was left in large measure up to the States. Through its SIP, each State could determine which sources of pollutants would be most closely regulated. The mix was left up the States, subject to EPA's approval that it appeared the national standard would be met. States could set tighter standards for new source emissions but not looser standards than those set by EPA. If a State found, in retrospect, that the emission standards "overcontrolled," it could request an EPA review and upon approval, was allowed to relax the standards initially set. An EPA official said approval for granting such variances is dependent on the State's ability to meet the attainment standards. In nonattainment areas, it is almost impossible for EPA to approve any variances. In the cleaner areas, there is some flexibility in negotiating relaxations.

Regulations for controlling thermal discharges were a combination of Federal-developed water quality criteria and State-developed water quality standards which were reviewed and revised according to changes in the water quality criteria. The first criteria were issued in 1972 and were simply an updated version of those published in

1968 by DOI. EPA recognized that water quality criteria are changeable and that development of the criteria is a continuing progressive research effort. Consequently, a further update was issued in 1976. EPA also had the responsibility for developing regulations that established effluent limitation guidelines for existing sources and standards of performance for new sources for steam-electric power generating units. These guidelines were established within the framework of the technology available to the utility industry to achieve compliance.

In contrast to the somewhat broad range of options that were open to the EPA Administrator for meeting the congressional mandate, OSHA's promulgation of its initial guidelines for worker health and safety were largely mandated by the Congress with little flexibility allowed. Over the years, U.S. industry had developed a large number of consensus standards affecting industrial practices. Compliance with the standards was optional. Section 6(a) of the OSHA Act required the agency to adopt these consensus standards as mandatory standards for industry. OSHA's only flexibility was in the selection process. The agency was not required to accept every standard, but could eliminate those which it determined would not improve worker health and safety. For every standard selected, however, OSHA was required to adopt the standard in total with no change.

Once OSHA promulgated its initial guidelines, section 6(b) of the act allowed it to modify, alter, or add to the standards adopted under section 6(a). This provision was used to correct some of the deficiencies that existed in the initial guidelines. An OSHA official said that not all of the consensus standards OSHA was required to adopt were really suited to mandated compliance and many of the standards were more concerned with property protection than with worker safety.

OSHA allows for the development of State-operated regulatory programs for protecting worker health and safety. OSHA monitors and evaluates the State programs, and any interested person who finds inadequacies in the State program may file a specific complaint to the OSHA regional administrator. OSHA will investigate the complaint and take any needed corrective action.

Regulatory requirements were not always clear

The Federal efforts to bring the State agencies more fully into the regulatory process led to some of the initial confusion--and increased costs--on the part of the utility industry. State agency approval did not always assure compliance with Federal requirements.

HL&P, for example, operated one of its powerplants under a State permit until 1970, discharging 105 degree water into Galveston Bay. In 1970, HL&P responded to a State request to lower the discharge temperature and subsequently built a dilution cooling bypass system that met State standards. EPA notified HL&P that dilution was not an acceptable cooling method, however, and the utility company abandoned its bypass system and built five cooling towers. EPA officials said that Texas had set the water temperature standard at 95 degrees and they were simply enforcing that standard through the permitting process. In other cases, Texas State officials believe that some of EPA's monitoring requirements are excessive, and said they would not require them to the extent EPA does.

State agencies also put new requirements on utility company operations to obtain Federal approval of State plans. In North Carolina, CP&L was required to construct air and water pollution control facilities on existing plants and redesign plants under construction after the State Environmental Management Commission added the new requirements to meet EPA-mandated requirements. At CP&L's Shearon Harris nuclear plant, the company was denied a variance from the State Water Quality Standards by the North Carolina Board of Water and Air Resources which would have allowed CP&L to use a cooling reservoir for water discharge. Although the Atomic Energy Commission staff approved the reservoir concept and the North Carolina Board found it to be in the public interest, EPA officials objected and the Board went along with EPA wishes.

The process of obtaining permits for certain utility construction activities from COE and the Service also became more uncertain as more agencies were established and environmental concerns became preeminent. Prior to 1968, COE administered the 1899 River and Harbor Act only to protect navigation and the navigable capacity of the Nation's waters. Permits to construct power transmission lines in navigable waters were required, but this was probably the only major effect of the COE permit program on utilities up to that time.

In December 1968, the Department of the Army revised its policy with respect to the review of permit applications and proposed to consider factors other than navigation. These included: fish and wildlife, conservation, pollution, aesthetics, ecology, and the general public interest. The change was predicated on a growing National concern for environmental values and in response to related Federal legislation such as the Fish and Wildlife Coordination Act (16 U.S.C. 661, 662) and the National Environmental Policy Act (42 U.S.C. 4321, 4332). Additional pollution control considerations were added under the section 404 permit program of the FWPCA (33 U.S.C. 1444).

Current procedures now require an applicant for a COE permit to agree to meet the requirements of other Federal agencies in addition to COE requirements. One COE official said that COE ends up enforcing other agencies' regulations through its permit program. In one example, a utility filed for a COE permit to build a water intake structure on the Missouri River to supply water for the powerplant cooling system. The Service was given opportunity to comment on the application and said it would not recommend the permit unless the utility gave up plans for a sludge pond site and designated it a wildlife habitat. The utility had to comply with the Service's request to get the water intake permit from COE.

Permits issued by the Service for crossing wildlife refuges are allowed on a case-by-case basis. Compatibility with the purpose for which the lands are managed is the major criterion, although compliance with NEPA regulations is also a factor. A Service official said the Service has no firm definition for compatibility because it is largely a matter of judgment. All permits are viewed as an exception to the intent of the legislation. In our examples, the utilities spent much time and effort to obtain the permits, with minimal success. In two CPA/UPA cases, a compromise was reached in one case and the utility was allowed to go on the edge of the wildlife area with its transmission line. In the other case, a permit was granted but only after a study was conducted supporting the utility's position. In the FL&P case, the Service refused to permit construction of a line across a wildlife area in Florida.

Costs and economic impact were generally not considered

Concern over the cost/benefit aspect of regulations was generally not a factor in the regulatory agencies affecting electric utility operations prior to 1970 and this trend was

continued in subsequent regulation. CCE and the Service, for example, were principally permit-issuing agencies and the criteria for issuing permits were well established by law. The Clean Air Act, the Occupational Safety and Health Act of 1970, and the FWPCA also placed legislative emphasis on reaching stated objectives with little regard to costs or economic impact. OSHA officials, for example, said the legislation on worker health and safety precludes the agency from promulgating regulations based only on the results of cost/benefit analysis. An EPA official said the agency could not consider the cost of implementing primary air quality standards.

Agency officials, however, did not totally ignore the cost effects of their regulatory requirements. Although some legislative restrictions were quite rigid, agency administrators had some flexibility within the law to exercise judgment on the degree to which regulations could be complied with and how they would be applied. For example, in developing new source performance standards for air pollution emissions from new stationary sources, EPA officials could distinguish between categories of sources and set standards based on the best system available. Consequently, costs of reducing emissions could be taken into account when determining the best system.

NRC also considers the costs to utility companies and their customers when developing new regulations. An NRC official said requirements to make changes to existing nuclear units are not applied to all utilities if the costs would be prohibitive and reactor safety will not be compromised by the exclusion. OSHA officials said that although a cost/benefit ratio cannot be the governing criterion for a regulation, they do determine if the economics of a proposed action would "massively disrupt" an industry that may be subject to the regulation. Officials admitted this is a judgmental decision on their part but believe it is necessary because no worker should be hurt or adversely affected from a lifetime exposure to a work situation.

In most cases, compliance with regulatory requirements could be appealed by the utilities if they felt unduly burdened. Variances from standardized procedures could also be requested and was specifically provided for in the FWPCA. Appeals for variances under sec. 316(a) and 316(b) of the FWPCA can be a lengthy process, however. An EPA official said it could take up to 5 years to complete a 316(a) thermal discharge study for a 750-MW plant. A study that simply shows the absence of appreciable harm is much quicker than a predictive study. Employers may apply to OSHA for a

variance from a standard or regulation if they can prove that their employees are provided protection that is at least as effective as required by the standard. When a variance is needed by an employer only temporarily, he must show that (1) all available steps are being taken to protect employees, and (2) he has an effective program for coming into compliance with the standard as quickly as practicable.

Decisions by the COE district engineer will generally stand unless a procedural deficiency can be demonstrated. The final appeal level in most cases is to the courts.

CHAPTER 4

NEW APPROACHES EVIDENT IN REGULATORY EMPHASIS AND REQUIREMENTS

Although the latest environmental legislation continues to impose strict standards of performance in meeting national goals, the rigid regulatory structure that developed initially appears to be giving way to new methods for attaining congressional objectives. In an effort to obtain balanced regulations, the administration and the Congress appear to be much more concerned with the economic effects of regulatory actions and with evaluating the costs and benefits of alternative methods of achieving a desired goal. As a result, we observed that much of the regulatory emphasis and requirements that affect the electric utility industry have recently been undergoing a transformation. Regulatory agencies are now using the flexibility available to them to bring regulatory objectives, costs, and achievements into greater harmony. Few of these efforts, however, are directed toward alleviating the most common regulatory problems routinely faced by the industry such as obtaining permits, meeting environmental standards, and maintaining sufficient operational flexibility.

The new regulatory trend comes at a time when the utility industry is faced with uncertainties that adversely affect electric utility planning and operations. The principal concerns involve such questions as regulatory delays, changing regulatory requirements, uncertain regulatory application, and factors to be considered in future regulatory efforts regarding nuclear power.

Specific institutional response to such concerns has been varied in its potential for effectiveness. For example, despite DOE's legislated responsibilities regarding electric utilities, it has not yet reached internal agreement on what its role should be regarding the industry or what specific measures it should take in response to operational constraints or other service barriers faced by electric utilities.

The problems facing the electric utility industry will continue unless the regulatory agencies having jurisdiction over the industry recognize the difficulties facing the industry today and become more aggressive in redirecting their regulatory emphasis. The agencies should recognize the possible adverse public impact that could result from a failure to develop the greater regulatory precision that is needed in their efforts.

THE REGULATORY APPROACH REVISED

The examples that we have presented of operational difficulties encountered by electric utilities, as well as the resultant increased consumer cost, generally trace their origins to a period when regulatory demands and expected results were to a great extent unyielding. Several factors have appeared on the regulatory scene, however, which not only have already begun to change the previous course of regulation, but promise to further alter the process of regulation so that regulatory objectives, costs, and achievement will be in greater harmony. This shift in regulatory approach and emphasis is not only evident in the electric utility industry, but in other segments of the economy which are subject to Federal regulatory requirements.

We believe there has recently been an awakening by the Congress, the administration, and the business community regarding the magnitude of regulatory requirements that have been imposed in the past. Federal agencies are taking action to comply with the administration's commitment of incorporating greater precision into future regulatory efforts. Two important catalysts in this process have been (1) the administration's efforts to improve Federal regulations by the issuance of Executive Order 12044 and the formation of the Regulatory Council to encourage the simplification of future regulations, and (2) legislation that has been introduced in the Senate to streamline and improve the Federal regulatory process.

It appears that these actions have caused Federal agencies to give greater consideration to the regulatory process, including the resultant impacts. Although it is too early to fully measure the effectiveness of these initiatives, positive regulatory accomplishments will probably be realized if the current momentum for regulatory reform is maintained. The following sections provide additional information on these observed changes.

Executive Order 12044

On March 23, 1978, the President requested that each executive agency 1/ adopt procedures to improve existing and

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1/ Independent regulatory agencies are not required to follow the policies and procedures set out in the order. However, the President asked the Chairmen of these agencies to adopt the policies and procedures and report their progress to the President and the Congress.

future regulations. Several objectives were outlined in the Order which the agencies were asked to use as guides in the development and implementation of regulations. The directive stated that in addition to being simple and clear, regulations should not impose unnecessary burdens on the economy, individuals, or other organizations subject to the regulations. In order to achieve these objectives, Executive Order 12044 established the following process to be used by agencies in the development of regulations:

--The need for and purposes of the regulation should be clearly established.

--The heads of agencies and policy officials should exercise effective oversight.

--Opportunity should exist for early participation and comment by other Federal agencies, State and local governments, businesses, organizations, and individual members of the public.

--Meaningful alternatives should be considered and analyzed before the regulation is issued.

--Compliance costs, paperwork, and other burdens on the public should be minimized.

Not only were these guidelines established for the development of regulations, but specific procedures were instituted that should be followed by agencies in the review and generation of their regulations. The agencies are required to analyze and report on their regulatory activities including the areas of concern summarized below:

Semi-annual agenda of regulations

The agencies are required to publish an agenda, at least semiannually, of significant regulations under development and review. This agenda is designed to give the public adequate notice of proposed regulatory actions, and should provide information on the need and legal basis for the proposal, the action being taken, and the status of regulations previously on the agenda. The agenda should also include information for contacting knowledgeable agency officials, and should indicate whether or not a regulatory analysis will be required.

Approval of significant regulations

Before significant regulations are published for public comment, the agency head or designated official should determine several important ramifications of the regulation

including (1) a plan for evaluating the regulation after its issuance, (2) a determination that alternative approaches have been considered and the least burdensome of the acceptable alternatives has been chosen, (3) a determination that the regulation is needed and the direct and indirect effects of the regulation have been adequately considered, and (4) a determination that the regulation is understandable to those who must comply with it.

Criteria for determining significant regulations

Regulatory agencies are required to establish criteria for identifying regulations which are significant. Included in this consideration should be an assessment of (1) the type and number of individuals, businesses, organizations, and State and local governments affected, (2) the compliance and reporting requirements likely to be involved, (3) the direct effects of the regulation including the effect on competition, and (4) the relationship of the regulation to those of other programs and agencies.

Regulatory analysis

A regulatory analysis is required for regulations which will result in an annual effect on the economy of $100 million or more or would have major economic consequences on the economy, individual industries, geographic regions, or levels of government. The analysis is to include an examination of alternative approaches used in the decisionmaking process, a description of the economic impacts associated with these alternatives, and the reasons the selected regulatory approach was chosen.

Review of existing regulations

The Order requires agencies to periodically review their existing regulations to determine whether they are achieving the policy goals of the Order. Generally the same procedural steps will be used to review existing regulations and develop new regulations.

The Regulatory Council

The Regulatory Council was established by the President on October 31, 1978, to ensure better coordination of Federal regulatory activities as well as seek ways to improve the management of the regulatory process. The Council represents 36 departments and agencies with significant regulatory responsibilities and publishes a Calendar of Federal Regulations every 6 months which gives the public the earliest possible notice of agencies' schedules for proposing and promulgating regulations.

Each regulatory entry for the calendar provides information on the regulation such as the legal authority, the target problem and alternatives under consideration, a summary of the benefits and costs, other related agency regulations and actions, the steps the agency is taking to collaborate with other Federal, State, and local agencies, the applicable timetable, available documents to provide more background on the regulation, and the agency contact who can give additional information. The first calendar was issued on February 28, 1979, followed by publications on November 28, 1979, May 30, 1980, and November 24, 1980.

In addition to publishing the calendar, the Council conducts studies of the impact of regulations affecting various segments of the economy and consumer groups which are regulated by more than one Federal agency and must therefore respond to more than one set of regulatory directives. The Council also seeks to minimize inconsistent or duplicative Federal, State, and local regulations by working with program officials to develop and implement innovative, more cost-effective ways to achieve the goals of regulation.

Recent legislative developments

There have recently been four prominent legislative initiatives directed at regulatory reform. Each of these proposals addressed specific regulatory concerns, such as the need for an agency-by-agency review of regulatory policies and the requirement that agencies analyze the economic impact of their regulations on small business and small governmental jurisdictions. The various concepts of these bills were incorporated into the Regulatory Flexibility and Administrative Reform Act of 1979 which was introduced in the Senate on December 18, 1979, but was not passed. This legislation contains many of the features of Executive Order 12044, but in some respects goes beyond the Order's provisions in oversight functions, responsibilities, and regulatory flexibility. For example, the proposed legislation provides for a Regulatory Policy Board which would consolidate the various regulatory oversight functions that now reside throughout the executive branch.

Another provision of the Reform Act would encourage regulatory agencies, whenever possible and whenever permitted by law, to develop their regulations to fit the scale and resources of the individuals or organizations that must comply with the regulations. In addition to this provision, the legislation would also create a new standard that in

certain instances would require the regulatory agencies to choose the least anticompetitive alternative when issuing a major rule or policy.

The Regulatory Cost Accounting Act of 1980

In December 1979, the Office of Management and Budget requested the comments of Federal agencies on a proposal which would require each agency to (1) create a system to account for costs imposed by their regulations on the private sector and other levels of government, and (2) report these costs annually for designated regulations. Although the proposal recognized that cost accounting for regulatory requirements does not have a body of generally accepted principles, the proposal was designed to develop a process in which the Office of Management and Budget and the agencies would establish detailed definitions, procedures, and standards needed to develop and report on the costs of Federal regulation.

Regulatory reform initiatives are incomplete

These regulatory reform proposals appear to be a positive first step toward correcting many of the difficulties faced by industries which are subject to regulatory requirements. The initiatives offered, however, do not appear to provide the relief needed to alleviate the continuing problems evidenced in either the specific examples provided by the electric utilities in this study or reported by the rest of the industry. Greater emphasis is needed toward revising the regulatory requirements which are specifically responsible for many of the problem areas we observed in this study. Unless regulatory revision is more oriented to the everyday obstacles faced by the industry, there appears to be little chance for near-term improvement in the requirements that most critically affect the electric utility today. The following sections outline several uncertainties now facing the electric utility industry that should be considered in the restructuring of regulations.

REGULATORY UNCERTAINTY

Electric utilities face operating uncertainties which to a large extent are dependent on the types of regulatory requirements applied to the industry. In order to assure that adequate generating capacity is available for future needs, the resolution of several regulatory uncertainties needs greater emphasis.

These uncertainties affect the following areas of concern to the utilities:

--Regulatory delays.

--Changing regulatory requirements.

--Uncertain regulatory application.

--Factors to be considered in future regulatory efforts regarding nuclear power.

Regulatory delays

Delays in starting and completing the construction of a powerplant can be incurred simply because of the time required to obtain the numerous permits and licenses required by local, State, and Federal regulatory agencies. Delays can also occur due to weather, contract problems, labor disputes, or financing problems. Although these events are unpredictable to some extent, a time factor to accommodate them can usually be incorporated in the scheduling process for the project.

A more difficult factor to predict, however, and one that is becoming increasingly dominant in utility construction programs, is delay attributable to lengthy and complicated regulatory procedures. As illustrated in chapter 2, the delays encountered by FP&L, HL&P and CPA/UPA because of the regulatory process have already added substantial costs to the projects and could add even higher costs in the future. These delays have been particularly evident in the utilities' construction program for new nuclear units, but also included transmission line construction projects.

Changing regulatory requirements

Regulatory requirements have been a "moving target" for utility companies to try to comply with, regardless of the type of fuel used to generate electricity or the location of the utility. Operating and construction costs have increased, as we noted in some of the examples in chapter 2, because operational procedures that were acceptable when initially put in place were later determined to be out of compliance under new or revised regulations. These changes were, for the most part, required by changes in the agency's basic legislation which tended to tighten the performance standards, particularly in the environmental area.

It currently takes over 8 years to bring a coal-fired generating unit on line, and 12 to 14 years for a nuclear unit. According to the National Electric Reliability Council (NERC), 1/ regulatory delay contributes to uncertainty in meeting scheduled in-service dates for new generation facilities. Many utility systems are becoming apprehensive about constructing and operating nuclear facilities--even though they may be favorable compared with coal--because of uncertainties in licensing and financing the project. Nuclear facility construction permits may be approved, yet in order to assure safe plant operation and public safety, the permits are continually subject to review and rehearing and may be suspended at any time during construction or operation of the plant.

Coal-fired generating facilities face similar types of problems because of the imposition of varying types of emissions requirements. Utility officials are currently concerned over the requirements for scrubber installation on all coal-fired plants and the possibility of more stringent controls over waste disposal. Although the degree of uncertainty for coal-fired plants may not be as great when compared with nuclear facilities, it can still affect the future of adequate electricity supplies provided by coal-fired facilities. Increased reliance on electricity provided by coal-fired plants will require greater emphasis on assuring a proper balance between environmental protection and the use of this most abundant resource.

Uncertain regulatory application

Many regulatory requirements have been placed on the electric utility industry, but uncertainty in the industry about how to apply the requirements could, based upon the judgment of the agencies, further constrain utility operations.

EPA, for example, had not assessed any penalties to electric utilities for noncompliance as of March 31, 1980, because its final regulations implementing the Clean Air Act

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1/ NERC was formed in 1968 and incorporated in 1975, and directs its efforts to "augmenting the reliability and adequacy of bulk power supply of the electric utility systems in North America." It consists of nine regional councils whose memberships include essentially all of the electric utility systems in the United States and the Canadian systems in Ontario, British Columbia, Manitoba, and New Brunswick.

Amendments of 1977 have not been published. The agency is aware of a number of utilities that are not meeting EPA's tentative standards, however, and in July 1979, estimated it could levy penalties amounting to over $1 billion for noncompliance by utility companies. Strict enforcement of EPA regulations could result in some utilities shutting down their older plants rather than paying the penalty or adding the necessary environmental controls. Even though such a move could adversely affect a company's reserve margin for meeting peak demands, these measures may be necessary to prevent environmental damage.

Nuclear plant operators are affected by NRC's issuance of numerous safety-oriented regulatory guidelines and regulations requiring changes in plant design and/or operating procedures. NRC officials said they consider the impact their directives may have on the operation of nuclear facilities and weigh the cost to utilities when requiring compliance with new or revised guidelines. Depending on a number of factors, not every plant will be required to make the necessary changes. In one example cited, 54 nuclear units were considered for possible compliance action, but only 8 were actually required to make the necessary change.

Factors to be considered in future regulatory efforts regarding nuclear power

The role and contribution of nuclear power generation now and in the future is one of the major questions facing the electric utility industry, national decision and policy makers, and consumers. Depending on the resolution of several issues we consider vitally important, nuclear power could either assure continued electric utility viability along with adequate and reliable supplies of electricity, or it could result in diminished reliability and costly increases in the amounts consumers pay for electric power. We believe the accident at Three Mile Island and subsequent regulatory actions focus the future role of nuclear power on the following three issue areas.

Nuclear power contribution

On a national basis, nuclear power contributes about 14 percent of the electricity produced; in some localities of the country, however, nuclear power produces between 40-60 percent of the power supply, and as more plants now under construction come into service, this figure could increase. While the Nation may be able to accommodate an overall reduction of 14 percent of generating capacity, we

believe that regional areas which rely heavily on nuclear generating capacity would be subjected to economic and safety adversities if the nuclear capacity were eliminated or significantly reduced.

Of the nine NERC regions in the United States and Canada, six rely on nuclear generating capacity for 20 to 27 percent of their electric power. This heavy dependence on nuclear power is compounded by the fact that most of these regions are in adjacent locations, so the elimination or reduction of nuclear generating capacity may adversely affect the purchased or transferred power option now available to electric utility systems in those regions.

The elimination or reduction of nuclear generating capacity may be felt even more acutely in areas within these regions that have an even greater percentage of dependence on nuclear capacity than the overall region; therefore, the "ripple effect" of hardship resulting from nuclear capacity elimination or reduction may quickly spread as industrial output and goods and services are curtailed. While it may be true that over the long term fuel sources other than nuclear may be used to generate the needed electric power in these areas, the short-term effects of inadequate and unreliable power supplies may exacerbate or protract the conversion process because of the economic disruption that may result from nuclear capacity elimination or reduction.

Added cost and supplies of purchased power

If nuclear power is eliminated or significantly reduced, electric utilities with heavy reliance on nuclear generation will probably be required to purchase electric power from other utilities. This method of satisfying power demands is not entirely safisfactory because the guarantee of continuous reliable power supplies is not always assured, and the cost of obtaining this power may be at premium. If several electric utilities in the same or adjoining regions are precluded from using nuclear facilities and are therefore required to purchase power, there may not be sufficient generating capacity or supplies of power available from neighboring systems to fill the electric power supply void created by the elimination or reduction of nuclear power. Therefore, the electric power consumer is not only required to pay more for the power received, but the continued reliability of that power may diminished.

Added environmental considerations

Other factors besides the cost and adequacy of purchased power must be considered if nuclear power is eliminated or reduced. Given these conditions, greater demands may be placed on conventional fossil-fired generating facilities which could lead to increased pollution emissions such as waste heat, carbon dioxide, and sulfur dioxide. Even though regulations governing emission standards are very specific regarding the amounts and types of substances that may be discharged during the generation of electricity, greater numbers of fossil plants--operating for longer periods of time than normal and at a higher capacity--may be required to generate the power normally produced from nuclear units. If severe weather or operational conditions begin to adversely affect the adequacy of electrical power, it may become necessary to temporarily ease environmental restrictions--thereby increasing generating plant output and available electrical supplies at the expense of environmental quality--until normal operations can be resumed.

DOE'S ROLE HAS BEEN LEGISLATED BUT INSUFFICIENT ACTIONS HAVE BEEN TAKEN TO ASSURE ADEQUATE POWER SUPPLIES

The Federal Power Act of 1935 gave FPC a number of responsibilities including that of dividing the country into regional districts for the purpose of assuring an adequate supply of electric energy throughout the United States with the greatest possible economy. The Commission was also granted jurisdiction over the transmission and sale of electric energy at wholesale and in interstate commerce.

On September 30, 1977, FPC was abolished and its functions and responsibilities were assumed by the newly created DOE. Within DOE, the responsibilities under the Federal Power Act were divided between FERC and ERA. FERC assumed the hydroelectric licensing authority, the ratemaking responsibility for electric power sales in the wholesale market, and interconnection responsibilities. ERA administers the Federal Power Act provisions relating to long-range utility planning, system coordination, and emergency interconnections.

According to officials at DOE, the primary mission of the Department is to reduce the Nation's vulnerability to reduced foreign oil supplies. Therefore, maintaining reliable electric supplies is of less importance within the Department than assuring that powerplants use fuels which are independent of foreign supply sources. The seriousness of the Department's lack of concern over reliability is compounded by its basic operating methodology--whatever energy matter is at the crisis stage receives priority.

If this strategy continues at DOE, the Department may wait too long--given the long lead times required for electric utility operations--to become involved in assuring that the Nation has adequate supplies of electric power. Some groups in DOE are already concerned about electric power reliability and, for example, have performed an extensive analysis of reliability for NRC following the Three Mile Island nuclear accident. Others within the Department, however, either believe that electric power reliability may not become a problem for 5 to 7 years, or are of the opinion that reliability issues should be the responsibility of State regulatory commissions.

Although there was general agreement by DOE officials that the electric utility industry has been subjected to overlapping or conflicting regulations, no central policy has been formulated by DOE to mitigate this difficulty or assure that the Nation has adequate and reliable long-term supplies of electric power. While the Department has intervened in State rate cases on behalf of the needs of consumers, utilities, and regulators in the large context of "national interest," it has failed to develop programs to assist electric utilities in solving the everyday problems and constraints associated with regulation.

CHAPTER 5

OBSERVATIONS, AGENCY COMMENTS AND OUR EVALUATION, AND COMPANY COMMENTS

Compliance with regulatory requirements is not new to the electric utility industry. It has operated under some measure of regulatory control for nearly six decades. Regulatory changes during the last decade, however, brought a new dimension to utility regulation that resulted in a number of constraints and uncertainties that the industry was not accustomed to. The objectives to be achieved by these changes were largely social in nature, and closely linked to desired health and safety benefits for the populace as a whole resulting from cleaner air and water and a safer working environment.

Largely as a result of the changing regulatory environment of the 1970s, predictions of electric power shortages leading to curtailed services and even brownouts and blackouts in the near future have appeared in numerous publications and speeches, and in congressional testimony. Because reliable electric power is such a critical factor in the viability of the Nation's economy--and regulations could affect future supply and reliability--it is imperative that greater insight regarding the regulatory process be obtained so that the interests of both the electric utility industry and the public can be better served.

The following observations resulted from our review of the effects of regulation on the operations of electric utilities. Implicit in these observations is the need for (1) resolution of regulatory uncertainty facing the electric utility industry, and (2) more aggressive DOE efforts to assure that the Nation is provided adequate and reliable long-term supplies of electric power.

1. Electric power projects and utility operations have been more costly as a result of compliance with regulatory requirements, and this has resulted in increased rates to consumers. The relationship between consumer rates and increased utility company costs needs to be given greater recognition by both the Congress and regulators when proposing new or modified requirements affecting utility operations.

2. Reliability of electric power service to consumers has been maintained to date but further restrictions on generating plant

construction and/or utility operations could adversely affect the present level of reliability. The long lead times required for adding new generating or transmission capacity preclude a quick industry response to overcome power deficiencies. This leaves reduced consumption by customers as the primary short-term solution to the utilities' capacity problems.

3. Tangible benefits to ratepayers have not always been visible although some social benefits may have been realized. We recognize the difficulty of quantifying certain benefits to be achieved by regulation, but it appears that at least some of the benefits expected by the regulations have not been demonstrated to be commensurate with the resultant costs. A greater effort is needed to develop the cost/benefit relationship prior to promulgating regulations so that a credible basis for imposing additional requirements on the industry can be established.

4. Regulators often did not know how to best achieve their objectives or assess the effects of utility compliance with regulatory requirements. Unless acceptable methodologies and assessment criteria are formulated in conjunction with the regulatory requirement, consumers will be required to continue bearing the cost of what is little more than regulatory experimentation.

5. It is imperative that Government provide a balanced approach in regulating the utility industry so that the cost and reliability of future power services are considered along with the environmental, health, and safety concerns of the public. Not only should this process assist the electric utilities in their future planning efforts, but it should help eliminate much of the regulatory overlap we found, and assure that the actions by the regulatory agencies are based on a demonstrated need for protection and regulation.

6. The administration and the Congress appear to be much more concerned with the economic effects of regulatory actions and with evaluating the costs and benefits of achieving a desired goal. As a result, the regulatory emphasis and requirements that affect the electric utility industry have recently been undergoing a transformation because regulatory agencies are beginning to use the flexibility available to them to bring objectives, costs, and achievements into greater harmony. Although these initiatives are commendable, few of the efforts are directed toward alleviating the most common regulatory problems routinely faced by the industry such as obtaining permits, meeting environmental standards, and maintaining sufficient operational flexibility. These problems will continue, therefore, unless the cognizant regulatory agencies recognize the difficulties facing the industry today and become more aggressive in redirecting their regulatory emphasis and incorporating greater precision in their efforts.

AGENCY COMMENTS AND OUR EVALUATION

Draft copies of this report were submitted to most Federal agencies cited in this report for their review and comment. The Equal Employment Opportunity Commission and the Securities and Exchange Commission did not have the opportunity for comment because they were cited as only having minimal impact on the utilities' operations. Most of the Federal agencies responded to the draft report, either verbally or in writing. The agencies that commented on the report generally agreed with the observations, but differed in some instances in the perspective of the case examples. These technical and narrative comments were considered and changes were made in our report where appropriate. Pertinent comments and our evaluation are summarized below.

Environmental Protection Agency

EPA agreed with our observation that Federal regulations have not prevented electric utilities from meeting electricity demand, and endorsed our description of the progress that is being made in regulatory analysis and coordination. The agency believed, however, that the report fails to place

adequate emphasis on these regulatory efforts, and fails to maintain a balanced perspective in many of the examples presented. The agency's concerns centered around the following criticisms:

--The cost calculations do not accurately reflect EPA regulatory requirements.

--Because the electric utilities in the study are atypical of utilities as a whole, generalizations should be carefully qualified.

--Greater emphasis should be placed on the fact that the study methodology identified issues needing further analysis and "fine tuning" and did not provide a general evaluation of overall regulatory programs.

One of EPA's primary concerns was the methodology we used to develop costs attributable to EPA regulations. The cost data presented in the report has been revised to incorporate EPA's comments and concerns.

We agree that the utilities in this study may be unique in several operational aspects. In fact, a "typical" electric utility may not be identifiable because of geographical differences, various and changing national levels of electricity demand, and utility service strategies which are continually subject to change due to various regulatory requirements.

We have therefore been careful not to draw generalizations regarding utility operating experience from just the companies in the study. Where we found similarities with other companies in operating problems attributable to regulatory requirements, however, we have used specific company examples only to illustrate the types and nature of problems we believe exist on a larger or national scale.

In addition to these comments, EPA provided specific comments on a page-by-page basis. Most of these comments have been accommodated through revisions in the report; in several areas, however, we disagree with EPA's position either because of a different interpretation of the facts presented or because the regulatory perspective we obtained during the study did not support EPA's comments.

EPA stated that our observations regarding the tangible benefits attributable to regulatory requirements were too vague and noted that substantial social benefits have been realized as a whole, and benefits from air pollution regulations alone are on the order of millions of tons of reductions in annual emissions.

EPA said that the report unfairly attributes the cost of a delay to an intervenor who may point out a mistake during project planning for utility operations. We would agree, but our examples regarding intervenor activities do not fit this category. Our examples (see pp. 18-21) indicate that such activity was conducted for reasons other than the correction of a planning oversight.

EPA questions our assessment that the cost effects of regulation were frequently ignored. We believe our assessment is correct because in several instances cited in the report, regulators were precluded by legislation from cost considerations in their decisionmaking process. In addition, as pointed out in the report, there is currently a strong commitment, which was previously somewhat surpressed, to ensure that regulations are not only cost-effective, but encourage the careful consideration of alternative regulatory approaches.

Nuclear Regulatory Commission

The Commission did not have any comments on the report.

Occupational Safety and Health Administration

The Administration did not provide comments on the report.

Federal Energy Regulatory Commission

The Commission staff generally agreed with the major findings of the report.

Corps of Engineers

The Corps of Engineers wished to clarify the report by noting that other agencies do not have approval authority over Corps permit applications. We have made these changes where appropriate.

Department of the Interior

The comments offered by the Department indicate a variance with the perspective offered in the examples of problems encountered by the electric utilities in our study. For example, the Department stated that instead of the regulations causing a delay, many delays occur from the reluctance of a utility to accept a regulation-based agency determination. We agree that this may occur in many instances. However, we also believe that utilities are justified in questioning regulatory requirements which in their opinion have no apparent benefit or logical rationale. This situation is illustrated by several examples such as the Florida Power and Light Company's attempt to cross the Loxachatchee National Wildlife Refuge.

The Department also offered a comment regarding our discussion of alternate land uses proposed for sections of the Loxachatchee National Wildlife Refuge. While agreeing that hunting is allowed on the refuge, the Department stated that such activity is carefully regulated and subject to the same compatibility test as transmission lines or other uses, and that there was no evidence that such a practice poses any threat to the Florida Everglades Kite, which is the endangered species involved in the example. We disagree because the 1979 operating report for the refuge that we obtained subsequent to the Department's comments indicated that two cases were developed during the year in which protected birds were killed by hunters.

Department of Energy

No formal comments on the report were provided by the Department; suggested editorial comments, however, have been incorporated where appropriate.

COMPANY COMMENTS

Each of the electric utilities was provided only the segments of the report that described its individual operational difficulties attributable to Federal regulations. The companies did not have the opportunity to comment on our observations or on other narrative information presented. In most cases the companies provided updated technical and narrative information which has been incorporated in the report where appropriate. In addition to providing this information the companies generally agreed that the report fairly presents the facts relating to the examples discussed in the report.

MATTERS FOR THE CONSIDERATION OF THE CONGRESS

Several regulatory reform initiatives designed to provide greater regulatory flexibility were proposed in the last Congress. Some portions of these proposals were incorporated into the Regulatory Flexibility Act (P.L. 96-354) which was signed by the President on September 19, 1980. The act, which became effective January 1, 1981 and applies primarily to small businesses and local governments, directs federal agencies to better match the regulatory and informational requirements with the scale of the entity.

GAO has generally supported the major elements of these inititatives and believes that the momentum for these actions should be maintained and expanded in scope. Greater flexibility should be incorporated into Congressional legislative efforts which would allow agencies to consider the costs of their regulations in developing regulatory programs. Congress should also require the agencies to justify their actions early in the development of regulatory programs so that the financial impact of their requirements are no longer ignored as in past programs. Once the increased awareness of regulatory impact is incorporated into future legislation, the regulatory emphasis and precision that we found to be lacking should become evident.

APPENDIX I

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

SEP 19 1980

OFFICE OF
PLANNING AND MANAGEMENT

Mr. Henry Eschwege
Director, Community & Economic Development Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

The Environmental Protection Agency (EPA) has reviewed the General Accounting Office (GAO) draft report entitled "Review of the Effects of Federal Regulation on the Electric Utility Industry," EMD 80-110. The Agency has enclosed extensive page by page comments on the proposed report to Congress. 1/ In addition, we would like to emphasize four major criticisms we have of the report:

- o The draft contains several substantive errors with respect to cost calculations and EPA regulatory requirements. Our detailed comments identify these errors, which can be easily corrected.

- o The report does not place its case study methodology in the necessary perspective:

  - The companies selected are atypical of utilities as a whole (for example, all three of the investor-owned utilities studied are coastal and Southern; they rely primarily on oil, gas, and nuclear power, rather than coal or hydropower). Generalizations from this small sample to the national experience should be carefully qualified.

  - A general evaluation of regulatory programs requires a comparison of aggregate costs and benefits, which is clearly beyond the scope of this study. The case study methodology is well suited to screening issues for

1/GAO Note: Page numbers mentioned in appendixes I through IX refer to our draft report and may not correspond to this final report.

further study and suggesting "fine-tuning" improvements in regulatory effectiveness and efficiency. While the draft correctly recognizes this point, it deserves additional emphasis.

- Chapter 4 of the draft accurately describes the Administration's strong and detailed commitment to a sensible regulatory process, including comprehensive analysis of regulatory impacts, careful consideration of alternative approaches, and coordination between different programs. The rest of the report, however, too often ignores the substantial effort invested in developing sensible regulations.

- Perhaps most importantly, the report fails to maintain a balanced perspective. Regulatory issues generally have at least two sides, depending on the viewpoint of the observer. An even-handed study should present both views, in order that readers may form their own judgments. For example, one can say, as the report does, that increasing particulate emissions removal from 90 to 95 percent represents a five percent increase in effectiveness, or, alternatively, that it represents a 50 pecent reduction in particulate emissions. Each point of view is informative, and each should be presented. In general, preventing pollution and improving safety will often increase electricity bills; not doing so will often increase illness and injuries. Both sides of the coin deserve full attention.

EPA agrees with GAO's conclusion that Federal regulations have not prevented electric utilities from meeting electricity demand. EPA also continues to pursue a strong commitment to balanced, fair, and cost-effective regulation. As always, we

APPENDIX I

appreciate constructive suggestions on ways to improve our programs, and we look forward to cooperating with all interested groups in fulfilling our statutory mandates.

Sincerely yours,

William Drayton, Jr.
Assistant Administrator for
Planning and Management

Enclosures

Detailed EPA Comments on Draft GAO Report
"Review of the Effects of Federal Regulation on the
Electric Utility Industry"

Location in Report	Comment
Cover Summary	Many regulatory requirements were placed upon utilities to restore and protect environmental, health, and safety values which utilities were not protecting of their own accord. These requirements resulted neither from industry size, nor from benefits already achieved. "The cumulative effect of all regulations," including state public utility commission regulation, may either increase or decrease rates paid for electricity. Federal regulations alone probably have the effect of increasing rates.
p.i	As Chapter 4 of the report points out, the Administration's regulatory reforms are substantial, rather than "initial."
ii, third point	Benefits from air pollution regulations alone are on the order of millions of tons worth of reductions in annual emissions.
ii, fourth point	While tangible benefits may not be visible as a result of every regulation, substantial social benefits have clearly been realized by regulations as a whole. This statement is so vague that it has little value.
ii, fifth point	We agree, but would insert the words "continue to" between "Government" and "provide."
iii	What specifically are "the most common regulatory problems" to which the draft refers? EPA is implementing improvements in areas such as simplifying information requirements, consolidating permits, and reducing regulatory delays.
p.iv	The costs cited result from compliance with both Federal and state requirements. The report could take this opportunity to point out the recurring difficulty of allocating costs between Federal and state programs. Costs should also be placed in the context of total industry expenditures.

APPENDIX I

p.vi	On occasion, delays reflect the time necessary to correct oversights which occurred during project planning. In these cases, attributing the cost of delay to the intervenor who points out the mistake is unfair.
p. vii	The methodology used to convert cooling tower costs to a $1/month residential customer impact is incorrect. Proper ratepayer impact analysis must consider the mix of plants used in generating power (not all of which have cooling towers), and not simply assume that all of a customer's electricity comes from one plant. On page 42, the report appears to recognize the methodological issue, yet the erroneous and overstated estimate is still presented.
p. ix	Although statutory language or data availability may limit consideration of costs, the assertion that "the cost effects of regulations were frequently ignored" is simply untrue. Certainly, reasonable people can disagree about the appropriate balance between costs and benefits.
p. x	Again, what are these "most common regulatory problems"?
p. 3	While discussing growth rates, the report could point out the potential of conservation to meet energy needs cost-effectively (see attached Wall Street Journal article).
p. 7	The assertion that regulation is solely responsible for "an evolution of electricity pricing from yesterday's declining rates to today's rapidly increasing rates" is false (we assume the assertion refers to generation costs, not pricing policies, which are largely unrelated to environmental and safety regulation). Skyrocketing oil costs play a dominant role in rate increases. Additionally, utilities appear to have exhausted the power plant scale economies exploited during the 1960's, and now face real escalation in construction costs.

APPENDIX I

p.9	This is the logical place to clarify the limitations of the case study methodology described in the cover letter to these comments.
p. 13	A quantitative indication of pollution controls' "capacity penalty" (percent of generation used to power controls) would be instructive. For a new plant with stringent controls, this penalty would be roughly 5%. Plants with pollution controls will generate electricity somewhat less efficiently. This is not necessarily "unreasonable", since they will protect environmental quality somewhat more efficiently.
p. 14-16	These cost figures lack a context, such as total utility expenditures.
p. 18	$16 million represents the incremental cost both of removing an additional 5-13% (not 5-8%) of particulate matter and of achieving a 50-80% reduction in particulate emissions, from a given fuel, at the facility in question.
p. 19	Observing that "the cost differential between low and high sulfur oil has increased by 500 percent since 1975" is misleading. The absolute differential has increased by a huge percentage only because the absolute price of oil has increased by a huge percentage. All of the costs would be more instructive if also given as fractions of the total for the purpose in question (e.g., fuel, new plant).
p. 20	(second paragraph) EPA has not established "water quality standards" as described. The States set water quality standards under § 303 of the Clean Water Act. Although EPA has authority to promulgate its own water quality standards where it finds State standards inadequate, EPA's own promulgations now apply only in four States. To the best of EPA's knowledge, these promulgations have had no impact on power plant discharges.

APPENDIX I

EPA has issued technology-based discharge regulations (BPT, BAT etc.) for many industries, including steam electric plants. These regulations do not by any stretch of the imagination, however, limit "each chemical effluent" discharged. EPA's technology-based regulations generally select a few key pollutants for control.

(third paragraph) We do not know what is meant by "discharge monitoring regulation" of 1974. EPA issued technology-based regulations (BPT, BAT, etc.) for power plants in 1974, but these are not monitoring regulations. If the draft refers to EPA's technology-based regulations, it is incorrect in saying that EPA provides "no exceptions for existing plants." The regulations included a "variance clause" for BPT limits. See 40 CFR 423.12(a).

p. 21

The reference to "regulations" requiring thermal discharge controls is confusing and misleading. The Clean Water Act -- not EPA regulations -- requires that heat be regulated as a pollutant (CWA § 502(6)). Moreover, EPA has no power plant thermal discharge regulations on the books at this time. EPA promulgated regulations in 1974 but the Fourth Circuit Court of Appeals vacated them in 1976.

The two reasons power plants may now be required to control their thermal discharges under the CWA are: 1.) in the absence of technology-based thermal regulations, the NPDES permitting authority may on a case-by-case basis, using its "best engineering judgment," establish under CWA § 402 (a)(1): a technology-based limitation for a particular plant; and/or 2.) a State thermal water quality standard may under CWA § 301 (b)(1)(C) require establishment of a thermal limitation on a case-by-case basis.

It is important to note here (and the draft virtually ignores this) that for thermal pollution, a power plant can escape both technology-based and water quality standards by showing, under CWA § 316(a), that its thermal discharge will not interfere with a

healthy fish population. Utilities may voluntarily install closed-cycle cooling systems for two reasons:

1.) such systems make economic sense in regions where water supply is scarce and/or costly;

2.) utilities may act in anticipation of future thermal discharge requirements.

p. 24 — If CP&L is required to install cooling towers, it will not be pursuant to EPA "regulations." The Region proposed cooling towers on an ad hoc ("case-by-case") basis under CWA § 316(b) to minimize adverse effects of cooling water intake (entrainment, entrapment, etc. of fish). .EPA has no regulations in effect under CWA § 316(b).

p. 25 — To say that a wildlife refuge is "unused" appears to be a contradiction in terms. Is the area used as a.wildlife refuge?

p. 27-33 — Did changes in plant design or operation result from the delays described? Did these changes, if any, benefit the public interest?

p. 33 — If public participation could have forestalled this vandalism, delay might have proved worthwhile.

p. 35 — Are the OSHA costs net of savings in labor and health care costs from avoided injuries?

p. 36 — The 6-8% figure for a cooling tower is incorrect, as explained in our comment on p. vii.

p. 37 — "Loss of load probability" is a better indicator of reliability than reserve margin.

p. 38 — 3-5% of the Brunswick plant's capacity represents a much smaller fraction of CP&L's total system capacity, with lesser implications for reliability than the text suggests.

APPENDIX I

p. 40-41	The ratepayer impact calculation is methodologically incorrect, as explained above.
p. 43	Does the $44.9 million figure consist of annualized capital plus O&M, or does it only include capital outlays?
p. 43-45	This discussion is very good.
p. 46	To avoid misleading implications, the text should make clear that EPA has promulgated no "discharge water temperature" standards. EPA's technology-based regulations have been vacated since 1976. Thermal water quality standards have all been promulgated by States. Again, closed-cycle systems are economically preferred in some locations.
p. 53	Valuing pollution control benefits in monetary terms is, in practice, nearly impossible. Estimating intermediate indicators, such as emissions reductions, is quite feasible.
p. 55	Power plants are clearly major pollution sources, not merely "visible targets."
p. 56	What evidence supports the assertion that "standards set often lacked scientific support?" National Ambient Air Quality Standards, for example, rest upon careful and lengthy reviews of scientific evidence, as required by the Clean Air Act.
p.55-96	Moving this discussion to the front of the report might help place the case studies in perspective.
p. 78	In <u>some</u> cases, but <u>not</u> universally, statutes preclude consideration of costs. Under the Clean Air Act, for example, cost is not considered in setting National Ambient Air Quality Standards, but must be taken into account when promulgating New Source Performance Standards

APPENDIX I

p. 81	Again, what are these "most common regulatory problems"?
p. 81a	Many of the most important uncertainties confronting utility planning are not regulatory; demand growth, oil prices and fuel supply interruptions are among these.
p. 96-99	This discussion seems to pertain to questions well outside the scope of the study.
p. 100	Clearly, reducing vulnerability to sudden oil supply interruptions and assuring power supply reliability are closely related, but they are not, as the report suggests, mutually exclusive.
p. 103 pt. 1	Regulation has increased costs in terms of electricity rates, but decreased them in terms of effects on public health and welfare.
p. 103 pt. 2	Conservation makes sense from economic, environmental, and energy perspectives.
p. 104	See comments on p. ii.

APPENDIX II

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SEP 24 1980

Mr. J. Dexter Peach, Director
Energy and Minerals Division
U.S. General Accounting Office
Washington, D.C. 20548

Dear Mr. Peach:

Thank you for giving us an opportunity to review the GAO draft report, "Review of the Effects of Federal Regulation on the Electric Utility Industry".

At this time, we do not have any comments.

Sincerely,

William J. Dircks
Executive Director
for Operations

APPENDIX III

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D.C. 20426

SEP 8 1980

Mr. J. Dexter Peach
Director, Energy and Minerals Division
United States General Accounting Office
Washington, DC 20548

Dear Mr. Peach:

Your letter of August 20, 1980, addressed to Chairman Curtis, requested FERC comment on a draft of a proposed GAO report to the Congress entitled "Review of the Effects of Federal Regulation on the Electric Utility Industry."

Generally, the staff does not disagree with the major findings of the report: (a) that increased regulation in the 1970's, especially for environmental protection and human safety, have resulted in large additional expenditures by electric utilities and increased costs for electric power, (b) that there is an increasing awareness of the cost consequences of regulation and growing interest in evaluating the benefits of regulation versus its costs and (c) that the increased regulatory restrictions on electric utilities have the potential of contributing to power shortages in the future. However, the staff considers that the report would be improved by comparative discussions of other factors affecting power costs and facility construction, so that the regulatory effects could be seen in better perspective. For example, fuel cost increases in the 1970's were certainly a much greater factor in the increasing price of electricity than regulatory requirements. Also, a great many power plant construction schedules have been set back because of reduced load growth and financial problems, so that it is difficult to judge the relative contribution of regulation to possible capacity shortages.

A few detailed errors are noted. On page 1, the text should state that the Nation's generating capacity is over 600,000 megawatts, rather than 500,000. Also, electricity accounts for approximately 30 percent of the Nation's consumption of primary energy, not of total energy demand. (The statement is made correctly on page 2.) On page 3, the text should read "projected capacity additions may not be needed as soon." On page 4, the statement that under The Department of Energy Organization Act "interconnection and wheeling authority was shifted to DOE's Economic Regulatory Administration (ERA)" is incorrect. With the exception of emergency circumstances, those authorities remain with FERC under Sections 202(b), 210,

APPENDIX III

211 and 212 of the Federal Power Act. ERA has authority to order interconnections and wheeling in emergency situations under Section 202(c) of the Federal Power Act.

We hope these comments are helpful.

Sincerely,

William G. McDonald
Executive Director

DEPARTMENT OF THE ARMY
OFFICE OF THE ASSISTANT SECRETARY
WASHINGTON, D.C. 20310

15 SEP 1980

Mr. Henry Eschwege
Director, Community and Economic
Development Division
United States General Accounting Office
Washington, D.C. 20548

Dear Mr. Eschwege:

This is in reply to your letter of August 20, 1980, to the Secretary of Defense regarding your draft report on "Review of the Effects of Federal Regulation on the Electric Utility Industry," GAO Code 309320, OSD Case #5515.

The digest of your report on page v, last paragraph, states, "Corps of Engineers permitting was made more difficult by legislative requirements that permit applications to the Corps be approved by other agencies who could attach conditions to the Corps permit." This statement, which is also indicated on page 76, needs clarification. The Fish and Wildlife Coordination Act requires that any Federal agency that proposes to control or modify any body of water (e.g. by granting a permit) must first consult with the U.S. Fish and Wildlife Service (FWS) or the National Marine Fisheries Service (NMF) as appropriate. The FWS and NMF may raise objections in the consultation process (that if left unresolved may require that the case be elevated to a higher level of authority for resolution), but they do not have direct approval authority over Corps permit applications. In the example cited, it is likely that the utility adopted a FWS suggestion in order to avoid the delays associated with elevating the case to higher authority for resolution.

Sincerely,

Michael Blumenfeld
Assistant Secretary of the Army
(Civil Works)

United States Department of the Interior

OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20240

Mr. J. Dexter Peach
Director, Energy and Minerals Division
U.S. General Accounting Office
Washington, D. C. 20598

Dear Mr. Peach:

We have reviewed the draft General Accounting Office (GAO) report entitled "Review of the Effects of Federal Regulation on the Electric Utility Industry." Our suggested response is as follows.

We share the concern about delays and increased costs that might result from the regulatory process. Since you found that the electric utility industry has " . . . been able to adequately meet the consumer demands . . .," the greatest impacts up to now are apparently the cost increases. Such impacts should be evaluated while bearing in mind that, without the regulation, much of the cost would simply be transferred to others such as the general public through environmental damages or to land managing agencies through the loss of resources to power facilities.

Some specific comments on the report by page and paragraph are as follows.

Page vi, First Complete Paragraph

This paragraph implies that the Fish and Wildlife Service imposed a condition on an applicant for a Corps permit. The Service can only recommend conditions. Only the Corps has the authority to impose conditions on the applicant.

Page 17

The paragraph on the protection of the environment and wildlife states that costs are incurred because of delays in determining if rights-of-way permits across refuges would be granted. However, many of the delays result not from the time needed for a determination, but rather from the reluctance of the utility companies to accept those determinations. Delays that result from utility company efforts to overturn those determinations are company imposed rather than regulation imposed.

Page 32

The account of the Minnesota example (Cooperative Power Association/United Power Association) indicates that the " . . . routing was planned with no State or citizen input." Normally, getting public input to a project of such magnitude should be a part of the planning process even if not required. Were the delays and associated costs the result of regulation or of poor project planning?

APPENDIX V

Pages 51-53

The discussion of the refusal by the Fish and Wildlife Service to grant the Florida Power and Light Company (FP&L) a permit to cross Loxahatchee National Wildlife Refuge is somewhat inaccurate. The draft report states that no development has been done in the area involved. However, water control facilities have been developed over the past two years and the area is now used by Everglades kites. Critical habitat considerations for this endangered species were the basis for the determination.

The delays in construction of the FP&L transmission line resulted not from lack of a determination on the right-of-way application but from FP&L's attempt to obtain the permit in spite of the determination.

The draft report correctly points out that hunting is allowed on the refuge. However, there is no evidence that the carefully regulated hunting poses any threat to the kite. Hunting is subject to the same compatibility test as transmission lines or other uses.

Land managing agencies commit considerable amounts of public funds to the acquisition, development, and management of their lands and associated resources. Land managers would then be unwise and irresponsible if they allow uses that are not compatible with the purposes for which those lands are acquired and managed. The legal requirement that only those activities which are compatible with the major purposes of the refuge may be allowed on a national wildlife refuge is evidence that Congress recognizes this.

Page 67

The final sentence of the discussion of the Fish and Wildlife Coordination Act indicates that the Survice must " . . . be consulted on these matters for its concurrence." This is not true! The Service is consulted for information and recommendations but the concurrence of the Service is not required. The Corps of Engineers can and does permit activities which the Service has recommended not be permitted.

Page 76, Last Paragraph

The example in this paragraph implies that the Service can impose conditions on an applicant for a Corps of Engineers permit. Such is not the case. The Service cannot "block" a permit; only the Corps can do that. Service recommendations become requirements only when the Corps accepts them and makes them Corps requirements.

We appreciate the opportunity to provide these comments and hope they will prove useful.

Sincerely,

Larry E. Meierotto

Assistant SECRETARY

Department of Energy
Washington, D.C. 20585

NOV 7 1980

Mr. Clifford Gardner
Energy and Minerals Division
U. S. General Accounting Office
441 G Street, Northwest
Washington, D. C. 20548

Dear Mr. Gardner:

In response to Mr. J. Dexter Peach's August 20, 1980 request, the Department of Energy is providing editorial comments for your consideration in finalizing your draft report entitled "Review of the Effects of Federal Regulation on the Electric Utility Industry." These editorial comments are being provided pursuant to a telephone conversation with Mr. William McDowell on November 3, 1980.

No formal comments on the subject report are being provided by the Department.

Sincerely,

William L. Jones
Acting Chief
Audit Liaison and Follow-up
Branch

Enclosure

Editorial Comments on
GAO Draft Report EMD 80-110
"Review of the Effects of Federal
Regulation on the Electric Utility Industry"

Page Numbers	Paragraph Numbers	Editorial Comments
Cover Summary	3	"Problems" facing utilities are not specifically defined. Are these problems higher costs, construction delays, etc.?
ii	1	How much more costly? Were offsetting investment incentives under IRS rules, such as investment tax credits, industrial revenue bond financing, etc., considered?
ii	6	The point of equitable criteria for public intervention was not made.
iii	1	"These problems" are still not defined.
iv	2	Are "future costs" and "recurring costs" references to capital costs and annualized operating and maintenance costs?
v	4	How long were the power plants delayed--days? months? DOE/EIA -0095 (79) suggests from its data that regulations are far from the vast pervasive or extensive source of delay (page 489 and following).
vi	3	How was the $88 million calculated? What percentage is the $88 million to total cost to the public? How much is the average ¢/kw Hr?
vi	3	"...delays in completing planned nuclear units..." Since most major companies rely on a five-year planning cycle which can allow for planning variables such as labor conditions, availability of raw materials, natural policies and future effective regulations, as well as sufficient time to complete planning, approval, construction and start-up time, etc., would not the impact of delays and increased costs be minimized through such planning?
x	2	"Future Industry Viability is Dependent on Regulatory Responsiveness." We do not believe this statement is fully supported.

Page Numbers	Paragraph Numbers	Editorial Comments
12	1	The statement that "electric utility company compliance with regulations has added to the cost of both building new plants and operating existing units" is not well reflected in the summary. In addition, how is "disproportionately increased" defined?
38	3	CP&L's inability "to meet power needs during peak periods of demand" could be related to the fact that (1) cooling requirements were not planned and (2) capital expenditures were not made to correct existing deficiencies. In addition, environmental considerations requiring plant modifications, increased O&M expenditures, etc. should be incorporated into the company's financial planning, technical or R&D projects.
-	-	Throughout the report, pollution control costs are generally expressed in absolute numbers rather than in the context of overall system costs. This treatment makes them less meaningful.

Some of the reviewers felt that, in any analysis of the impact of regulations, special effort should be made to (1) explicitly state and validate the objectives of the regulations; and (2) to estimate, to the extent possible, the regulations, actual and potential impact on beneficiaries as well as cost bearers. These reviewers felt that not attaching any beneficial assessment to the regulations resulted in a lack of value to the purpose inherent in the Congressional mandate to develop the subject regulations.

Carolina Power & Light Company

August 22, 1980

Mr. F. Kevin Boland,
Senior Associate Director
Energy and Minerals Division
U.S. General Accounting Office
Room 5124
441 G Street, N.W.
Washington, D. C. 20548

Dear Mr. Boland:

We have reviewed the draft of your report "Review of the Effects of Federal Regulations on the Electric Utility Industry." The following is a list of comments and suggested changes which we feel would be useful to you in preparing your final report. For convenience, I will reference these remarks to their respective page numbers in the draft.

Page 12:

We would rewrite the sentence beginning on line 9 ("For example...period.") as follows:

> It must be pointed out, however, that during this period the utilities were experiencing significant reductions in load growth due to the aftereffects of the 1973 Arab oil embargo. Of the more than $9 billion spent for capital additions to the utility plants during the 1970-1978 period, at the four electric utilities in our study, the actual capital expenditures during this period and estimated future capital costs resulting from compliance with regulatory requirements could be over $800 million, or almost 9% above the amount required otherwise.

Unnumbered page following p. 16 in draft:

We would underline or otherwise emphasize the phrase "costs and requirements that utility customers are paying for." We feel that this phrase strikes at the heart of the regulatory cost issue.

Page 18:

We would rewrite the two sentences beginning on line 4 ("These units...") and ending on line 7 ("...existing plants.") as follows:

> These units are designed to collect in excess of 99 percent of the particulate matter. CP&L spent approximately $80 million through 1979 for installation of and modifications to these precipitators.

Page 19:

If the first sentence ("it will...EPA requirements.") refers to CP&L, we would need to see the full text in order to verify the amount.

We would change the sentence beginning on line 6 ("CP&L officials...") to read:

> CP&L officials said that they spent about $17.5 million more in 1977 for low sulphur coal than they would have if a higher sulphur coal could have been used.

Page 20:

We would rewrite the last two paragraphs as follows:

> EPA has establised effluent limitations for specific categories of waterwaste discharges from several industrial operations. For the electric utility industry, the regulated discharges are produced from activities such as metal cleaning, cooling water treatment, and boiler maintenance.

Page 20:(Cont'd)

EPA's effluent limitation regulations issued in 1974 established waste stream categories that were not consistent with the waste streams in existence at CP&L facilities. CP&L could not reasonably monitor for compliance with the effluent limitations on each individual waste stream with the existing drainage systems. Because the regulations did not provide exceptions for existing plants, both utilities had to revise the drainage systems at existing plants to be compatible with the waste streams as categorized by the effluent limitation regulations.

CP&L spent $6.4 million for drainage revisions at seven of their operating plants.

Page 21:

We would rewrite the second sentence ("Because...period.") as follows:

Because the waste water discharge from the Cape Fear power plant exceeded the standards set by the State during the June-November period, CP&L installed cooling towers costing approximately $6 million with annual operating expenses estimated to be $235,000.

Page 25:

We would correct the sentence "CP&L reported...equipment" as follows:

CP&L reported spending approximately $60,000 in 1977 to meet State and Federal air quality monitoring requirements and about $97,000 in 1977 for required waste water monitoring equipment.

Page 33:

We would change the second to last sentence on the page ("CP&L had used...$1.3 million.") as follows:

> CP&L had used a manual system prior to 1975, but in response to a FPC audit in 1971, the utility developed new property accounting systems at an incremental cost over and above what it would have spent on these systems otherwise of over $2.2 million with annual operating costs of over $500,000.

Page 34:

We would change the sentence beginning on line 13 ("Because...labor.") as follows:

> Because the additional prospectuses were required, incremental costs of over $434,000 for outside legal and accounting fees, printing and postage, and in-house labor can be attributed to these regulations.

Page 35:

We would change the last sentence on the page ("Quite...margin.") and add a new sentence as follows:

> Our assessment of the reserve margins maintained by the three investor-owned companies for the 1974-1978 period showed that CP&L actually increased their reserve margins. It must be pointed out, however, that the main factor leading to the increased reserve margins was the unexpected drop in peak demand growth rates during this period resulting from the economic impact of the 1973 Arab oil embargo.

APPENDIX VII

Pages 36 - 37:

We would rewrite the section beginning at the bottom of page 36 ("In fact, two...") and continuing through page 37 as follows:

> Two utilities, _____ and CP&L experienced increases in their unadjusted reserve margins (i.e., the reserve margins which do not take into account generating capacity not available at the time of the peak due to either scheduled or unscheduled outages and reductions) in the last few years due to this reduced load growth. However, actual reserve margins on the CP&L system ranged from 2.5 to 10.5 percent for the 1976-1978 period. The reserve margins for the three investor-owned utilities are shown in the following table.

Summer Reserve Margin Percentage By Year

Company	Year				
	1974	1975	1976	1977	1978
CP&L (unadjusted)	17.9	14.3	29.3	33.9	35.4
(actual)			3.6	5.9	10.1

Page 38:

We would add the following sentence at the end of the first paragraph:

> The potential total impact of the regulatory requirements was offset to a degree by the reduced load growth.

Pages 24, 40, 41:

Since a significant portion of your report is devoted to a discussion of the Brunswick cooling towers issue, you may want to use the current estimates for capital costs ($118 million) and annual revenue requirements (debt retirement and operating costs totaling $40.4 million). The capital cost figure is used on pages 24 and 40 and the annual revenue requirement is referenced on page 41 (current estimates are not readily available for the component costs of the annual revenue requirement).

Page 46:

In the first sentence, "high water velocities" is more accurately termed "high water flow rates."

We appreciate the opportunity to review and comment on this report prior to its release. I will be glad to discuss any of our suggested changes with you at any time. I would appreciate very much receiving a copy of your final report to the Congress.

Sincerely yours,

Paul S. Bradshaw
Vice President and
Controller

PSB:DLG:jb

P.O. BOX 529100, MIAMI, FL 33152

FLORIDA POWER & LIGHT COMPANY

September 5, 1980

Mr. F. Kevin Boland, Senior Associate Director
Energy and Minerals Division
U. S. General Accounting Office
Room 5124
441 G Street, N.W.
Washington, D. C. 20548

Attention: Mr. Gerald H. Elsken

Dear Mr. Elsken:

We have reviewed the draft of the GAO's Report entitled "Review of the Effects of Federal Regulation on the Electric Utility Industry" and find that it fairly presents the facts relating to selected examples of the impacts of regulation on Florida Power & Light Company. However, in order to clarify or to not be misleading to someone who is unfamiliar with our Company, we have the following comments:

Chapter 2, Page 12

A reader of your report could interpret the first paragraph on this page to mean that $800 million was the total impact of regulatory cost on the four selected utility companies. The review at Florida Power & Light Company was limited to selected major items that were readily available and easy to quantify.

Chapter 2, Page 15

It would appear appropriate to clarify the time frames and types of power plants (i.e. fossil versus nuclear) for the table presented on this page.

Chapter 2, Page 23

In order to clarify the data presented on page 23, we would suggest the following items for your consideration. On line 6 the word oil fired should be inserted before units 1 and 2. On line 9 the word nuclear should be inserted before units 3 and 4. Line 13 would be more reflective of the events if this section were modified as follows: The Court ruled against the U. S. with regard to its request for a temporary injunction and FP&L continued work on the long cooling canal. In settlement negotiations, the Company agreed to construct a costly close-cycle cooling system rather than proceed with the original plan, in order to prevent the controversy from delaying the operation of the plant.

Chapter 2, Page 28

The last sentence of the first paragraph states an additional $232 million will be passed to consumers. This calculation is based upon the occurrence of an event at a specific point in time. The $232 million replacement energy

Chapter 2, Page 28 (continued)

cost will be significantly higher, based upon current projections for 1983.

Chapter 2, Page 35

This paragraph fails to point out the use of peaking units and other special provisions made at a considerable increase in costs over nuclear generation.

Chapter 2, Page 36

We feel that this area could be significantly strengthened by adding the following comment after the sentence ending on line 7: and (4) more importantly by its ability to accurately forecast demand and plan and implement facilities to be in service in time to meet growth.

The increase in reserve is entirely due to an unforeseen drop in load growth caused by the international energy situation and domestic economic recession. The worst thing about regulation is the inability to plan and schedule construction, due to the inability to foresee regulatory delays. If we had not had the economic recession, our reserve margins could have been inadequate.

Chapter 2, Page 43

Environmental compliance cost should not be solely judged by looking at the increase in generation costs versus total generation costs, since a large part of the total cost is fuel related. We also question the relevancy of the comparison between FP&L and CPL.

I hope these comments will be beneficial to you and enable you to clarify or strengthen the report as you feel is appropriate. I will be looking forward to seeing the final product of your study when it is released. If I can be of any further assistance, please feel free to contact me at (305) 552-4222.

Sincerely,

Tracy Danese
Vice President

TD/gi

APPENDIX IX

UNITED POWER ASSOCIATION

Philip O Martin
General Manager

August 26, 1980

Mr. F. Kevin Boland, Senior Associate Director
Energy and Minerals Division
U.S. General Accounting Office
Room 5124
441 G Street, N.W.
Washington, D. C. 20548

Attention: Mr. Gerald H. Elsken

Dear Mr. Boland:

Thank you for sending us pertinent segments of your draft report to the Congress entitled "Review of the Effects of Federal Regulation on the Electric Utility Industry". We appreciate the opportunity to review and comment on the draft copy.

We have only one specific comment on the proposed language. On page 36, we would suggest that the first sentence be changed to read as follows: "Because load growth in the MAPP pool area has been lower than forecast, CPA/UPA as members of MAPP were able to continue purchases of electric power and thus the one-year delay in bringing their newest power plant on line did not adversely affect their ability to serve their consumers."

I would, however, like to make a general observation regarding the opening remarks of Chapter 2 on page 12. This would indicate that from the four utilities you studied, the actual capital expenditure during the specified time frame resulting from compliance with regulatory requirements was less than 10% of total capital expenditures during this period. I think this is unfortunate since it leaves the reader with the impression that this is really not that excessive. First, I do not feel that the examples used are representative of the proportion of the regulatory portion of capital costs of power plants being constructed at the present time. Second, if the total annual operating costs are taken into account, which determine what the consumer is required to pay, the proportion due to regulatory factors becomes even larger.

We have not made a detailed operating study for our system, but have seen results of a study made by Colorado-Ute Electric Association, Inc., a G&T cooperative located at Montrose, Colorado. Their study indicates that 35% of the cost of producing power from existing steam generating facilities is attributable to governmental regulation and further indicates that these projected costs from a plant under construction may reach 45%.

In an address made in Denver on October 19, 1979, Mr. Richard Elkin, President, National Association of Regulatory Commissioners, stated that 30% of the monthly consumer electric bill was caused by legislation.

From the above examples and other reports I have seen or heard about, it would seem that the costs due to regulation are much higher than indicated in the portion of the draft report we received. I feel your report does not give the consumer a true picture of today's situation.

Again, thank you for the opportunity to comment on the draft of your proposed report.

Sincerely,

UNITED POWER ASSOCIATION

Philip O. Martin
General Manager

POM/vh

(309320)

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