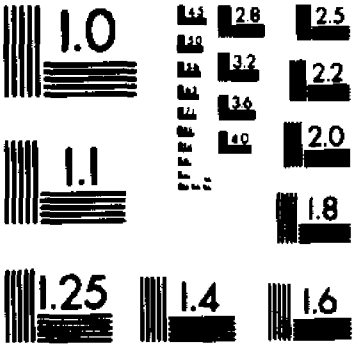

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THE PUBLIC POLICIES OF A PRIVATE UTILITY: THE POLITICAL ECONOMICS OF CONSOLIDATED EDISON

City University of New York PH.D. 1986

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THE PUBLIC POLICIES OF A PRIVATE UTILITY: THE POLITICAL ECONOMICS OF CONSOLIDATED EDISON

by

ALLEN HERSHKOWITZ

A dissertation submitted to the Graduate Faculty in Political Science in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York.

1986

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The City University of New York

For Meg Carey and Robert Engler

For teaching me, by example, the ideals of character, integrity, passion and grace on which higher education rests; for teaching me about family, commitment and independence; for teaching me Emerson and so much more...

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"The machine is here to stay... It is the forerunner of the democracy that is our dearest hope. There is no more important work before the architect now than to use this normal tool of civilization to the best advantage instead of prostituting it as he has hitherto done in reproducing with murderous ubiquity forms born of other times and other conditions..."

Frank Lloyd Wright
The Art and Craft of the Machine

"Technology is always a historical-social project; in it is projected what a society and its ruling interests intend to do with men and things."

Herbert Marcuse
Industrialization and Capitalism

"In the midst of the great spaces, under the bright lights, there is no way to look away. The glitter lights up the rubble, and illuminates the dark lives of the people at whose expense the bright lights shine."

Marshall Berman
All That Is Solid Melts Into Air

Introduction

For the most part, electric utility regulation in New York State was structured and defined in an earlier energy era. Beginning in the early 1960s, that era underwent a redefinition and its underlying assumptions started to erode. The most notable aspects which distinguish that earlier energy era from the present one include less costly primary fuels, low cost capital, decreasing marginal costs (economy of scale), and negligible concern for environmental protection. This earlier regulatory framework historically encouraged energy use and facilitated the growth and consolidation of electric utilities. Reinforcing this industry's "grow and build" orientation was a corresponding belief that energy consumption and macroeconomic growth were inseparably correlated.

Electric utilities began as numerous small inventor-entrepreneurial ventures within cities. Their growth and consolidation were encouraged early in the industry's history by economic conditions promoting large centralized technologies. Prior to the mid-1960s investments into electrical generating technology tended to display an increasing return to scale.

Samuel Insull, once the personal secretary to Thomas Edison and later president of the Chicago Edison Company (which became the Commonwealth Edison Company after 1907) was the most influential and well-known of those urging the development of large centralized generating equipment controlled by franchised monopolies. In an often quoted justification in behalf of this cause, Insull argued in 1914 that because people then tended to use electricity at different times during

the day, there was no direct correlation between increased electrical demand and the installed generating capacity necessary to meet that demand. He concluded that large centralized technologies owned by a single supplier were more economic than smaller, competing generating facilities.

> "There were 193 apartments on that [Chicago] block, and 189 of them were customers of the Chicago Edison Company. There were no appliances, motors, or other electrical devices to speak of in that block of dingy apartments--just electric lamps. The power demanded by all separate apartments on the block, if totalled, was 68.5 kilowatts. But... the different lamps would be lighted at different times, and the actual maximum demand for power from that block of apartments was only 20 kilowatts. To supply all of these customers from a single source would therefore require generating power of 20 kilowatts. But if each household were to be equipped with a separate generating plant to meet its own needs, an aggregate of 68.5 kilowatts would be needed--more than three times as much."[1]

Thus, monopoly owned central station dynamos had their economic justification and a powerful proponent. Moreover, social conditions also encouraged investments into these technological forms. Until very recently the large central station powerplant has been bound-up in the American mind with what Albert Borgmann has described as "The Promise of Technology... first formulated at the very beginning of the Enlightment... The main goal... seem[ing] to be the domination of nature."[2] Technology would liberate man from the darkness and drudgery of life. And the bigger and faster the machine, the better. Thus, for example, the American architect Daniel Burnham (1846-1912) built his highly successful career on the credo "Make no little plans. They have no magic to stir men's blood. Make big plans."[3]

By the 1920s electric utilities spread beyond city boundaries, over state lines, and are now coordinated nationally by 17 regional "power pools" as well as numerous "coordinating councils." In response to the industry's consolidation and growth, the regulation of utilities also changed even as it encouraged the process. Initially structured into contracts or franchise agreements, granted by localities in order that a utility be allowed to sell electricity within a specified territory, regulation was later decentralized by region within the state and then became statewide after utilities outgrew city limits. State regulation was itself supplemented with federal regulation as the electric systems became more diversified and the technology more specialized. For example, the Federal Power Commission was developed to stimulate hydropower facilities, just as the A.E.C. emerged almost fifty years later to support the development of nuclear powerplants.

The emergence of electric utility regulation had other political and economic causes as well. In the early years of the industry's history franchises to distribute electricity were granted by competitive bidding. Occasionally political favoritism was also involved. By the turn of the century a number of utility executives, led by Samuel Insull, argued that granting electric utility franchises on the basis of competitive bidding was wasteful, risky and raised the cost of doing business. As an alternative they argued for systems run by local monopolies which, in exchange for an exclusive service territory would have their rates regulated by a public body. In a speech before the National Electric Light Association in 1898, Insull argued

"The more certain this protection [from

> competition] is made, the lower the rate of interest and the lower the total cost of operation will be, and consequently, the lower the price of the service to public users. If the conditions of our particular branch of public service are studied in places where there is a definite control, whether by commission or otherwise, it will be found that the industry is in an extremely healthy condition, and that users and taxpayers are correspondingly well served."[4]

Moreover, as the use of electricity became more widespread and essential, many localities developed municipally-owned systems. The development of municipally-owned systems was furthered by reformists who sought to end the political favoritism which sometimes accompanied the granting of an electricity franchise, and by progressives who sought a greater role for government against economic concentration. The development of municipally-owned electric systems led many utility executives formerly against regulation to embrace it as a means to protect private ownership. According to Douglas D. Anderson, although state regulation was initially proposed

> "as an alternative to local competition and the political bargaining that was associated with it, and as a means for reducing risk and lowering the cost of capital to the industry... it was a different threat that ultimately made supporters of state regulation out of... utility executives: the spread of municipal ownership... They were terrified that the movement would wrest from them control of their businesses... If other utilities saw state regulation as inimicable to their interests, electric utilities in the leading states did not. That the utilities sought to preserve their autonomy is uncontested; they did this not by opposing state regulation, but by seeking it."[5]

As regulatory systems and electric utilities became integrated statewide and then nationally, so did the political and economic power of this giant industrial complex. Thus, the development of these large

integrated systems has not only facilitated and reinforced the growth of our national economy, but has also encouraged the centralization of the political and economic powers which control natural resources. Localities across the nation have struggled with the electric industry's political power to plan how vast resources are used almost since its inception. In the 1920s, as the industry consolidated and grew nationwide, Pennsylvania Governor Gifford Pinchot stated to his State Legislature that:

> "Nothing like this gigantic monopoly has ever appeared in the history of the world. Nothing has ever been imagined before that even remotely approaches it in the thoroughgoing, intimate, unceasing control it may exercise over the daily life of every human being within the web of its wires. It is immeasurably the greatest industrial fact of our time. If uncontrolled, it will be a plague without previous example. If effectively controlled in the public interest, it can be made incomparably the greatest material blessing in human history."[6]

More recently, a 1971 Berkshire County Regional Planning Commission Report commented on integrated utility systems in the following way: "The size of the [electric utility] power pools and the fact that they extend beyond traditional regulatory jurisdictions have created difficulties for representation of local and regional viewpoints."[7] In the 1960s, when Con Edison wanted to use the reservior supplying water to the village of Cornwall for a pumped storage hydro-electric powerplant, it managed to persuade the New York State legislature to exempt Cornwall from the state law requiring a popular referendum before any town can give away its reservior. Similarly the Long Island counties of Nassau and Suffolk have had to struggle with the Long Island

Lighting Company's attempt to impose on them a civil defense evacuation plan, which is required by federal law for the licensing of Lilco's Shoreham nuclear powerplant. While N.Y.'s Governor and many Suffolk officials believe an evacuation of Long Island is impossible, the company has been lobbying the state and federal government to sanction a plan whereby Lilco employees substitute for local and state police and other emergency officials. At least one of N.Y.S.'s U.S. Senators supports Lilco's plan.

The Consolidated Edison Company of New York, as its name implies, is an outgrowth of our earlier energy era and the regulatory logic associated with it. By 1936 the Edison Electric Illuminating Company, founded in 1882 by Thomas Edison, had acquired or merged with over 170 other electric, gas, and steam companies to form Consolidated Edison. Recently, many of the basic assumptions of our earlier energy era which facilitated the growth of Con Edison have changed. The connection between economic development and greater energy use has been decoupled. Economic growth has recently been taking place in a range of manufacturing and service industries even as the growth in energy use has declined. Electricity use patterns have changed. Fuel costs and capital costs are high and large scale projects now have many diseconomies associated with them. And according to public opinion polls environmental conservation is now an overwhelming American priority. Utilities and regulatory commissions such as Con Edison and the New York Public Service Commission (NYPSC) are the products of an earlier energy era and must adapt to these new realities or face increasing social and economic pressures. The existence of these new

challenges recently led Business Week to title a cover story with the question, "Are Utilities Obsolete?"[8]

This dissertation explores how Con Edison has responded to the reconstruction of social values and economics in our local energy economy over the past 25 years. A fundamental assumption underlying America's private enterprise system is that as economic pressures and social values evolve, business can and will respond in an economically rational and efficient manner to satisfy the consumer. Without such adaptability, a business will be unable to maintain its market. The regulatory assumptions enforcing this fundamental economic concept for electric utilities are explored in Chapter One. In the early 1970s fuel and capital costs skyrocketed and conservation of energy and capital became an overwhelming national priority. Con Edison, which has historically depended on selling (without regard to conserving) energy to generate revenues, was forced to respond. As Chapter Two points out, it did so by using the state and its regulatory agencies to its advantage, however incompatible with rational market economics. As utility executives at the turn of the century used regulation for protection from the risks of competition and municipal ownership, so Con Edison recently used the NYPSC to evade rational market forces. Similarly, since the early 1960s a social emphasis on environmental protection has challenged the company's freedom to build as and where it wishes. In addition, the 1970s and 1980s saw the emergence of new energy technologies which, though threatening Con Edison's autonomy and historical operating orientation, allow for the supply of energy in an efficient and socially and environmentally unobtrusive way. However, as

Chapter Three points out, Con Edison managed to exploit its market position as a local monopolist to preclude such an alternative energy system from developing.

In the capitol of capital, so dependent on electricity intensive high-technology and computers, Con Edison's high rates and control of the New York City energy economy have not gone unnoticed. Chapter Four raises the issue as to whether Con Edison still qualifies, primarily in economic terms, to be given a monopoly franchise over N.Y.C.'s electrical grid. This chapter concludes by arguing that Con Edison no longer qualifies to be classified as a 'natural monopoly' and goes on to analyze some utility reform measures historically considered, as well as putting forth my own reform scenario, designed to increase real competitive market efficiencies. However, as the Conclusion to this dissertation suggests, New Yorkers should not expect much in the way of reform at Consolidated Edison.

Notes

1. From William E.Keily, editor, Central-Station Electric Service: Its Commercial Development and Economic Significance as Set Forth in the Public Addresses (1897-1914) of Samuel Insull (Chicago: Privately Printed, 1915). Quoted in David Morris, Self-Reliant Cities (San Francisco: Sierra Club Books, 1982) p.35

2. Albert Borgmann, Technology and the Character of Contemporary Life (Chicago, The University of Chicago Press, 1984). p.35,36

3. On this, see The New York Times Book Review, September 8, 1985. p.32

4. National Electric Light Association, Proceedings (New York: National Electric Light Association, 1898), pp.14-29. Quoted in Douglas D. Anderson, "State Regulation of Electric Utilities" in James Q. Wilson, editor, The Politics of Regulation (New York: Basic Books, Inc., 1980) p.6

5. Anderson, op.cit. pp.5,6,7

6. Quoted in Carl D. Thompson, Confessions of the Power Trust (New York; E.P. Dutton, 1932) p.xvii-xviii.

7. Quoted in David Morris, "The Pendulum Swings Back." in Howard Brown and Tom Strumolo eds., Decentralizing Electricity Production (New Haven; Yale University Press, 1983) p.43.

8. Business Week, May 21, 1984.

Chapter One

The Context For Political Debate: Financing Electric Utilities In a Hypothetical Marketplace

> "Since utility service is recognized as a 'natural monopoly' our regulation provides the economic protection that the marketplace ordinarily would provide."
>
> New York Public Service Commission
> Annual Report, 1977, p.1

Financing electric utilities is unique. The industry is extremely capital intensive and is regulated by state and federal government. America's electric utilities account for one-fifth of total industrial capital investment in the United States, a figure which is greater than the capital investments made by the auto, chemical and petroleum industries combined.[1] Historically, this has been due to the large and complex nature of utility technology: one single investment into a 850 Megawatt (MW) nuclear powerplant costs as much as $5-$7 billion. Electric utilities are the largest holder of industrial securities. The industry requires more invested capital to generate a dollar of revenue than any other economic sector. According to Scott Fenn of the Investor Responsibility Research Center,

> "As of 1980, investor-owned electric utilities had invested an average of $3.07 in utility plant to support each $1 in annual revenue from kilowatt-hour sales. In contrast, in 1980 General Motors had a fixed asset investment of 16 cents per dollar of sales revenue and Exxon had an investment in plant, property and equipment of 31 cents per dollar of sales revenue."[2]

Financing this burden does not come easily, neither from the capital markets nor through the generation of sales revenue. According to The Economist, "America's electricity generating industry is in such deep financial trouble [in 1981] that it will provide the Reagan

administration with its biggest industrial problem, dwarfing the troubles of steel and cars... The industry cannot afford to build the new power stations the country needs: its building programme is projected to cost $150 billion between 1980 and 1984, with investment worth a further $250 billion needed by 1990."[3]

Why are electric utilities in such a financial predicament? According to the industry, utilities "are squeezed by soaring construction costs, record interest rates, sluggish (and controlled) revenues, [and] long delays to most building projects because of environmentalists' objections."[4] In addition, anticipated revenue growth has slowed due to decreasing demand for electricity. Until the late 1960s electricity demand grew at an annual rate of about 8%. Through the 1970s it hovered around 5%, and in 1981 the industry optimistically projected a 4% growth rate for the next five years.[5] A more realistic projection of future electrical demand might place it at a 2%-3% growth rate.[6]

Privately owned electric utilities are regulated as "natural monopolies" and their financing is subject to state oversight. The economic concept of 'natural monopoly' and the political construction of regulatory commissions have well-known historical roots. In New York one of the very first modern regulatory commissions in the U.S. was established in May 1907 during the governorship of Charles Evans Hughes. In its original form the N.Y. Public Service Commission (PSC) was divided into two regional bodies, each responsible for overseeing a wide range of economic activities for which it was organizationally unprepared. Such activity not only included electric utilities but ice

sales, grain elevators, railroads and other forms of transportation. In 1921 the two regions of the N.Y. Commission merged into a single statewide regulatory agency with some of its responsibilities redefined.

In general, regulation of electric utilities emerged from a political compromise. Moderate utility executives felt competition among numerous electric systems was "ruinous," and feared the potent and widespread turn-of-the-century populist call for publicly-controlled systems. On the other hand, "good government" urban reformers sought to end the bribery which sometimes characterized turn-of-the-century utility franchise licensing. The compromise between these political and economic forces created so-called 'natural monopolies,' whose market domination was regulated by the state. This compromise gave local utilities exclusive franchise over well-defined markets --called service territories-- in exchange for state oversight of the utility's pricing structure.

However, the creation and regulation of natural monopolies have not altered the logic of utility financing, and like other industries their means of acquiring capital are limited to basically two processes: they collect rates for service and they borrow or issue securities.

Rates generate investment income for the utility. Furthermore, the revenues generated by rates affect the utility's ratio of earnings to debt and therefore affect the company's borrowing flexibility. For example, too little revenue increases the company's ratio of debt to earnings and assets, leaving the utility with less assets and income to cover existing or anticipated securities or bond dividends, or to pay back loans. This tends to make a company a less attractive investment,

(a greater risk), limiting its options in borrowing and increasing borrowing costs.

The rates an electric utility can charge must be approved by the state commission which regulates it. With few exceptions, Commissions use a formula known as the "cost-based" or "rate base rate-of-return" approach in order to determine a utility's revenue requirements. A utility's revenue requirements are the monies needed to supply service reliably. The idea behind this accounting formula appears simple: Electric utilities should be allowed to recover the money needed to supply reliable service through rates, along with a "reasonable" profit. State regulatory commissions are obliged to set rates that cover utilities' operating costs and which yield them a "reasonable return" on "the fair value of the property being used by it for the convenience of the public."[7] In fact, determining the revenue requirements of a utility is a difficult, often subjective and controversial process.

The general revenue requirements of an electric utility incorporate three categories of costs: operating expenses, the rate base, and a "reasonable return" on investment. Formally, commissions determine the recovery of these costs by using the formula:

$$R = O + (V-D)r,$$

where R equals the revenue needed by the company to cover O, the utility's operating expenses, plus (V-D), the utility's rate base, which is multiplied by r, the "reasonable return" on investment. The rate base, (V-D), is made up of the value of property used and useful in supplying electrical service (V), minus the physical and functional depreciation on that property (D). All these values are subject to oversight by the

regulatory commission.

I. Operating Expenses

According to Alfred Kahn, former Chairman of the New York State Public Service Commission,

> "the operating expenses and capital outlays of public utility companies [0 plus increases in (V-D)] are by far the most important component of their rate levels, on the one hand, and [indicate] the efficiency with which they make use of society's resources on the other."[8]

Operating expenses generally include labor, materials and supplies used in management, fuel costs, maintenance, public relations, political contributions, charitable contributions and taxes. These usually make up the largest component of a rate. Not all operating expenses are allowed to be recovered through rates. Those that are are known as "above the line expenses." Most operating expenses are in this category. Other operating expenses, considered by a commission as unreasonable to be borne by ratepayers, are known as "below the line expenses" and are borne by stockholders. While commissions in general tend not to determine how much a utility should spend on any particular operating expense, they have responsibility to oversee company decisions as to whether stockholders or ratepayers must bear any particular cost.

In fact, regulatory commissions are hard pressed to monitor a utility's operating expenses and other capital outlays. Instead, as Kahn has pointed out,

> "they have given their principal attention... to the limitation of profits.
>
> "The reasons for this... illustrate once again

> the inherent limitations of regulation as an institution of effective social control of industry. Effective regulation of operating expenses and capital outlays would require a detailed, day-by-day, transaction-by-transaction, and decision-by-decision review of every aspect of the company's operation. Commissions could do so only if they were prepared completely to duplicate the role of management itself. This society has never been willing to have commissions fill the role of management and doubtless with good reason: it is difficult to see how any company could function under two separate, coequal managements, each with an equally pervasive role in its operations. Therefore, when the controlling decisions are made; they are made in the first instance by private management itself. Regulation can do little more than review the major decisions after the fact permitting here and disallowing there. In these circumstances they have been unable as a general practice to substitute their judgments for those of management; and often when they have tried, the courts have denied them the authority to do so, except in cases of obvious and gross mismanagement. Profits, in contrast, are merely a markup, something added to the sum total of expenses. This does not mean that profit control is noncontroversial--quite the contrary. But their regulation does not involve the same type of detailed and pervasive supervision as would a comparable control of the decisions that determine a company's efficiency. The process has focused primarily on profits, also because these are politically the most visible..."[9]

Given the limits of regulatory oversight, electric utilities have in the past been charged with occasionally accounting for operating expenses in an unscrupulous manner. Such charges have been generated from consumers as well as commissioners. Such activity has historically derived from utilities seeking to make themselves as attractive an investment as possible, (as profitable as possible), as well as their desire to protect management's decision-making autonomy and encourage electricity use. In fact, a good amount of this controversial activity has been documented[10] and includes overstating fuel costs, not passing

tax benefits on to ratepayers, accounting for the same expense twice, making ratepayers finance political advertisements and contributions, and "advertising to convince... customers of [the] need for a rate increase."[11]

Utilities claim, of course, that they rarely, if ever, account for anything in an unscrupulous way. Consequently, the methods used to account for many operating expenses and capital outlays have been subject to controversy and deserve discussion here. The first concerns electric utility advertising costs.

Until 1978, when Congress passed the Public Utilities Regulatory Policies Act[12] (PURPA), advertising costs were usually recovered from ratepayers (above the line) rather than stockholders (below the line). Utilities argue that advertising is a legitimate cost of doing business. They point out that it helps attract investors, raises employee morale, helps recruit new employees and is an inexpensive method of communicating to ratepayers. They also point out that advertising can be used to encourage electrical consumption when there is an excess in generating capacity and discourage use during peak periods.

Consumer advocates and environmentalists view advertising by utilities more critically. Although it is sometimes difficult to clearly determine which utility expenditures relate to advertising, Consumer Reports magazine has stated that, "the heart of utility advertising is the corporation's desire to influence public opinion and thereby sway regulators and affect political decisions on such matters as utility rates, distribution of energy resources, and location of plants, including atomic energy facilities... [T]here is a legitimate

question about whether utility customers should be forced to pay for the advancement of economic or political goals the customers themselves may not share... They would, as economist Paul Samuelson put it, be 'taxing the judge and the jury' to pay for persuading them."[13] According to one consumer group, Detroit Edison, like many other utilities in the past, advertised "to convince its customers of its need for a rate increase."[14] In the 1960s, the late Senator Lee Metcalf documented pervasive advertising by investor owned electric utilities. Some of these advertising efforts sought to convince the American public that, among other things, reforming the system or establishing publicly owned electric utility systems were communist inspired, socialistic and inherently anti-American. Metcalf was among the most active legislators who have challenged electric utility advertising as "false and misleading." In the past the Internal Revenue Service has found that many utility ads were not "ordinary and reasonable expenses" but designed for "lobbying purposes, for the promotion or defeat of legislation or the development or exploitation of propaganda."[15] The I.R.S. has ruled that advertising expenses could not be listed as expenses to be recovered from ratepayers. In 1978 Congress made the recovery of promotional and political advertising from ratepayers illegal. According to PURPA,

> "No electric utility may recover from any person other than the shareholders (or other owners)... any direct or indirect expenditure... for promotional or political advertising..."[16]

As advertising expenses were judged unreasonable to be recovered from ratepayers, many utilities have begun spreading their charitable

donations more widely, partly as a means of influencing community leaders.

Recovering operating expenses, according to the formula used by commissions to determine utility revenues, should not yield a utility any profit. Operating expenses are to be merely recovered from rate-payers. Profits are based solely on capital outlays into property "used and useful" in providing service. For this reason fuel costs have also been the subject of considerable controversy. It is sometimes claimed by consumers that utilities unfairly obtain revenue beyond the mere recovery of their fuel costs. Recovering fuel costs is contentious because most state utility tariffs contain an "automatic fuel adjustment" clause. The purpose of a fuel adjustment clause is to allow utilities to adjust their rates as the cost of fuel fluctuates above or below an amount originally included in base rates. This clause eliminates the need for a utility to initiate a formal rate proceeding, although the company is required to file some explanation for the changed fuel costs within a specified time (often 60 days) with its regulators. This modification in the normal rate-making process is justified on the grounds that the cost of fuel fluctuates frequently, especially in recent years, and because fuel is such a large part of utility costs, the company will be subject to a tremendous financial burden were it not allowed to immediately pass on the changes in fuel costs.

Although a utility must inform the commission of its intention to pass on increases or, less frequently, decreases in fuel costs, consumers argue that they are not given advance notice of such a change

nor is there any opportunity for them to present evidence to their commission against a fuel adjustment increase. Consumers claim that because fuel adjustment revenue increases have in times past been greater than the total granted in general rate increases,[17] utilities can collect a significant amount of their revenue through an automatic adjustment of rates. According to one consumer group, commenting on the fuel price rises which occurred during the early 1970s, "If you live in New York City, about three quarters of the increase in your electric bill for the 12 months ending February 15, 1974, was due to the 'adjustment' permitted in the clause; in Boston, two-thirds; in Philadelphia, one-half. In San Francisco, nearly every penny of increase came as a result of the fuel adjustment clause."[18]

Utilities defend the fuel adjustment clause by stating that consumers will benefit during periods of declining fuel prices. In 1984 this did in fact occur. Nevertheless, consumerists continue to argue that "during [other] periods when fuel prices actually did decline, in the mid- and late-60s, some utilities asked for, and got, state permission to drop fuel-adjustment clauses, only to reinstate them later, when prices began to rise sharply in the early 1970s."[19] They caution against allowing a recurrence of such tactics. Many commissions try to achieve a compromise between these positions by allowing only a portion of the fuel charges increased by a utility into the rates. In N.Y., for example, only 90% of a utility's fuel costs are automatically passed into rates by the adjustment clause.

Nevertheless, there are other arguments made by consumers as to why an automatic adjustment of fuel costs can be unfair or inefficient.

They point to the fact that there is no simple method for a utility to pass on to ratepayers increases in fuel costs. Utilities purchase coal according to its heat content, which is measured in British Thermal Units (BTUs). Therefore, BTUs must be converted into costs per kilowatt hour (kwh) in order to charge the customer. "This calculation is based on the heat rate of the utility's generating system, which consists of the number of BTUs required to produce one kwh of electricity... this ratio depends on the efficiency of the utility's power plants."[20]

The problem, consumerists argue, is that while fuel adjustment clauses are based on fixed heat rates, (also known as efficiency ratios), a utility's generating efficiency can vary month to month, depending on the demand on the plants in operation. Consequently, if a utility has improved its efficiency ratio between the time at which the clause is established and the time it is utilized, consumers will be paying for more fuel than is actually burned. The Environmental Action Foundation (EAF) has calculated that the average heat rate for the electrical industry improved between 1960 and 1970 from 10,760 BTUs per kwh, to 10,494 BTUs per kwh. (Less BTU input per kwh output indicates an increase in efficiency). If fuel adjustment clauses were not modified during this period to reflect the increase in generating efficiency, and some were not, the total overcharge by electric utilities with such a clause in their tariffs would have amounted to $78 million, or 20% of all fuel cost.[21] However, as discussed later in this dissertation, standard central-station electricity generating technology has been on a productivity plateau for about 20 years. Therefore, one should not now expect much fluctuation in a utility's

heat rate unless they move away from dependence on the large central-station generating technology.

Consumers also argue that they face the possibility of being overcharged if the fuel adjustment clause does not take into account the utility's average, system-wide fuel costs and instead only adjusts changes in the prices of fossil fuels. According to the Environmental Action Foundation, many utilities have been able to collect millions of dollars in extra revenue because they have applied the rise in the price of fossil fuels to all kwhs produced, not averaging in the cheaper kwhs produced by hydro-power or nuclear fuel. The brokerage firm of Salomon Brothers surveyed fifty-two large utilities in 1973 and found that only seven had included cheaper nuclear fuel in their fuel adjustment clauses, while forty-five did not.[22] Thus, when a nuclear power plant which replaced higher priced fossil fuels shut for repairs, the higher priced replacement fuel was sometimes included in ratepayer's bills. However, when the nuclear plant was in operation, the cheaper nuclear fuel was sometimes excluded from the calculations. This results in extra revenue for the utility. According to Consumers Union, this has also occurred among some utilities which own their fossil fuel suppliers or supply their electric division with fuel from their natural gas division.[23]

Similarly, when a utility purchases power generated by other systems while its fuel adjustment clause is based only on the efficiency ratio of its own facilities, cheaper power produced by plants outside the system, with better efficiency ratios, might be excluded from the average fuel cost calculation. This would also overcharge ratepayers

for fuel not actually used.

Other criticisms of the automatic fuel adjustment clause are that utilities sometimes pass on the costs of items unrelated to changed fuel prices; that utilities might calculate monthly bills based on high fuel costs which occurred only a few days in the billing period; that the clause does not encourage utilities to challenge fuel price rises or broken contracts by suppliers and; that poor power plant efficiency ratios, which might occur from sloppy maintenance, or bad management, are immune from regulatory review. Some environmentalists have gone so far as to charge that the fuel clause facilitates the practice of utilities running-up high bills for less polluting fuels, hoping to stir-up consumer discontent with clean air regulations.[24]

Congress has recognized the controversial nature of the automatic fuel adjustment clause. Through PURPA it has established procedures for periodic review and, in fact, termination of the automatic adjustment clause. According to Section 205 of the Law:

> "Not later than 2 years after the date of the enactment of this subsection and not less than every 4 years thereafter, the [Federal Energy Regulatory] Commission shall make a thorough review of automatic adjustment clauses in public utility rate schedules to examine--
> (A) whether or not each such clause effectively provides incentives for efficient use of resources (including economical purchase and use of fuel and electric energy), and
> (B) whether any such clause reflects any costs other than costs which are--
> (1) subject to periodic fluctuations and
> (2) not susceptible to precise determinations in rate cases prior to the time such costs are incurred...
> (3) The Commission may, on its own motion or upon complaint...
> (a) modify the terms and provisions of any automatic adjustment clause, or

(b) cease any practice in connection with the clause, if such clause or practice does not result in the economical purchase and use of fuel, electric energy, or other items..."[25]

The last issue to be addressed here concerning the operating expense component of the rate-making formula relates to the effect of regulation on management salaries and supply purchases. Ironically, instead of regulation having a depressing effect on these expenses, it might possibly encourage extravagance. According to Alfred Kahn, regulatory oversight

> "creates strong incentives on the part of companies to pad their expenses--with management voting itself bigger salaries and other emoluments at no cost to stockholders, and stockholders as well benefitting to the extent that the company can succeed in buying its services, raw materials, and other inputs at inflated prices from financially affiliated suppliers."[26]

II. The Rate Base

The rate base is the second variable used by commissions to determine a utility's revenue requirements. It is comprised of the gross value of the company's property minus depreciation. The gross value of a utility's property usually includes power plants, transmission lines, equipment used in generating power, land, working capital for construction costs and water rights useful in providing service.

Commenting on the rate base determination, Kahn has noted that:

> "since it is this element in the cost of service that determines the size of the company's profit, it is not surprising that its determination has been by far the most hotly contested aspect of

> regulation, consuming by far the greatest amount of time of both commissions and courts."[27]

Property depreciation and tax accounting are rate base items which have also been sources of public controversy. Depreciation is the cost deducted from the total property value which makes up the rate base. It is defined as "the gradual deterioration and eventual destruction of the value of physical facilities used in the process of providing service."[28] Depreciation is a cost of service as well as an investment incentive. It refers not only to conditions caused by physical wear and tear, but also results from technological obsolescence. The latter is known as "functional depreciation" and may result from increased demand which makes smaller generating facilities inadequate or social requirements which make certain modes of operation no longer desirable. Thus, all equipment is subject to depreciation.

It is claimed that calculating depreciation gives an accurate account of the costs involved in supplying service. Accounting textbooks point out that depreciation is not designed to finance replacements, but rather to reimburse those who supply capital to the company by diminishing the company's taxable income. By diminishing a company's taxable income through depreciation, stockholders who own the utility are not taxed on property no longer earning a return. Thus, depreciation is also an investment incentive. The controversy which concerns this expense involves the different methods utilities can use to account for it.

Before 1954 depreciation could only be accounted for by a 'straight line' method. According to this procedure, the cost of the plant is

divided by the number of years it is expected to be in service. The resulting quotient is then deducted each year from the company's taxable income, until the plant is out of service and its total cost is recovered. For example, if a plant cost $50 million and is expected to be in service ten years, $5 million is depreciated each year. Since the rates consumers pay are based on the value of the property in a utility's rate base, and since the value of the rate base is theoretically lowered by depreciation, the amount depreciated each year should then actually lower rates, other things being equal.

In 1954 a Revenue Act was passed which fundamentally changed the method by which utilities could account for depreciation. It also altered the method by which ratepayers recover depreciation benefits. The Act allows utilities to account for depreciation according to an accelerated method. "Accelerated depreciation" is a non- straight line method of depreciation and increases its investment incentive. It entitles the company to charge high depreciation expenses against its taxable income during the early service life of its equipment, and charge less during the equipment's later service life. Thus, during the early service years of its equipment the utility pays lower taxes. During the later years taxes are expected to increase to compensate for the earlier, larger tax write-off. The added investment incentive comes from allowing taxes to be deferred to the plant's later life, giving the utility more cash available in the plant's early years.

Accelerated depreciation can be accounted for in either of two ways. The first method, favored by consumer advocates, is known as 'flow-through' accounting. Under 'flow-through' accounting, the

increased tax savings which utilities realize in the early years of accelerated depreciation are immediately passed on to ratepayers. The tax actually paid by a utility to the government is the amount it recovers from ratepayers.

The 'flow-through' method contrasts significantly with the 'normalized' method, the method more frequently used by utilities in accounting for accelerated depreciation. It is this latter method of accelerated depreciation accounting which has stirred-up controversy.

Under 'normalized' accounting the utility recovers from ratepayers the taxes it would have been liable for had it calculated depreciation according to the 'straight-line' method, while it actually pays taxes according to accelerated depreciation. Thus, while the utility is actually paying lower taxes in the early years of accelerated depreciation, ratepayers are paying a higher tax rate according to a hypothetically calculated straight-line depreciation. The difference between the tax rate consumers are charged and the rate the utility actually pays, can be used as the utility sees fit and is listed in an accumulated deferred income tax account. Theoretically, during the later years of accelerated depreciation, the utility will pass on to the government the accumulated deferred income taxes.

The idea behind such an accounting practice is that it eases the financial burden on utilities, since the taxes collected from ratepayers but not immediately paid to the government, are placed in an accumulated deferred income tax account from which a utility can finance system expansion. This eases the financial pressure on a utility since the company can use deferred taxes as interest free loans or in lieu of

issuing securities. According to industry officials, 'normalized' accounting is preferable to 'flow-through' accounting since the latter would "preclude taking advantage of the opportunity made available by Congress, and there would be no benefits to divide among anybody."[29]

Critics of 'normalized' accounting claim it hurts consumers. First, "the opportunity made available by Congress" was done so after the industry lobbied extensively for such an opportunity. However, in government, this is not unique. Second, so long as utilities keep making new investments, (which accelerated depreciation is designed to encourage), new accumulated deferred taxes will replace or outpace the taxes paid to the government. Thus, utilities will be building up large accumulated deferred tax accounts. In fact, this has been occurring: for the past half century the electric industry has been doubling in size approximately every ten years and depreciation on new investments considerably outpaced depreciation costs on older equipment. (Depreciation on new investments can outpace depreciation on older equipment even if the system does not double in size every ten years.) Consequently, many utilities have been accumulating new tax deferrals faster than they have been paying off old tax deferrals to the government.

According to Alfred Kahn:

> "When a company [accelerates depreciation and] charges a disportionately large part of the total in the earlier years for tax purposes--which has the effect of reducing taxable income, hence taxes--this means it will be able to charge off correspondingly less, since it will be forced to pay equivalently higher taxes, in later years... But the postponement is beneficial to the [utility] taxpayer; in effect, accelerated depreciation means the Treasury Depart-

> ment is giving him an interest-free loan, during the period of the postponement. It increases the real rate (after tax) of return on investment, if one is permitted to keep more of his profits for a while, before having to hand them over to the government...
>
> Advocates of including in the cost of service only the taxes actually paid, [to the government] which involves 'flowing through' the benefits of accelerated depreciation to the customers, argue that the benefits [to the utility] are likely to be permanent--that is, that the amount of taxes saved is not really postponed but is, in effect, forgiven. And they are more right than wrong, provided the company's total investments grow over time at a sufficiently rapid rate. In that event, the tax postponements on its newer (and ever larger) investments will always exceed the higher taxes continually coming due on the older (and smaller) investments. Indeed, as long as total company assets grow at all, taxes will always be lower under accelerated amortization than they would be otherwise."[30]

For the 150 largest electric utilities in the country, accumulated deferred income tax accounts have grown from $133 million in 1954 to $5.368 billion in 1975, to approximately $8 billion in 1977, $10 billion in 1978 and $12 billion in 1979.[31] Critics of tax normalization also point out that because these interest free loans finance projects which are added into the rate base, ratepayers are paying taxes which finance projects that cause their rates to rise and result in more deferred income taxes.

A similar controversy results from the method utilities use to account for Investment Tax Credits. The Investment Tax Credit (ITC)), first established in the Revenue Act of 1962, allows businesses to deduct from their federal income tax obligations a percentage of their new investments in equipment. Originally this percentage was set at 3% of investment. In 1969 it was repealed. In 1971 the ITC was reestab-

lished (and renamed the Job Developement Credit) at 4% and then raised to 10% in 1975. Most recently, under the 1981 Tax Bill passed by Congress, it was raised to 25% "for some incremental research and development outlays"[32] while remaining at 10% for other "property with a useful life of seven or more years."[33] Unlike accelerated depreciation, which assumes taxes will be paid to the government during a facility's later years, the ITC is designed to be a permanent tax saving for the utility.

The ITC can also be accounted for by 'normalization' or 'flow-through' methods. Flow-through would list the tax credit as an increase in a utility's net income and reduce rates to consumers the full amount of the credit immediately. Normalization gives the utility the full credit almost immediately, but passes the credit on to consumers over the life of the property, according to straight-line accounting. Thus, if a plant is expected to last forty years, the utility receives the full ITC when the investment is completed, while only 1/40 of the tax savings will be passed on to ratepayers each year thereafter. The tax savings to the company which are not immediately passed on to consumers are listed in an accumulated tax credit account. As investments increase, the accumulated tax credits also increase. Like deferred taxes held by utilities these tax credits can also be used to finance new construction, on which new ITCs will be almost immediately received by the utility but returned to ratepayers by a small fraction each year. Consumer advocates argue that this arrangement is unfair as it results in another interest free loan to utilities which is used to expand the rate base. In the past some utilities did not even need to invest their

accumulated tax credits or deferrals for them to expand their rate base: many commissions allowed some or all of these tax accruals into the rate base, on which a profit was returned.[34]

The disposable income utilities acquire from the 'collection' of taxes is fundamental to their financing: "Utilities are taxkeepers, or at best tax collectors, not taxpayers."[35] Were their tax privileges taken away, the financial stability of many utilities would be greatly jeopardized. This was affirmed when the late Senator Lee Metcalf and Representative Fortney Stark, in an effort to eliminate such taxkeeping abuses, introduced legislation in 1975 titled the Electric Utility Tax Exemption Act of 1975 "which would exempt utilities from federal income taxes altogether. Not surprisingly, Metcalf's proposal... received no support from the power industry."[36] Commenting on Metcalf's initiative Robert Dolan of the National Association of Electric Companies (NAEC, formerly the industry's lobbying arm) said "We should pay taxes like any other business"[37] and the Edison Electric Institute added "We're as patriotic as anyone else."[38] In 1979 the 205 largest investor owned electric utilities paid one-half of one percent of their gross revenues ($87 billion) in taxes and five percent of their net income ($9.5 billion). In 1978 they paid one percent of their gross income in taxes and six percent of net income, and in 1977 the figures were one percent and five percent respectively.[39] This too seems to be an additional source of income since regulatory commissions, in granting rate adjustments, assume the utility will be paying the theoretical 46% corporate tax rate.

Although reviewed by the commission, determination of which

property is included in the rate base, (against which depreciation is calculated) is more or less management's prerogative. The values of property included in the rate base can be divided into four categories. The first category is known as 'tangibles' and includes land, buildings, equipment used in service, power plants and transmission lines. Given the limited oversight abilities restricting regulatory commissions, utilities generally present commissions with additions to the rate base after the fact. Alternative investments to achieve the desired result are less frequently considered by a commission. Major investments into powerplants or transmission lines must be approved by siting boards --which usually includes the commission chairman-- though these Boards also have tended to rarely consider alternative, least cost options.

The second category of costs in a rate base is known as 'overhead construction costs'. This value consists of construction administration costs, brokerage costs, legal fees, interest on funds used in construction, insurance, taxes and 'contingencies'. Interest and taxes related to construction are allowed to be included in the rate base, earning a profit, if the total cost of the plant under construction is withheld from the rate base, that is, if construction work in progress is not allowed. This is done in order to "provide an incentive for expansion and an adequate compensation for a company's advance commitment of capital... The capitalized interest is added to the investment in plant under construction."[40] Furthermore, these values are included in the book cost of the plant when it goes into service.

The third component of the rate base is known as 'working capital'. This is the money the utility needs to meet its current financial

obligations, including investments in materials and supplies and the maintenance of minimum bank balances. Working capital varies with the purchasing and billing procedures of the company, as well as with the construction the company is undertaking: "When purchases are made on credit, when deposits or payments are required in advance of payment dates, or when customers pay for the service at the time it is used, working capital requirements may be small. When materials and supplies must be purchased long before use, when customers are billed monthly, quarterly, semiannually, or even annually, or when the business is seasonal, such requirements may be large."[41]

The last component of the rate base is known as 'intangibles' and includes franchise value, water rights and leaseholds. Electric utilities are allowed to include intangibles in their rate base by claiming that their value as an operating utility is more than the sum of their physical property. The value of intangibles is also determined by management with regulatory oversight.

Water rights refer to the estimated increase in the value of the utility which results from its right to use water which flows through or next to land it owns. Leaseholds refer to any increase in the market value of land owned by a utility. Franchise value is one of the more interesting values included in a rate base. Two main characteristics defining a public utility are, first, that the "public's concern may be so pervasive and varied as to require a very high degree of regulation."[42] Second, that it tends to be most economically efficient as a monopoly. Thus, it is interesting to note that franchise value refers to the excessive return a utility could receive by virtue of its monopo-

ly position, but is prevented from so doing by regulation. Essentially, this means consumers pay for not granting a utility the right to reap monopoly profits: "To measure a separate franchise value, the company estimates the future earnings above a reasonable return on the tangible property value, and discounts these excess earnings at the probable fair rate of return. A franchise valuation is a capitalization of the earnings that regulators should take away from a utility firm."[43]

The basis for determining a utility's revenue requirements on the value of its rate base stems from the 1898 U.S. Supreme Court case of Smyth v. Ames (169 U.S. 466). According to the doctrine deriving from this case, a utility has a constitutional right to charge rates which will yield it a "reasonable return" on "the fair value of the property being used by it for the convenience of the public."[44] According to regulatory commission logic this is the most equitable arrangement consumers can expect from dealing with natural monopolies, however vague it might seem. In fact, the New York State Public Service Commission has gone so far as to suggest that regulating utilities on the basis of this doctrine gives consumers "the economic protection that the marketplace ordinarily would provide."[45] However, according to some analysts, there are notable problems in determing a utility's income on the basis as put forth in Smyth v. Ames. James Bonbright, one of the most insightful scholars on utility economics in his time or since, elaborated on these problems in 1940. He pointed out that:

> "As a result of this court made 'law of the land' legislatures or public service commissions have not been free to develop standards of regulation under which the rates are so adjusted as to yield an adequate return on actual capital investment,

> with or without special premiums for efficiency. Nor have they been free to adopt any other measure of reasonable profits based on the amount of income necessary to attract capital and to maintain the corporate credit. On the contrary, they have been compelled to decide rate cases by reference to an almost meaningless engineering appraisal of the physical properties. In theory, this appraisal may result in low valuation, justifying the fixation of rates at lower levels than would be set under other rules of rate making. And so it sometimes worked out in practice during the early history of regulation. But for many years, the valuations approved by the courts have seldom gone below original construction cost and have often exceeded this cost by a high percentage.
>
> "The most obvious defect, however, of the 'fair value' rule lies in its fatal difficulties of administration. Anyone who is acquainted with modern appraisal procedures will recognize the heavy expenses, the time wasting efforts, and the controversial nature of an attempt to value complex properties like those of the Consolidated Edison Company of New York or of the Commonwealth Edison Company of Chicago...
>
> "Partly, I suspect, because of its very tendency to cripple effective public control over rates, the 'fair value' doctrine has been strongly supported by utility officials and company attorneys."[46]

The problem of administering the fair value is compounded further by the fact that state commissions are invariably inadequately staffed and underbudgeted. Thus, because utilities are not disinclined to increase their rate base or their profits, "rate bases tend to bulge with overpriced or unused equipment."[47] Historically, this has sometimes led to unnecessary growth, increases in environmental problems, and poor investment decisions. An example of this is utility overcapacity. The electric utility industry's national average reserve generating capacity above peak demand is now over 40%, almost 3 times the Federal Power Commission's traditional recommendation of 15% (recently readjusted to about 22% under industry pressure). For most

industries this would be an indication of inefficiency. It has much to do with the industry's historic policy of not targeting production for actual end-use needs (discussed in Chapter Three). However, because of the arrangement by which utilities generate revenue, they, unlike other industrial sectors, can profit from surplus capacity.

Historically this inefficiency-made-profitable could occur as long as the rate of return allowed by the regulatory agency was greater than the costs associated with acquiring capital. As long as this was so, (and it traditionally was since interest rates used to be much lower and commissions considered the cost of capital as the minimum return necessary to maintain a company's credit standing), a utility profited from any investment, including overinvestment. This incentive "to expansion of investment and output... [which] may... be regarded as distortions, tending to produce inefficient results"[48] is known as the "A-J-W effect." Although less widely applicable today for reasons discussed below, the A-J-W effect was one of the major political-economic problems historically associated with utilities. Alfred Kahn summarized it in 1971:

> "As Averch, Johnson, and Wellisz, among others, have pointed out, this combination of circumstances [a rate of return greater than the cost of capital] may induce public utility companies to make investments the social benefit of which fall short of their social costs, because (1) such investments will expand the rate base on which the companies are entitled to a rate of return in excess of the cost of capital and (2) to the extent that the net revenues directly generated by such incremental investments fall short of yielding the allowed rate of return, they can recoup the revenue deficiencies by raising their rates in markets in which they have hitherto been prevented from pricing at profit-maximizing levels. These considerations could induce them

(1) to adopt an excessively capital-intensive technology and (2) to take on additional business, if necessary, at unremunerative rates.

> The 'A-J-W effect' undoubtedly describes a real tendency... It might be reflected in
> 1. The resistance of many public utility companies to full peak-responsibility pricing, which would tend to hold down the expansion of demand at the peak and the consequent justification for capacity.
> 2. A willingness to maintain a large amount of standby capacity, in excess of peak requirements.
> 3. Some considerable resistance by electric utility companies to the thorough-going regional planning of investment that represents the most highly integrated form of power pooling... [W]hen a distribution company purchases power from one of its partners, it receives nothing more than reimbursement for those actual expenses,[49] whereas if it generates the power itself it has an expanded rate base on which it is entitled to a return.
> 4. A resistance to the introduction of capital-saving technology...
> 5. A reluctance to lease facilities from others...
> 6. A tendency for public utility companies to adhere to excessively high (because excessively costly) standards of reliability and uninterruptibility of service, with correspondingly high and costly specifications for the equipment they employ...
> 7. A tendency to bargain less hard than they otherwise would in purchasing equipment from outside suppliers. Fred M. Westfield has cited complaints that the electric utility companies were insufficiently perceptive of the electric equipment manufacturers' price conspiracy of the late 1950s and insufficiently vigorous in pressing suits for damages as the basis for his theoretical demonstration that the A-J-W effect could have made these companies not only susceptible to such exploitation but eager for it. It is perhaps significant that that famous conspiracy was broken by the complaints not of a private company but of the Tennessee Valley Authority..."[50]

Recently, with capital costs often equal to or higher than a

utility's allowed rate-of-return, the tendency is much less for a company to profit from the A-J-W effect. This is especially so given the extremely long-lead times now associated with central station powerplant construction. Nevertheless, the industry as a whole seemed slow to recognize the changed circumstances it confronted as interest rates began their historic climb in the late 1960s.

Valuation of the property included in the rate base, as Bonbright noted above, is also loaded with controversy. This results from various methods by which commissions can assign a value to rate base items. Valuation is especially relevant as commissions around the country grapple with introducing multi-billion dollar nuclear projects into rate-bases.

For the most part, the Federal Energy Regulatory Commission (FERC) and many state commissions value items in the rate base at "original cost less depreciation." According to this method, items in the rate base are valued at original cost and depreciation is subtracted from it yearly.

Sometimes state commissions allow equipment to be assessed at a replacement cost which reflects the present market price of the equipment. This method is known as "replacement cost new." The latter method is justified as being reasonable to the extent that it encourages an awareness of the greater costs involved in replacing energy used now. This might work in the direction of decreasing electrical consumption. However, unless commissions take care to prevent such an occurrence, this valuation process will allow a utility to profit on money it never invested. It also assumes that replacement of current electricity

technologies will involve identical technologies. This could be an unnecesssarily costly assumption.

Recently, the costs associated with any single, large scale central-station electricity generating facility, as well as siting and financing costs, have become enormously expensive, running into the billions of dollars. Consequently, in an effort to keep "rate shock" at a minimum, some commissions have begun to investigate the prudency of management decisions when determining a facility's valuation and have deducted any costs they considered imprudent from original value.

Another controversy involving the rate base concerns the industry's desire to include construction-work-in-progress (CWIP). Most utilities are allowed to earn a profit only on property which is currently "used and useful"[51] in providing utility service. Including CWIP allows utilities to recover the costs of building and financing new facilities before they are placed in service. Utilities argue that this makes it easier for them to finance new construction and boosts their internal cash flow. This reduces their need to raise capital from investors. Including CWIP has become increasingly desired by utilities in response to the high costs of financing nuclear power plants. Nuclear plants require many billions of dollars and have very lengthy construction periods. Without construction-work-in-progress a utility building such a project might have to wait as much as 15 years before seeing any return on a multi-billion dollar investment. Some utilities have faced the spectre of bankruptcy as a result.

The alternative and more widely used procedure to CWIP is to allow accumulation of the financing costs on CWIP and their addition to plant

in service when construction is completed. This method defers the cash return to the company, spreading it over the estimated plant service life. It is based on the theory that "consumers should not pay for plant facilities until they are in use and of direct benefit to them."[52]

This alternative to CWIP is listed in a utility's balance sheet as an asset labeled "Allowance for Funds Used During Construction." (AFUDC) Even though the actual cash flow for such an expense is negative, going to construction outlays, AFUDC is listed on a balance sheet as an asset so as to facilitate a utility's sale of securities or lending, by strengthening the company's overall financial presentation. Recently, many utilities which seem to have healthy asset sheets are actually near default because so much of the company's assets are AFUDC, tied into billion dollar capital expenditures, (usually nuclear), which have been earning no return for years. The long lead time now associated with traditional utility investments can preclude their inclusion in the company's rate base for as much as ten to fifteen years. For example, the Long Island Lighting Company has been building its Shoreham nuclear powerplant for well over a decade. In 1984 the company's balance sheet showed assets of approximately $5 billion. However, approximately $4 billion of that was AFUDC associated with Shoreham and the company nearly defaulted on its bond payments. Including CWIP in a rate base would allow utilities to avoid confronting this financing problem.

Consumers complain that the inclusion of CWIP is complicated by the fact that utilities have historically exaggerated the future demand

projections on which construction plans are based. Profit-making and assuring a secure generating capacity encourage them to do so. Writing about the industry's problem of forecasting demand, Electrical World editorial writer William C. Hayes lamented that "The stunning and unexpected results of our 29th Annual Forecast continue to haunt me. The results --a peak increase of only 1.4% [later adjusted to 2.3%] and a KWh increase of only 2.6%-- were so unexpected under the economic and weather conditions that obtained that they are extremely difficult to accept. The seeming inability of competent forecasters to project industry growth with any accuracy as demonstrated by these unforeseen results, and the extraordinary range of present forecasts betrays, it seems to me, a basic weakness in the data from which we are all working... Present forecasts are based on --why not say it-- conjecture... The unvarnished truth is that we simply do not know."[53] More recently, Business Week editorialized that "too many utilities have commited themselves to power plants --nuclear, coal, and other types-- that they do not need."[54] Some argue that were CWIP allowed, the poor economics and mismanagement associated with the U.S. nuclear power industry, would have been less immediately obvious.

Demand calculations and forecasts do not directly relate to actual electricity consumed nor do they relate to specific uses. Electrical demand does not refer to actual electricity consumed but indiscriminate maximum potential demand. Specific end-use considerations are rarely evaluated. Thus, electrical demand is forecast, and utilities build plants to prepare for maximum potential demand system-wide, for whatever use, plus reserve. Utilities argue that such planning is necessary in

order to be prepared to meet all their ratepayers total electrical needs, should the need arise. However, the probability that all consumers will require all their potential demand at the same time is remote. Furthermore, some specific electrical tasks can be met without large generating stations. Thus, including CWIP in the rate base could allow utilities to profit from inadequate planning or overexpansion. These factors ultimately increase the financial troubles of electric utilities. In 1974 the Energy Policy Project of the Ford Foundation estimated that increasing the utility industry's historically accepted reserve generating margin (15 percent) by 5 percent cost $10 billion in additional investments.[55] Today in some regions of the U.S. the industry has an average reserve generating margins over 40%, 25 percent greater than the accepted norm. This represents at least $50 billion worth of idle capacity, (the actual figure if adjusted for inflation, may be twice that).

III. A Reasonable Rate of Return

After the difficult --if not impossible-- process of accurately determining the value of the rate base, it is multiplied by a 'fair' or 'reasonable' rate of return. This is the third cost category used to determine a utility's revenue. The concept of a 'reasonable' return as specified by the U.S. Supreme Court, "is really a notion of a zone of reasonableness. Confiscation of the property of a private company is the lower limit of the zone; exploitation of buyers, which is revealed by pricing practices and monopoly profits, is the upper limit. If the return is reasonable, it must fall between these limits."[56]

According to Alfred Kahn, the process of determining a "reasonable return" on the rate base

> "has inevitably reflected a complex mixture of political and economic considerations. Governmental price-fixing is an act of political economy. And, it bears repeating, this means that it necessarily and quite properly involves the striking of a balance between conflicting economic interests, influenced by political considerations in both the crassest and the broadest possible senses, and informed by community standards of fairness. Therefore, from time to time, the courts and commissions have characterized the entire task of setting 'just and reasonable rates,' and particularly that portion representing return to shareholders, in terms of reaching an acceptable compromise between the interests of investors on the one hand and consumers on the other. The conception is that there is no single, scientifically correct rate of return, but a 'zone of reasonableness,' within which judgment must be exercised."[57]

The rate of return ("required earnings") for electric utility's is not specified nationally but is determined by each state's commission. Besides those mentioned by Kahn, the rate of return depends on a number of other variables listed by the Supreme Court, to be considered by commissions:

1. Comparisons with other companies having corresponding risks.
2. The attraction of capital.
3. The current financial and economic conditions.
4. The cost of capital.
5. The risks of the enterprise.
6. The financial policy and capital structure of the firm.
7. The competence of management.
8. The company's financial history.[58]

Specifically how these criteria are determined and how much weight each carries varies with time and from commission to commission. However, that consumer's rates be 'reasonable' has historically been a less important consideration than giving a reasonable return to investors. A possible explanation for this is that most "writers on

property have recognized it as a set of rights [rather than obligations]. In the seventeenth century, John Locke defined 'property' so widely as to mean by it rights to 'life, liberty, and estate'. Standard interpretations see property as consisting of rights to possess, use, manage, dispose of, and keep others away from things."[59] Thus, although the Supreme Court has held that "the fixing of 'just and reasonable' rates involves a balancing of the investor and the consumer interests,"[60] commissions have consistently emphasized investor interests: "it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock... By that standard the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital..."[61] As a result, rates are designed so that earnings to investors are non-restrictive. Unless this is done, utilities argue, "such earnings would be confiscatory and would violate the constitutional guarantees of 'due process' and 'equal protection of the law'"[62] The consequence of the Court's historical emphasis on investor protection, according to James Bonbright, is that it has become "myth that public utility companies have actually been limited by public service laws to a reasonable rate of profit under any objective, meaningful test of reasonableness."[63]

IV. The Rate Structure

After the revenue requirements of the utility are established and values are settled for operating expenses, the rate base and the fair rate of return, the utility must establish a rate structure. This rate structure must be approved by the state commission. The rate structure defines the various rates charged to different classes of customers. The classes are usually distinguished by their relative demand and use of electricity. The differentiation of rates has historically been designed by utilities and commissions to maximize the utility's return, eliminate any unused generating capacity and encourage the company's growth. In the past this was done by designing rates which encouraged consumption. According to Charles Phillips Jr. "the seller who discriminates [by charging lower rates as demand increases] might well enjoy higher sales, lower costs, and larger profits, while the seller who is forbidden to discriminate might have smaller sales, higher costs, and smaller profits or even losses. Consumers, too, may benefit from discrimination: lower prices usually result in a greater demand for--and, hence, consumption of--the company's services."[64]

A utility's authority to discriminate among the various rate classes has its limitations. To the extent that this is so it is primarily due to regulatory oversight as well as market elasticity. (Historically the market for electricity was judged downwardly inelastic. Over the past decade or more this assumption has been proven false.) However, for various reasons, including limited resources, regulatory commissions have not always effectively regulated rate discrimination. To quote again from Kahn:

> "With respect to... the regulation of rate patterns or structures--the typical statutory or judicial injunction is that rates be not 'unduly discriminatory' that differences in the rates charged various customers or classes of service be likewise 'just and reasonable'. At this point we need make only two general observations about the way in which most regulatory commissions have carried out this mandate. First, outside of the transportation field, they have given far less attention to this subject than to determining general rate levels and especially the rate base and rate of return. The height of a particular rate and the differences between them have been from the very outset a very important consideration in the regulation of railroads: the feeling of different customers and localities that they were being subjected to unfair discrimination played a vital role in the passage and enforcement of the Interstate Commerce Act, from the very beginning. In the other utilities, the major issue has usually revolved around the adequacy of total or net revenues; and the solution has usually been a more or less across-the-board increase or decrease of the entire structure. Second, to the extent regulatory laws and commissions have considered the pattern of prices set, they have been guided by the same sort of mixture of essentially economic and political-social considerations as have influenced their determination of the proper returns on investment.
>
> The relative neglect of individual prices most clearly epitomizes the difference between the traditional approach to public utility price regulation and the one the economist would recommend."[65]

Distinctions among the rate classes are attributed to variations in the cost of supplying electricity. This incorporates three variables: 1. Demand costs; 2. Output costs, and; 3. Customer costs.

Demand costs involve the investments and expenses related to producing and distributing electricity. Therefore, these costs vary among consumers with different peak demands: the greater the peak demand, the greater the investment needed to supply service. Investments connected with demand costs generally include generating

plants, transmission lines, substations, distribution networks, etc.

Output costs refer to the fuel and labor expenses incurred in supplying service. These costs vary with the number of kilowatt-hours consumed.

Customer costs are influenced by the number of metered customers in the service area. More customers means more metering equipment, more meter reading and billing, and a larger accounting staff. More customers also tends to mean that the distribution system is more complex, e.g. the costliness involved in placing underground cables in congested urban areas. These costs are independent of consumption.

Because of the difficulty involved in determining the precise service cost of each customer, customers with similar demand characteristics are grouped together. In this way the 'classes' of customers are determined and different rates are applied to each class. The philosophy of price discrimination historically adhered to was summarized by Russell Caywood in the following way:

> "Electric utility rates should be based on a philosophy which calls for the lowest possible prices consistent with customer requirements, quality service efficiently rendered, fair wages, and a fair return to the utility. Rates should be such that service will be widely available and extensively used; they should be promotional; i.e., they should provide lower prices for larger loads and for longer use of service. Rates should be available for any kind of service a customer desires. In applying rates to individual customers, the spirit on the part of the utility should be one of helpfulness and cooperation, always keeping within the limits set down by the schedules and rules as fixed with the regulatory body."[66]

The practical outcome of designing rates according to this philosophy was that as consumption increased, rates declined. Therefore,

although rate classes were distinguished according to the costs involved in supplying service, higher service costs did not lead to higher rates. In fact, just the opposite was true: large consumers who incurred greater service costs, paid lower rates per kwh. This means that electric rates were promotional. This policy emerged because larger consumers of electricity historically had a more elastic demand: industrial or large commercial consumers have the alternatives of generating their own power, using gas or locating where power is cheaper. Keeping rates for these consumers low made it cost effective for them to stay on line instead of seeking those alternatives. Smaller consumers of electricity have historically had less elastic demand because they were unlikely or unable to substitute gas, kerosene or candles to meet their limited, but essential, electrical needs.

Utilities also justified rate discrimination by arguing that it led to a greater and more efficient utilization of generating capacity, and therefore lowered prices for all consumers. By encouraging demand, costs per kwh declined as the utility's fixed costs were spread over broader electrical output. Also, lower rates could attract new businesses, minimize unused capacity and spread fixed costs over an even larger number of customers. During an era when resource conservation was not a significant national concern, such promotional rates were socially acceptable. In addition, during that era low fuel costs, capital costs and technological improvements combined to decrease marginal costs, (increase economy of scale) and promotional rates seemed to be more efficient as well.

However, rate discrimination which encourages electricity

consumption is controversial, especially today when so many seek to encourage energy conservation for a variety of political and economic reasons. In his April 20, 1977 energy message, former President Jimmy Carter told the nation "We must... reform our utility rate structure. For many years we have rewarded waste by offering the cheapest rates to the largest users."[67] Encouraging consumption has invariably led to increases in plant construction. Over the past 25 years, with marginal costs increasing, this expanded the rate base and ultimately raised rates. While increased output was pushed as being likely to spread out fixed costs in the short term, it ultimately increased those fixed costs. Because of higher fuel costs, high interest rates, siting problems leading to long lead-times and other diseconomies, the economies of large scale have been disappearing from the generating sector of the utility industry for at least two decades. Today, higher fixed costs will raise rates. The Energy Policy Project of the Ford Foundation has commented in the following way about declining marginal costs which tended to support economy of large scale: "this happy era has ended. The new cost trend is up."[68]

From the perspective of trying to maintain stable electric rates, the absence of declining marginal costs, in combination with the growth oriented regulatory logic seems to present a fundamental contradiction: if the rate base does not grow, revenue will remain level in the short term, but decline in the longer term as depreciation contracts the value of the rate base and accumulated tax deferrals and depreciation costs become due. However, if investments are made, enlarging the rate base, revenues will increase but so will rates.

Because of price discrimination lower and middle income classes, groups which formerly were thought to have an inelastic demand for electricity, have historically paid higher rates per kwh than those who incurred greater generating demand and ultimately justified enlarging a utility's rate base. Declining rate discrimination has been challenged as unfair, (those with proportionately lower demand contributed a disproportionally greater share in revenues), as well as inappropriate for a society which now emphasizes energy efficiency and environmental protection. The Energy Policy Project of the Ford Foundation commented on declining rates in the following way:

> "In the past, these promotional rates reflected the trend of industry costs which were declining. Rates that promoted greater use gave the companies more income, which in turn enabled them to build large new plants that further reduced costs and rates. Recent studies conducted for the Project support the conclusion that this happy era has ended. The new cost trend is up. The maximum size of plants, about 1,000 megawatts, is no longer increasing because economies of scale are captured below that size. There may still be some economies of scale in distribution; it costs more to hook up many small users than a few big ones. But these economies are offset by rising power plant and fuel costs.
>
> "Under these conditions, promotional pricing is inappropriate... [R]ate designs, which promote greater use through price reductions, eventually push prices higher for all customers. When enough customers take advantage of cheap promotional rates--for example, for electric heat--the resulting increase in demand forces costly expansion of capacity. Within a few years, this cost backlash can double the heating bill for an all-electric home. People who are thus victimized can become upset enough to turn utility rate hearings into near riots, as recently happend in New York's rich, respectable Westchester County."[69]

In 1978 the Federal government recognized the incompatibility of

declining rate classifications with the logic of recent developments in our energy economy. PURPA discourages promotional electric rates by stipulating that "the energy component in a rate... may not decrease as kilowatt-hour consumption by such class increases..." Reversing the logic historically underlying promotional rates, PURPA seeks to affirm a new economic logic appropriate for our new energy era: those who justify by their large use of electricity that "additional capacity is added to meet peak demand relative to base should pay premium prices."[70]

Two suggestions practicable in eliminating rates which discriminate against the smaller user are "marginal-cost pricing" and "peak-load pricing." Marginal pricing was first introduced into actual practice in the NYPSC in 1976 under Chairman Alfred Kahn. It determines the rates of the large user who is increasing consumption according to the cost of replacing the electricity. Conceptually and in practice, determining marginal-cost based pricing is complex. However, discrimination in the past led larger consumers into believing that electricity cost less than it actually did, (in terms of service costs and replacement) thus they could choose to continue or increase their usage even though energy conservation or smaller or on-site generation may have been a cheaper method of meeting their needs. To encourage conservation of both capital and energy, marginal pricing is applied only to those large users whose consumption of electricity is increasing and tends to justify new capacity. The practical outcome of such a pricing policy is to raise rates for the large user who is increasing consumption while lowering or keeping stable the rates for all other consumers.

Peak-load pricing charges different rates during different time periods in an effort to maintain or lower a company's peak-demand. It tends to be used in conjunction with marginal-cost based rates. Even though peak-demand may arise only during short intervals, utilities must have adequate capacity to satisfy it. Because electricity cannot be stored, (or because it is inefficient and costly to do so), the company must maintain facilities capable of meeting peak demand. By charging a higher price to those who use electricity "on-peak", demand peaks could be lowered. This could slow any momentum towards new construction, and assigns the costs of expensive new facilities to those who create the need for them. To quote the Ford Foundation's Energy Policy Project one final time:

> "It clearly makes more sense to price electricity to encourage conservation--especially during peak periods, but also at off peak times. A move away from declining block rates will help eliminate the incentive for indifferent and wasteful consumption.
>
> The advantage of peak load pricing is that people who use capacity on peak days... will actually pay for the extra capacity needed to serve them. With promotional rates, the peak load customer sometimes gets a cheaper rate because he is a large user--a case in point is air conditioning. High peak load rates may also encourage people to conserve energy by insisting upon more insulation, or better efficiency in air conditioners, or even solar houses. They might encourage industry to shift their use to off-peak periods or to design plants so that power can be interrupted during peak periods. Peak load pricing would mitigate the strange 'Catch 22' effect experienced by those customers who conserved electricity and were rewarded with higher electric bills. This happened because the reduction in use on an overbuilt system designed to meet high peaks and wasteful use resulted in higher costs per kilowatt hour to all customers. The rate system was designed to promote more use and when people started conserving, the system backfired on them. If rates were sensibly

> designed to discourage peak use and wasteful use, a consumer who saved electricity would save money as well."[71]

V. Capital Structure

In conjunction with charging rates for service, electric utilities are financed by borrowing and issuing securities. This is the second method of utility financing mentioned at the beginning of this chapter and carries controversial issues as well. Securities include bonds, (long-term debt), preferred stock and common stock, (equity). The total amount of securities issued by a utility is known as its capitalization. The relative proportion of bonds, preferred stock and common stock which comprises a utility's capitalization, is known as the company's capital structure.

Should a liquidity or cash flow problem limit a utility's ability to pay dividends or interest on its liabilities, bond holders have first claim on receiving dividends. There are generally three types of bonds which are issued by utilities. First, there are Mortgage bonds, which are secured by the entire property of the issuing company. Next, there are Debenture bonds, which are secured by the general credit of the issuing company but are subject to the prior claim of the Mortgage bond. Finally, there are Revenue (or Income) bonds, which are secured by the earnings of the issuing company after interest on any Mortgage or Debenture bonds has been paid. After interest on bonds have been paid, preferred stockholders receive their dividends. Lastly, dividends on common equity is paid.

The capital structure of a utility indicates the relative ownership

of a utility. A look at the capital structure could reveal which institutions have the greatest investment in the utility, (though actual ownership is usually disguised), and in what form these investments are held. In addition, it indicates the nature of the financial liabilities incurred by the company. Equity, given its higher risk relative to debt, tends to have higher service costs including higher dividends. Finally, looking at a utility's capital structure might provide us with an insight into its ability to avoid rate increases. If the company's financing costs are high, the company must maintain higher total earnings to operate, pay its creditors, service debt and maintain its credit rating. During a period of slowing or lower revenues, this would leave a company less able to avoid raising rates. To a great extent this is so because commissions consider the cost of capital to the company (determined by taking the weighted average of the returns on bonds, preferred stock and common stock) as the minimum fair return necessary for the company to maintain a good credit standing. (Obviously, rates will tend to rise in any period the utility's financing costs are high, for whatever reason.) The major controversy associated with a utility's capital structure centers on establishing what economists refer to as an "efficient capital structure." This is a capital structure which secures the company's financing while at the same time keeping financing costs at a minimum. Since each form of security carries a different financing charge, with equity tending to be the most costly, the debate centers on a utility's desire to keep financing costs flexible --thus increasing its tendency to issue equity, which the company can more easily repurchase-- and the desire of

consumers to keep financing costs, and thus rates low. This latter value is best achieved by limiting equity, since it carries higher cost relative to other forms of financing.

VI. Diversification: Getting Around Regulation?

In times when capital costs are high, (and they have been recently, especially for electric utilities which are building nuclear power-plants, have poor market ratings or which operate in slow or negative growth markets) it is more difficult for investment in the rate base to generate earnings sufficient to cover the costs associated with construction, operation and financing. This tends to make tax deferrals increasingly important to electric utility financing. However, financing growth by deferred taxes is not adequate as a long-term corporate financing strategy, even though it is extensively used: electric utilities will require hundreds of billions of dollars if they want to finance their debt or realize ambitious growth schemes into traditional generating technologies. This is especially difficult in an era of high capital costs.

To free themselves from the constraints of this 'limited' supply of funds, "to emerge from their chronic financial distress,"[72] utilities are increasingly diversifying into other, often unrelated, unregulated businesses. In 1980 the Edison Electric Institute, the trade association of the investor owned electric utility industry, surveyed 125 major electric utilities and found "significant activity by the utility industry in new business ventures... outside the traditional function of generation, transmission, and distribution of

electricity."[73] Much of this activity generates significant revenue for many utilities. In one exceptional example, the Pacific Power and Light Company "derives 46% of its operating income from nonelectric businesses that boast a return on equity two to three times greater than that of the company's electric unit."[74] If the industry has its way, the governmental regulation which discourages such activity will be eliminated and diversification will become a legal option for utility financing and growth strategies.

For the past 50 years electric utilities have been legally prevented from diversifying into fields unrelated to the production and distribution of electricity by the Public Utility Holding Company Act of 1935. The Act, "the most stringent corrective measure ever applied to American business,"[75] was the culmination of exhaustive Federal Trade Commission and Congressional investigations which documented the existence of a gigantic and abusive nationwide monopoly in the electric power industry. Commenting in 1925 on the scale of this electrical monopoly, the late Senator George Norris of Nebraska stated,

> "I have been dumbfounded and amazed, and the country will be dumbfounded and amazed when it learns that practically everything in the electrical world is controlled either directly or indirectly by some part of this gigantic trust. It controls from one end of the country to the other the generation and distribution of electricity by water power and by other means, and the manufacture and sale of electrical appliances, running all the way from a little electric bulb in the house lamp to the gigantic generator that will handle without trembling from 30,000 to 60,000 horsepower. A gigantic trust that has fastened its fangs upon the people of the United States from the Atlantic to the Pacific and from the Great Lakes to the Gulf."[76]

This giant monopoly was known at the time as the "Power Trust." It

came about through a series of diversifications, stock purchases, mergers and market expansion and was then viewed as "one of the most vital and fundamental problems of our modern life."[77] The power of this trust, which was to affect utility regulation to this day, was devised by Samuel Insull and his "towering pyramid of holding companies, together with General Electric's Electric and Share, Morgan's United Corp. and a few others, [which] controlled 75% of the nation's private electric-utility industry- 'practically immune' to existing law, in the opinion of Felix Frankfurter."[78] Through its concentrated economic power --representing $10,000,000,000 in 1925-- it controlled not only most of the nations's electric power, but set out to shape the minds and behavior of Americans as well. A list of the misdeeds perpetuated on the American population by this nefarious trust runs for thousands of pages and can only be superficially suggested here. According to the government's investigations, the few companies which made up the trust were found to have systematically overcapitalized by issuing stock above and beyond the value of their property; consistently added value to their stock by fictitious reappraisals; extracted excessive and unfair monopoly rates from consumers; paid earnings on stock, primarily owned by trust officials, as high as 3,102.62% through perverted financial "pyramiding" schemes; paid excessive salaries to officials and friends of the trust; established effective control of banks by manipulating deposits and interlocking directorships; maintained fictitious policies of "customer ownership" by issuing non-voting stock, as a political device to establish "the nation's greatest defense against socialism or communism"; manipulated public thought and action by ownership or

manipulation of the press and pervasive political advertising; selectively subsidized universities in order to obtain faculty "co-operation"; influenced the hiring of professors and placed "power company men on University faculties"; revised textbooks used in schools throughout the country in order to replace those which it felt reflected "unsound teaching in relation to the... economic structure of the country," or those which were "no less than poisonous" and; maintained a misleading, vicious and unethical "war on public ownership."[79] Gifford Pinchot, former Governor of Pennsylvania, came to the following conclusion about the utility trust:

> "Nothing like this monopoly has ever appeared in the history of the world. Nothing has ever been imagined before that even remotely approaches it in the thoroughgoing, intimate, unceasing control it may exercise over the daily life of every human being within the web of its wires. It is immeasurably the greatest industrial fact of our time... a plague without previous example."[80]

In an attempt to insure that such a concentration of economic power does not again arise, Congress in 1935 passed the Public Utility Holding Company Act, (despite a lobbying effort by the utility trust which was itself the subject of a congressional investigation). The Act has prevented utilities from issuing stock to expand into activities unrelated to electricity production and precludes outside directors from being selected from financial institutions dealing with utilities. Section II of the Act limits utility operations to "a single integrated public-utility system, and to such other businesses as are reasonably incidental, or economically necessary or appropriate to the operations of such integrated public-utility system..."[81] Thus, diversification

by electric utilities is controlled in the interest of preventing economic concentration and the political power which results from it. However, because diversification will afford electric utilities the opportunity to generate greater revenue, the industry is once again lobbying to remove the "chains" of the Act. Because it prevents them from expanding into activities unrelated to the production and distribution of electricity, the Act is "a financial restriction that can't be overlooked."[82] According to Forbes, the industry has "been quietly agitating for amendments to the act that would relax SEC control over financing arrangements, permit diversification into unrelated industries and allow outside directors to be selected from financial institutions dealing with utilities."[83] Apparently, they have been meeting with some success. According to Barron's Financial Weekly, the "chains are slipping."[84] According to Scott Fenn of the Investor Responsibility Research Center

> "With returns on equity from the regulated utility business stuck near 11 percent for the past decade, many utilities are now exploring the possibilities of investing in faster growing, more profitable ventures such as oil and gas exploration, coal mining, energy and engineering services, real estate, computer services, telecommunications and fish hatcheries."[85]

As of 1981, 82 of the 128 utility members of the Edison Electric Institute had diversified into other, non-regulated fields.[86] Since 1980, at least four bills have been introduced to change the law or eliminate it altogether (one by New York Senator D'Amato) and S.E.C. chairman John S.R. Shad supports the elimination of the law, having argued it is "unnecessary and obsolete."[87] Shad's S.E.C. is already

easing up on enforcement of the Act and according to the Edison Electric Institute, some utilities are already involved in "energy education."[88] And, according to one opponent of the restrictions in the 1935 Act, "There's going to have to be a lot of education."[89]

Notes

1. Scott Fenn, America's Electric Utilities: Under Siege and in Transition, (Washington, D.C. Investor Responsibility Research Center, 1983) p.25.

2. Ibid, p.26.

3. The Economist, February 28, 1981. p.65.

4. Ibid.

5. Ibid.

6. See Electrical World, October 1978.

7. Symth v. Ames (169 U.S. 466), 1898.

8. Alfred Kahn, The Economics of Regulation: Principles and Institutions, (New York: John Wiley & Sons, Inc. 1970) Vol.1, p.29.

9. Ibid, p.29-31, emphasis added.

10. See, for examples, Lee Metcalf and Vic Reinemer, Overcharge. (New York; David McKay Company, Inc., 1967); Richard Morgan and Sandra Jerabek, How to Challenge Your Local Electric Utility: A Citizen's Guide to the Power Industry. (Washington, D.C.; Environmental Action Foundation, 1974); and, especially, Carl D. Thompson, Confessions of the Power Trust. (New York; E.P. Dutton & Co., Inc., 1932). Also see bibliography.

11. Morgan and Jerabek, op.cit. p.51.

12. Public law 95-617, November 9, 1978. Hereafter referred to as PURPA.

13. Consumer Reports, July 1978.

14. Morgan and Jerabek, op.cit. p.51.

15. Metcalf and Reinemer, op.cit. p.105.

16. See PURPA, Section 113, (5).

17. Sandra Jerabek, A Citizen's Guide to the Fuel Adjustment Clause. (Washington, D.C.; Environmental Action Foundation, 1975) p.3.

18. Consumer Reports, July 1974. p.837.

19. Ibid. p.838.

20. Jerabek, op.cit. p.5.

21. Ibid. p.5-6.

22. Cited in Consumer Reports, July 1974. p.838.

23. Ibid.

24. Jerabek, op.cit. p.24.

25. PURPA, Section 205.

26. Kahn, op.cit. Vol. II, p.48.

27. Kahn, op.cit. Vol. I, p.36.

28. Charles E. Phillips, Jr., The Economics of Regulation: Theory and Practice in the Transportation and Public Utility Industries. (Homewood, Il; Richard D. Irwin, Inc., 1969) p.194.

29. F. Warner Brooks, "Accelerated Depreciation." Speech before the Midwest Association of Regulatory Utility Commissions, 1957. Cited in Phillips, Jr. op.cit. p.209.

30. Kahn, op.cit. p.33.

31. Richard Morgan, Phantom Taxes in Your Electric Bill. (Washington, D. C.; Environmental Action Foundation, 1976) p.7, and Public Power, May/June, 1981. p.44.

32. The New York Times, July 31, 1981. P.D. 1.

33. The New York Times, July 30, 1981. P.D. 20.

34. Metcalf, op.cit. p.63.

35. Communication from Vic Reinemer, currently publisher of Public Power, August 12, 1981.

36. Morgan, Phantom Taxes. op.cit. p.13.

37. Powerline, October, 1978. p.4.

38. Ibid.

39. Public Power, op.cit. p.43.

40. Phillips, Jr., op.cit. p.252-3, emphasis added.

41. Ibid, p.253.

42. From Supreme Court Justice Louis Brandeis' dissent in New State, Inc. Co. v. Liebman, 76 L. ed., Advance Opinions 479 (1931), cited in W.E. Mosher and Finla G. Crawford, Public Utility Regulation. (New York: Harper and Brothers, 1933) p.3.

43. Emery Troxel, Economics of Public Utilities. (New York; Holt, Rinehart & Winston, Inc., 1947). p.310.

44. Quoted in James C. Bonbright, Public Utilities and the National Power Policies. (New York; Columbia University Press, 1940) p.16.

45. New York State Public Service Commission Annual Report, 1977. p.1.

46. Bonbright, op.cit. p.16.

47. Metcalf, op.cit. p.62.

48. Kahn, op.cit. Vol. II, p.49.

49. Though Kahn is correct here, a utility might enjoy more than simple reimbursement should it purchase power from a more efficient generator and not make adjustments in its automatic fuel adjustment clause. See discussion above on fuel adjustment clause.

50. Kahn, op.cit. Vol. II, pp.49-54.

51. Letter to Kenneth F. Plumb, Secretary Federal Power Commission, from Richard Morgan, Environmental Action Foundation. April 15, 1975.

52. J. Leslie Livingstone and Avis D. Sherali, "Construction Work in Progress in the Public Utility Rate Base: The Effect of Utilized Projects and Growth." Financial Management, Spring, 1979. p.42.

53. Electrical World, October 1, 1978. p.3.

54. Business Week, Editorial, May 21, 1984.

55. Energy Policy Project of the Ford Foundation, A Time to Choose (Cambridge, MA; Ballinger, 1974). p.262.

56. Troxel, op.cit. p.224.

57. Kahn, op.cit. Vol. 1, p.42.

58. Bluefield Water Works & Imp. Co. v. Public Service Commission of West Virginia, 262 U.S. 679, 692-93 (1923). Cited in Phillips, Jr., p.262. According to Phillips: "Since the Bluefield Case, little has been added by court decisions."

59. Virginia Held, Property, Profits and Economic Justice (Belmont, CA; Wadworth Publishing Co., 1980) p.1.

60. Federal Power Commission v. Hope National Gas Co., p.603. Cited in Phillips, Jr., p.264.

61. Ibid.

62. Phillips, Jr. op.cit. p.265.

63. Bonbright, op.cit. p.52.

64. Phillips, Jr. op.cit. p.131-2.

65. Kahn, op.cit. Vol. 1, p.54-55.

66. Russell E. Caywood, Electric Utility Rate Economics (New York: McGraw-Hill Book Company, Inc. 1956) p.38.

67. The New York Times, April 21, 1977.

68. A Time to Choose, op.cit. p.258.

69. Ibid p.258.

70. PURPA, Sec. 111. This is discussed further in Chapter 3.

71. A Time to Choose, op.cit. p.259. Emphasis added.

72. Barron's Financial Weekly, February 22, 1982.

73. Edison Electric Institute, Investor Owned Electric Utilities New Business Ventures: A Survey of Business Diversification Activity of the Investor Owned Electric Utility Industry, (Washington, D.C.; 1981)

74. Business Week, January 18, 1982. p.56.

75. Clair Wilcox, Public Policies Toward Business, 3rd edition (Homewood, #1; Richard D. Irwin, Inc., 1966) p.366.

76. Congressional Record, January 2, 1925, 68th Congress, 2nd Session, pp.1101-1107, Cited in Carl D. Thompson, op.cit. p.XVII.

77. Thompson, op.cit. p.VII.

78. Barron's Financial Weekly, February 22, 1982. p.13.

79. For a lengthy and excellent summary of these misdeeds, see Thompson, op.cit.

80. Thompson, op.cit. p.XVII-XVIII.

81. Phillips, op.cit. p.562.

82. Forbes, February, 1, 1982. p.34.

83. Ibid.

84. Barron's Financial Weekly, February 22, 1982.

85. Fenn, op.cit. p.74.

86. Edison Electric Institute, Diversification, op.cit.

87. Forbes, February 1, 1982. p.34.

88. Edison Electric Institute, Diversification op.cit.

89. Barron's Financial Weekly, February 22, 1982. p.34.

Chapter Two

Evading the Market: The Financing of Con Edison 1973-1983

I. STATE HELP

> "The money of the state shall not be given or loaned to or in aid of any private corporation... nor shall the credit of the state be given or loaned to or in aid of any... private corporation..."
>
> Article VII, Section 8.1
> N.Y.S. Constitution

> "the company's financial comeback would have been impossible without the state coming to its rescue."
>
> Business Week on Con Edison
> May 30, 1977, p.44

The regulatory logic which substitutes a "hypothetical marketplace"[1] for real competition raises a paradox as it concerns Con Edison and its regulation by the New York State Public Service Commission. Between 1973 and 1983 the company began to thrive as its market contracted.

Electricity demand nationally dropped dramatically over the past decade. From annual growth rates which historically averaged approximately 7%, demand dropped down during the past decade to zero and negative rates of demand growth. The decade-long drop in electrical demand, brought on primarily by higher fuel prices, was accompanied during much of this decade by the most severe economic recession since the 1930s, and this reduced electrical demand even further. This is confirmed by a Salomon Bros. report which pointed out that for 1982 "The weak economy resulted in the first important year-to-year decline in kilowatt-hour sales and peak demand since W.W. II."[2]

Within Con Edison's service area the data since 1973 quite clearly show the effects of a significant contraction in electricity demand. The company's total number of customers dropped by 100,000; residential annual kilowatt-hour, (kwh), use per customer dropped as well by over 5%, from 3,609 kwh in 1973 to 3,427 in 1983 (up from 3,199 kwh in 1982); the company's total annual electric sales to all customers dropped by over 5.8 billion Kwhs (5,858,967,000). At the same time the price of its oil climbed almost 450% from an average $5.59 per barrel in 1973 to about $30.46 per barrel in 1983, (down from $35.42 in 1981), and the cost of its natural gas soared over 650% from .53¢ per thousand cubic feet to $4.02 in 1983.[3] All this limited the growth of the company's construction program --a utility's historic mechanism for growth-- and the 1983 national data reveals that of all the investor owned utilities in the U.S. Con Edison is second only to Hawaiian Electric in having the lowest construction capital spending program as a percentage of its current net plant.[4] (Not necessarily in absolute dollars.)

The paradox I refer to on the preceding page is revealed when we compare these facts with the company's financial position today and its financial situation ten years ago. The facts seem to defy economic logic. Indeed, what economic philosophy can explain a company's assets increasing 68%, (from $5,551,970,000 in 1973 to $8,448,582,000 in 1983), its net income rising 177%, (from $207,707,000 in 1973 to $575,836,000 in 1983), and the market value of its stock climbing from $3.75 per share to $50.00 per share (where it split), within a ten year period during which its market contracted by 100,000, ratepayers, sales to remaining customers drops over 5%, (over 12% between 1973 and 1982) and

its operating expenses rose overall by 230%, (from $1,451,282,000 in 1973 to $4,786,822,000 in 1983)? How assets and net income increase while its market contracted would be a paradox for any company to explain. It is especially so for an electric utility operating in a regulated market and the Public Utility Holding Company Act of 1935 legally in the way of it developing alternative sources of revenues. In fact, not only has Con Edison managed this extraordinary financial feat, but it has done so while rising out of what it claimed to be the ashes of virtual bankruptcy.

In 1973-1974 Con Edison claimed it was in financial trouble after it could manage to put together only $150 million of a $550 million financing package of bonds, preferred stock and common equity, which it needed to complete two delayed, unfinished and controversial powerplants. The company's receivables, (outstanding accounts listed among the assets of a business), were up to $367 million, with an average life of 57 days as opposed to the 30 day normal. Management argued that this threatened to exhaust the $150 million line of bank credit the company then had available to it. Furthermore, as fuel costs rose in response to the OPEC oil embargo, the drop in electricity demand growth began --and continues to this day-- and the company's revenue growth slowed significantly and unexpectedly. (Revenue growth slowed, it was not "reduced") Finally, with construction expenditures for only the three years 1972, 1973 and 1974 totalling $1,702,558,000, (the company estimated its five year, 1973-1978, construction budget at over $3 billion), and long-term debt obligations as of 1974 totalling well over $3 billion, the company was so financially overextended that it

considered selling its gas business[5] and passed a common stock dividend in April, 1974. The latter event was an unheard of act by a utility until then and sent shock waves throughout the industry, causing utility bond ratings nationally to plummet. Moreover, Con Edison sold two long delayed and controversial powerplants to the New York State Power Authority. In the latter activity, (which read "public takeover" to many utility managers nationwide), Indian Point number 3 (a nuclear fueled, 1 thousand megawatt plant) and Astoria number 6 (an oil and gas fired, 880 megawatt plant), were sold, still uncompleted, for $612 million. Virtually overnight the company's stock dropped from the mid-20s to 6. By the end of 1974 the company's stock had a market price of $3.75.[6] That was ten years ago.

Today the headlines read quite differently and announce: "Con Edison Wins Wall St. Praise"[7], "Nobody, but nobody, in the utility business has Con Edison's cash position"[8], "Con Edison Looks Lovable at Last"[9], "Con Ed's Profit Up By 51.9%"[10], and "Con Edison Net Rose 19% in 4th Quarter; Payout is Boosted."[11]

In June, 1982 the company's stock split at $50.00 and in January, 1983 The First Boston Company rated Con Edison the most financially flexible electric utility in the nation.[12] The company's earnings cover interest on debt six times while the industry average is less than two times,[13] ranking the company in first place nationally as it concerns this important financial indicator. In 1982 E.F. Hutton recommended the purchase of Con Edison stock for the following reasons:

"1. The shares provide a current yield of 10.8%...

"2. The company has compiled one of the highest rates of

> dividend growth within the electric utility industry in recent years (over 10% compounded during the last three years), yet dividend payout of latest earnings is still a relatively conservative 63%, compared with the industry average of 80%.
>
> "3. We see the potential for continued dividend growth at about a 10% annual rate for a number of years to come...
>
> "4. The 10.8% current yield together with expected annual dividend growth of 10% provides the potential for a total return of better than 20% for some years to come...
>
> "5. ...Con Edison ended 1980 with $285 million of temporary cash investments [up to $347 million in 1981 and $333.2 million in 1982[14]] plus an additional $185 million of funds set aside for the upcoming retirement of bonds and preferred stocks. This total self-reliance compares favorably with the average electric utility which was able to generate perhaps 35% of its capital needs internally and has been forced to come to market frequently with bonds and stock. Because of its absence from the bond market during this period, the highest coupon on a Con Edison outstanding issue is only 9 3/8% [compared with a 1980 industry average of 14.%[15]][16]

Perhaps the phrase which most succinctly sums up Con Edison's present financial position is the one offered by a vice president in charge of utility analysis at Kidder, Peabody, Inc. When asked What is Con Edison's major financial weakness? "Excess cash" was his reply.[17]

How has Con Edison managed this financial comeback? And what does the company's financial health mean for the economic health of the city in which the company operates? For a company within the most capital intensive industry in the U.S. --electric utilities consume fully 20% of all capital available in the U.S. for investment, more than autos, petroleum and chemicals combined[18]-- the record rise in interest rates over the past ten economically troubled years would seem enough by itself to prolong the company's financial difficulty. For example,

despite a construction budget considered relatively low when compared to the rest of this capital intensive industry, during the ten years from 1974 to 1983 Con Edison did finance over $3.5 billion, ($3,576,862,000) for its capital construction program.[19] And it did so without issuing any new securities or debt of any kind since 1974. It has taken no new bank loans since 1975. Furthermore, the record rise in interest rates --which so greatly contributed to the nation's economic woes and placed pressure on many other utilities-- was accompanied in Con Edison's case by a contracting market, negative growth in electricity demand and conservation retrofitting throughout N.Y.C. in response to skyrocketing fuel prices. Despite this, Con Edison not only recovered, but thrives. The company has made a few stockholders very rich: Cede and Co., the Wall St. firm amalgamating and disguising Con Edison's top stockholders (see Chapter One, Part V), held 4,511,121 shares in 1973, the year before the collapse of the company's stock, and 6,254,668 shares, 72% more, in 1975, the year after the collapse. Today Cede and Co. holds 49,645,673 shares.[20]

In 1981 Con Edison reflected in its Annual Report on its financial comeback and affirmed that

> "the bold steps the Company took during the 1970s had been the right ones to restore financial health... The New York Times reported in November [1981] where Con Edison is today--at least as Wall St. sees it-- is at the end of a tranformation. It is a recovery that many Wall St. analysts contend has become a model for electric utilities around the nation."[21]

The "bold steps" restoring Con Edison's financial health began with the company's decision to omit a common stock quarterly dividend payment

in April, 1974. For a utility to pass a dividend is, or has always been thought to be until Con Edison did it, a major financial calamity. According to Leonard S. Hyman, Vice-President and head of the Utility Research Group at Merrill Lynch, Con Edison's omission of its common stock dividend in April, 1974 was one of the "five major events [that] shook the foundations of the industry... [It] hit the industry with the impact of a wrecking ball. It smashed the keystone of faith for investment in utilities: that the dividend is safe and will be paid."[21.1]

Utilities, state regulated, with fixed rates of return and guaranteed earnings, have historically been viewed as the safest investments. Utility stocks have been sentimentally, (though inappropriately), characterized as stocks for orphans and widows. More descriptively, they were seen as low or no-risk stocks for those seeking a steady and guaranteed dividend on their investment. The stability of the steadily increasing and virtually state guaranteed dividend payout offered by utility stock has historically been viewed as its major attraction. In the past, one would not expect to get rich off utility investments, but neither would one expect to lose any investment. Regulated monopolies are, after all, monopolies nonetheless, and they provide an essential service to a virtually capitive market: no one can do without electricity. Elaborating on the sanctity of his company's stocks, Chairman of the Board Charles Luce wrote in 1970 that as far as Con Edison's stockholders were concerned, "We shall take any... action necessary to attain a fair rate of return for the investors in our Company when revenues are not sufficient to cover increasing costs."[22]

In April, 1974 Con Edison decided not to pay its .45¢ per share quarterly dividend on its common stock. As a direct consequence of Con Edison's action, the senior debt rating of 40 electric utilities throughout the nation were downgraded in 1974 and 1975 alone. This was more downgrading of utility ratings than had taken place in the ten years prior to Con Edison's action combined.[23] Given the significance of a utility passing a dividend, a number of immediate questions arise concerning Con Ed's decision to do so.

First, the year before, during and all those since the company took the dramatic step of passing its dividend have been profitable years for Con Edison. In 1973 the company's net income after accounting for preferred stock dividends (that is, after all obligations are paid), was $163.5 million. In 1974 --the year of the OPEC oil embargo-- its net income after accounting for preferred stock dividends was over $150 million, and in 1975 its net was over $207 million.[24] (For tax purposes, however, the company declared losses in 1973 and 1974.[25]) Yet, the dividend the company dramatically decided not to pay would have cost the company only about $27,696,586.[26] Thus, given the severe implications and repercussions associated with a utility passing a dividend, it is puzzling why Con Edison chose to avoid paying $28 million in common equity dividends on a net income six times that amount. According to former NYPSC Chair Alfred Kahn, the company's decision to omit a dividend payment was so significant it led those in the financial community to believe that "Con Ed was out of the equity market forever."[27] Indeed, couldn't the company have lowered the dividend, or used some of the $150 million in bank credit it then had

available to it and in that way avoid the dramatic effect of passing a dividend. Interestingly, Con Edison quickly re-established its dividend. Although the company had not raised its dividend since 1965, within one year after the 1974 event the company was paying .60¢ per share, two-thirds of what it was paying before April, 1974. By 1976 it had almost fully re-established its dividend to its pre-1974 level, and in 1977 the company was paying $1.00 dividend, .10¢ more than the 1974 level.[28]

Commenting on the company's 1974 financial situation at the time it chose to omit the common stock dividend, Mr. John Thornton, Con Edison's Chief Financial Officer and Vice-Chairman of the Board, noted that Con Edison was getting "very good backing from the banks. The banks supported us even before the PASNY [powerplants purchase] deal... Citibank, Chase, Morgan, Manufacturers Hanover, Chemical... There were 13 or 15 in all. All the major New York banks supported us."[29] Other records support Mr. Thornton's statement regarding the banking support Con Edison was getting at the time the company chose to pass its dividend. According to the company's 1973 Annual Report to Stockholders, "At December, 31, 1973, the Company... had arranged with 13 banks for lines of credit amounting to $150,000,000... at... prime rates."

Thus, with net income available for common stock exceeding $150 million, and an additional $150 million available to the company from "supportive" banks, Con Edison took the financially dramatic step of omitting a $28 million common stock dividend.

The passing of the dividend was one of the key variables persuading

the N.Y.S. legislature to authorize PASNY's $612 million purchase of Indian Point #3 and Astoria #6, two long-delayed, costly and controversial plants the company was then constructing. The Constitution of the State of New York prohibits the state from giving or loaning money to a private corporation. According to Article VII, Section 8 of the State's Constitution

> "The money of the state shall not be given or loaned to or in aid of any private corporation or association, or private undertaking; nor shall the credit of the stage be given or loaned to or in aid of any individual, or public or private corporation or association, or private undertaking..."

To avoid violating the State's Constitution, the legislature authorized the Power Authority of the State of New York (PASNY) to purchase the plants. Though clearly a use of the state's credit (via a state agency) to aid a private corporation, the legislation authorized a "purchase," not a loan or a gift.

According to vice-Chairman Thornton, the decision to pass the dividend had nothing to do with pressuring the legislature into buying the plants. It "had nothing to do with political pressure. The decision was based on cash needs and our need to conserve cash... I was in at the Board meetings at the time and the Board agonized over the decision. You have to remember the threatening climate at the time, we thought we might have to pass another dividend... We were still in shock and uncertain over the Arab embargo. In retrospect it may not look as if it were necessary, but at the time the financial and market climate looked very threatening indeed."[30]

Mr. Thornton's views on the dividend omission are contradicted by

two former NYPSC Chairmen. According to Alfred Kahn, who Chaired the PSC in 1974, Con Edison's decision to omit the dividend "cannot be explained financially."[31] He characterized Mr. Thornton's explanation as "improbable."

Joseph Swidler was Chair of the NYPSC immediately preceding Alfred Kahn. He was at the head of the PSC when Con Edison omitted its dividend payment. (It was upon Mr. Swidler's suggestion that Governor Nelson Rockefeller nominated Kahn for the Chairmanship.) Before Chairing the PSC Swidler was a lawyer working for Con Edison. He was recruited to the company by Chairman Luce and when Rockefeller offered him the PSC Chair, Luce urged him not to take it. Since leaving the PSC Mr. Swidler's law firm has worked for Con Edison in rate case proceedings. According to Swidler, he was one of the architects of the PASNY powerplant purchase/State bailout plan.

Swidler's interpretation of the dividend omission is as follows: although Con Edison was a financially weak company in 1974, there was more to the company's decision to pass the dividend than conservation of capital: "I think it was a judgment call. The Board, Luce, thought that unless Con Ed did something like that it would not get the legislative recognition it needed. They could have cut the dividend instead of omitting it. You can't explain it financially. The legislature is like a donkey, and Con Ed had to hit it over the head to dramatize its plight... The timing of the bailout was fortuitous and cut back Con Ed's obligations." The drawback of the plan, according to Swidler, was that Con Ed "had to give up one of the Crown Jewels, Indian Point Three."[32]

Today, every one of America's financially troubled electric

utilities is doing whatever it can to avoid selling assets or omitting a dividend payment. They are cutting costs, reducing maintenance, laying off workers and slowing down construction schedules. In fact, the Long Island Lighting Company until 1984 was borrowing long-term in order to keep paying dividends. It also laid off 714 workers.

Con Edison undertook no cost cutting measures to avoid passing the dividend. What it did was unload two delayed, costly and contentious powerplants to N.Y.S.'s Power Authority. In fact, not only did Con Edison not undertake cost cutting measures but one month before the company omitted paying the $28 million dividend it initiated construction of a $457 million pumped-storage hydro-electric powerplant in Cornwall, N.Y., at Storm King Mountain.[33] This project was also long-delayed and first introduced ten years earlier as "the world's largest" project of its kind. Why would a utility in dire economic straights begin constructing a $457 million generating station at the same time it was considering omitting a common stock dividend and negotiating to sell two other yet-to-be-completed powerplants? Such a question lends credence to the ten civil actions initiated by stockholders against the company immediately following the dividend omission. These suits charged the company with misrepresentation in its May, 1973 common stock offering, which indicated the company was a sound investment.

It seems fair to question whether financial considerations were the sole dynamic involved in causing the company to skip a dividend. Financial considerations alone did not seem to warrant it. It seems reasonable to suggest that the company was seeking to draw attention

away from or towards other issues with which it was then confronted. Above all, it sold two costly and controversial powerplants. Additionally, in September, 1973, seven months before Con Edison began publicizing its financial woes, the Atomic Energy Commission ruled that Con Edison must construct a costly closed cycle cooling system at its Indian Point plant. Such a system was supposed to prevent the release of hot water into the Hudson which was causing "massive" fish kills. Earlier, the state had requested from Con Edison or fined it millions of dollars in damages for those fish kills. The company was furthermore suffering from a confluence of other political economic problems. In 1974 the Nuclear Regulatory Commission (NRC) was conducting investigations into the design of Indian Point 1, paying special attention to its absence of an emergency core cooling system. (On October 14, 1974 Indian Point 1 was permanently closed because of this deficiency.) At the same time, the company was embroiled in its costly, decade old Storm King dispute with environmentalists, which subjected the company to more than its usual share of bad public relations. As Science magazine put it at the time:

> "The project [Storm King] soon gave rise to one of the earliest and most noted cases in environmental law... [I]n the... litigation, what was involved was a government agency suddenly disturbed in its complacent relationship with a client industry by citizens using available substantive and administrative law to demand consideration of environmental values."[34]

Finally, at the time Con Edison passed its dividend the Public Service Commission was in the process of considering a request by the company for the largest rate hike ever requested by an electric utility in

N.Y.S. until then, a 25%, $422,601,000 rise.[35] Apparently, these were a number of issues the company could hope to settle to its advantage if it overdramatized its financial woes.

In persuading the state to purchase two costly, unfinished and unnecessary powerplants, (after all, did it have to sell them? The company could have slowed construction, and thus spread the costs out over a longer time period or made a request to include them as construction work in progress, as Public Service Law allows, based on the fact that it was experiencing financial difficulty), the company was infused with over $600 million in cash and relieved from the $350 million bill required to complete the plants. The deal also gave the company a "net gain for tax purposes" of $125 million.[36] Also, if Con Edison was hoping that passing a dividend would help it get its huge rate request, it was right. The commission gave the company $338,639,500 or 80.1% of its original request. In fact, within only 2½ years following April 1974, the Public Service Commission granted Con Edison over one-half billion dollars in rate hikes.[37] (See Chart Two, p.95) Passing a dividend could have also been seen by company officials as a means of softening the attitudes of environmental officials or judges who were hearing cases against the company. As then Chairman Charles Luce said "Some of these [environmental issues] could be tragic decisions for the people of N.Y.C. And frankly, I don't know what Con Edison would do" if forced to comply.[38]

An apparently logical question which emerges from the state bailout of Con Edison is why didn't the state buy the company's entire stock or at least demand a greater say in the management of the company? Article

VIII, Section I of the N.Y.S. Constitution states that "No county, city, town, village or school district shall... become directly or indirectly the owner of stock in, or bonds of, any private corporation..." However, no Constitutional statute similarly limits the state from establishing an agency (like PASNY) from doing so. Included in the legislature's bill authorizing the $612 million PASNY purchase of the powerplants was another authorization for an additional $300 million to cover the costs of completing construction.[39] This brought the total aid to Con Edison to at least $913 million, not counting cost overruns associated with completing the two plants. However, at the end of 1973 the market price for Con Edison stock was $9.38 a share, and there were 117,124,000 shares outstanding.[40] Thus, the company's entire common equity could have been purchased for $1,098,623,123 or $185,623,120 above the price it paid for just two powerplants. Similarly, at the end of 1974 the market price for Con Edison stock was $3.75, and there were 123,096,000 outstanding.[41] The company's entire stock could have been bought then for $461,610,000, just about one-half the price the state paid for two powerplants. As part of the bailout plan, New York received no reciprocal economic guarantees from the company, nor did the NYPSC derive additional regulatory authority over management.

Nor did the powerplants purchased by the State Power Authority turn out to be in the best interests of that important state agency. According to a May 1984 legislative report titled The Future of the Power Authority of the State of New York, "the Legislature's directive to PASNY to bail out Con Edison in 1975 [sic] was a mistake that harmed the Authority's finances, and, ultimately, its credit; a non-operating,

or poorly operating, nuclear power plant, such as Indian Pont Three, and an expensive oil-fired plant, such as Astoria Six, are economic losers in today's energy world."

II. Temporary Cash Investments: State Cash and Unregulated Earnings

Having summarized some questions which surround the bailout/powerplant purchase, I now turn to explain how it laid the foundation for Con Edison's decade of prosperity. First, it relieved the company of some massive construction expenditures which were growing annually. Con Edison's construction expenditures grew from $688,545,000 in 1971 to $844,476,000 in 1972 and $985,406,000 in 1973.[42] In 1975, however, the year after the bailout/powerplant purchase, Con Edison's construction budget was cut by two-thirds from where it stood in 1973, to $324,428,000.[43] Thus, the company was freed from the burden of having to complete costly powerplants at precisely the time its markets were contracting and electricity demand began to drop. Furthermore, the state supplied the company with over $600 million with no strings attached. This cash came at an especially good time for Con Edison, just as interest rates were beginning their historic climb into the double digits. Con Edison found itself in a perfect position to become an active investor in short term paper and make millions. In fact, by the turn of the decade Con Edison was making more, in percentage terms, from its paper investments (pre-tax) than from supplying electricity. (See Chart One, p.91) The following discussion records the historic interest rate climb for the years 1975-1983, by detailing how Con Edison

invested its state supplied cash in these rates. (All the investments mentioned are one-year, unless otherwise noted.)

In 1975 Con Edison had not yet been able to use the state cash soon to be available, and it had only $45,000,000 invested in Commercial Paper at 5.25%.[44] By the end of 1976, however, the company was investing the cash supplied to it by the state, and it held 166,650,000 shares of one-year U.S. Treasury Bills at 5.3/4- 5.9%; 12,350,000 shares of Federal National Mortgage Association Debebture Coupons at 5.93%; 5,000,000 shares of two-year Federal Land Banks at 5.55%; 102,000,000 shares of two-year U.S. Treasury Notes at 5- 6.69%; 55,000,000 shares of two-year Commercial Paper at 4.5-6% and; 40,000,000 Certificates of Deposits, (CDs), at 4.5/8- 6.3/4%. These short-term investments amounted to $378,667,173 at the end of 1976, and earned the company $19,645,989, including revenue from disposition of Bank Acceptances. Interestingly, despite the aid just supplied to the company by the state in the preceding year, Con Edison decreased its investment in New York State Bonds by 60,000 shares, (to 877,000), sold all its New York City Bonds, (125,000 shares), and decreased its holdings in N.Y.C. Corp. stock by 213,400 shares (to 151,600). (In 1974, the year of the bailout and one year before Con Edison began divesting its N.Y.C. and N.Y.S. stock, the company wrote in its Annual Report to Stockholders "We have continued our efforts to be a good corporate citizen and to improve the community in which we operate." In 1975, as the company was divesting its N.Y.C. securities during the city's fiscal crisis, Con Edison's Annual Report to Stockholders proclaimed "We Live Here, too." The Report went on to note Con Edison's "involvement in the community"

including a consumer workshop on "how to read your meter.") These latter state and city investments yielded the company $31,161 in revenue.

In 1977 we notice an intensification of the dramatic interest rate climb reflecting the stagflation which would infect the national economy until the 1981-1983 recession. Speculating on inflation and the rise in interest rates, all but two of Con Edison's temporary cash investments were in one-year notes. By the end of the year the company held 90,000,000 shares of U.S. Treasury Bills at 6.06- 6.485%; 20,000,000 shares of Federal Home Loan Bank Discount Notes at 6.2- 6.5%; 40,000,000 shares in Fixed Term Deposits at 6.875- 7.125%; 27,500,000 shares of Commercial Paper at 6.25- 6.53%; 244,000,000 C.D.s at 6.35- 7.2%; 9,292,790 Bankers Acceptances at 6.45- 6.58% and; 66,770,000 Repurchase Agreements. (The company still held the Federal Land Banks and U.S. Treasury Notes which it purchased in 1976.) These short term investments amounted to $450,054,547 at the end of the year and generated $26,785,685 in revenue, an increase of approximately 36% from the preceding year. The New York City economy was ailing in 1977 and the company further decreased its holdings of N.Y.C. Corp. stock by 80,300 shares, (to 71,300), and again decreased its holdings of N.Y.S. Bonds by 87,000 shares, (to 790,000). These latter investments generated $23,220 for the company.

The lowest interest rate the company realized in 1978 on its temporary cash investments was 6.25%, (on U.S. Treasury Notes), which was approximately equal to the highest rate available to it only two years earlier. It held 60,000,000 shares of Fixed Term Deposits at

8.56- 12.25%; 21,300,000 shares of Commercial Paper at 10.05- 10.8%; 60,727,212 shares of Bankers Acceptances at 8.05- 10.88%; 28,000,000 Repurchase Agreements at 10- 10.4% and; 172,000,000 C.D.s at 8.3- 11.27%. These investments generated $30,819,879 in revenues for the company, 14.1% more than the preceding year. At the same time, Con Edison once again decreased its holdings in N.Y.C. Corp. stock, this time by 69,000 shares, (leaving it with only 2,000 shares), and also decreased its holdings of N.Y.S. Bonds by 286,000 shares, (to 504,000). These latter investments generated $26,937 in revenue for the company.

In 1979 the company held 70,000,000 shares in Fixed Term Deposits at 10.6- 15.3%; 116,145,000 shares of Commercial Paper at 9.4- 14.95%; 25,000,000 shares of Bankers Acceptances at 9.45- 14%; 36,860,000 Repurchase Agreements at 12.875- 13% and; 27,000,000 C.D.s at 7.5- 13.37%. Interestingly, the company settled for rates more characteristic of 1977 than 1979 in the following investments: 4,259,000 GMAC Notes at 5- 7.75%; 6,000,000 Citicorp Notes at 6.625%; and 450,000 First Boston Notes at 6.75%. (These latter lower-interest investments deserve investigating, but may have to do with what New York Attorney General Robert Abrams claimed to be the tendency of New York utilities, including Con Edison, to place "funds in no-interest [or low interest] accounts in banks where there is dual membership as utility director and bank director."[45] That is, these are possibly due to corporate interlocks since no financial logic can explain them.) In any event, Con Edison's short term investments for 1979 yielded $34,715,037 in revenue, or 11.3% more than 1978. The company also completely liquidated itself of all its 504,000 N.Y.S. Bonds, and again decreased

its N.Y.C. Corp. stock by 1,700 shares, (to 300).

Interest rates continued to rise throughout 1980, and Con Edison was again able to invest in these high rates and profit handsomely. The Company held 55,450,961 shares of Fixed Term Deposits at 10.75- 21.625%; 50,000,000 shares of Commercial Paper at 12.5%- 20.75%; 66,500,000 shares of Bankers Acceptances at 10.9- 20.6%; 20,000,000 Repurchase Agreements at 18.25% and; 56,500,000 C.D.s at 7.5- 20.1%. The company still held its unexplainably low 3,259,000 GMAC Notes at 5%, but did sell its 6.6% Citicorp Notes and 6.75% First Boston Notes. With N.Y.C.'s financial emergency behind it, Con Edison made a small purchase of 20,700 shares in N.Y.C. Corp. stock --which it was to completely liquidate in the next year-- and 105,000 shares in N.Y.S. Bonds. The company's temporary cash investments for 1980 generated $36,098,340, 4% more than the previous year.

In 1981 interest rates began their slight decline in response to the emerging 1981-1983 recession. Nevertheless, because of an increase in short term investments, the company was able to generate 9.3% more in 1981 than in 1980 from these paper investments. It held 56,000,000 shares of Fixed Term Deposits at 12.6875- 16.0625%; 51,000,000 shares of Commercial Paper at 11.20- 15.102%; 75,100,000 Bankers Acceptances at 10.95- 14.55%; 45,600,000 Repurchase Agreements at 12.875- 13.25%; 69,000,000 C.D.s at 12.- 18.25%; 20,000,000 Federal National Mortgage Association Discount Notes, (absent from the company's portfolio since 1977), at 10.75- 10.9%; 5,000,000 U.S. Treasury Bills at 11.149% and 23,000,000 Federal Home Loan Mortgage Discount Notes at 11.- 12.45%. These investments generated $39,779,905 in revenue which was, as

mentioned above, 9.3% greater than the preceding year. Also, Con Edison liquidated all the N.Y.C. Corp. stock which it purchased only the year before, but purchased an additional 19,000 N.Y.S. Bonds, bringing its total holdings of the latter investment to 124,000 shares.

In 1982 interest rates continued their slight decline. The company held 2,000,000 Federal Farm Credit Bank Notes at 12.5%; 34,000,000 Federal Home Loan Bank Discount Notes at 8.1- 9.55%; 53,800,000 Fixed Term Deposits at 9.- 16.5%; 96,000,000 shares of Commercial Paper at 8.4- 9.25%; 8,000,000 shares of Bankers Acceptances at 8.5- 8.55%; 19,835,000 Repurchase Agreements at 10.25- 14.25%; 40,000,000 C.D.s at 8.55- 9.25%; 32,000,000 U.S. Treasury Bills at 8.1- 9.25%; 30,000,000 Federal Home Loan Mortgage Discount Notes at 7.9- 9.55% and; 22,000,000 Federal Farm Credit Bank Discount Noters at 8.125- 8.375%. Con Edison generated $42,392,783 on these investments, an increase of 6.2% from 1981. The company made no new investments whatsoever in either N.Y.C. or N.Y.S. Thus, by the end of 1982, Con Edison's investment in N.Y.C. stocks or bonds was zero, and it held 124,000 N.Y.S. Bonds.

At the end of 1983 Con Edison's short term investments included 10 million shares of Bearer Notes at 9.15- 9.19%; 17,700,000 Federal Farm Credit Bank Notes at 8.8- 10.13%; 28,700,000 Federal Home Loan Bank Discount Notes at 8.73- 9.6%; 78,000,000 shares of Fixed Term Deposits at 7.5- 10.63%; 88,000,000 shares of Commercial Paper at 9- 10%; 157,500,000 Bankers Acceptances at 8.94- 9.98%; 30,000,000 Certificates of Deposit at 9.27- 9.82%; 83,000,000 Federal National Mortgage Association Discount Notes at 8.75- 9.55%; 45,000,000 U.S. Treasury Bills at 8.9- 9.48% and; 47,000,000 Federal Home Loan Mortgage Discount

Notes at 9.25- 9.5%. All these investments generated $32,407,588 in interest and dividend income, an increase of 9.3% from the preceding year, though the actual Book Costs of these investments rose from $333.3 million to $590 million, an increase of 76%. The company made $655,196 worth of investments in New York City securities, and decreased its ownership of New York State Bonds by 39,000 shares, now holding 85,000 shares.

The preceeding discussion explains, in part, how Con Edison has been able to go, according to Forbes, from "Riches to Rags and Back to Riches Again."[46] With the money provided to it by the State's bailout/power-plant purchase, Con Edison was able to make temporary cash investments in high interest paper, which generated $262,758,436 in additional pre-tax interest and dividend income between 1975 and 1983, (not counting the increases in the Book Costs associated with the principal investments.) These investments are not regulated by the NYPSC. However, if they were, one could only speculate as to whether the Commission would or should require a greater investment by the company into N.Y.C. or N.Y.S. stocks and bonds. Nevertheless, it is quite interesting that immediately following the state's bailout of the company, Con Edison reduced and ultimately liquidated all its investments in N.Y.C. paper and now maintains only the most marginal investment in N.Y.S. Bonds. As Chart One points out, the yearly revenue generated from Con Edison's temporary cash investments exceeded, as a pre-tax percentage, the return allowed on Con Edison's rate base for all the years since the bailout/powerplant purchase except 1977, 1978 and 1983.

According to the Investor Responsibility Research Center, "Higher inflation and interest rates affected all businesses during the 1970s, of course, but electric utilities were particularly vulnerable to these economic forces..."[47] Thus, while the utility industry in general was justifying its financial woes as in large part resulting from record interest rates, and as the federal government imposed Draconian measures on social spending to bring these rates down, Con Edison used cash supplied to it by the state to invest in these high rates and generate over $230 million between 1975 and 1982.

CHART ONE
Con Edison's Temporary Cash Investments
1974-1983

Year	Total Book Cost of T.C.I.s at Beginning of Year A	Total Book Cost of T.C.I.s at End of Year B	Yearly Average of T.C.I.s (Col A + Col B divided by 2)* C	Revenues Generated in Interest and dividends D	Percentage Return on Investment E	Rate of Return on Rate Base** F
1983	$333,255,,335	$589,685,961	$461,470,588	$ 32,407,588	7%	10.92%
1982	$347,419,150	$333,255,335	$340,337,243	$ 42,392,783	12.5%	10.92%
1981	$284,986,461	$347,419,150	$316,202,806	$ 39,779,905	12.6%	10.12%
1980	$313,816,928	$284,986,461	$299,401,695	$ 36,098,340	12.1%	10.12%
1979	$354,110,339	$313,816,928	$333,963,634	$ 34,715,037	10.4%	8.73%
1978	$450,054,547	$354,110,339	$402,082,443	$ 30,819,879	7.7%	8.73%
1977	$376,643,507	$450,054,547	$413,349,027	$ 26,785,685	6.5%	8.91%
1976	$ 47,511,479	$376,643,507	$212,077,493	$ 19,645,989	9.3%	8.91%
1975	zero	$ 47,511,479	not an accurate measure	$113,230,000	not an accurate measure	8.86%
1974	none	none	--	--	--	8.79%
Total				$230,350,848		

* This column attempts to account for fluctuations during the year between column A and B.
** Approximated for each year due to mid-year rate increases

Sources: Con Edison, Annual Report to Public Service Commission, p.26,26-1, for years 1974-1983
Con Edison, 10 Year Financial and Operating Statistics, 1972-1982, p.17

III. Market Insulation: Declining Sales and Increasing Rates

> "With consumer frustration often focused on utility bills, consumers have been demanding more say in regulatory proceedings. Consumer representatives try to establish their interests as being equal in importance to the utility's financial integrity; and consumers have been successful in achieving this equality in some states...
> "Reduced levels of sales growth will slow earnings growth unless regulators allow utilities to raise rates... In short, with reduced levels of sales growth in the future, utilities will become increasingly dependent upon fair and reasonable treatment at the hands of the PUCs... Some risks that once were acceptable for investors to bear alone must now be spread over a larger universe. Risk must be managed."
>
> The Electric Utility Industry: Rethinking Regulation
> Lehman Brothers Kuhn Loeb Research, February, 1983

The state's dominant role in Con Edison's financial comeback, and financing in general, was much more than as one-time vehicle for cash. Ignoring Con Edison's state supplied cash reserves and short-term investments, Con Edisons's net income more than doubled between 1973 and 1983, increasing 177% from $207,707,000 to $575,836,000.[48] Despite the lower electrical demand afflicting this consumption dependent company throughout the past decade, Con Ed's revenue per residential kwh consumed increased over 200% from 5.2¢ in 1973 to 15.9¢ in 1983, (it increased almost 300% from 1970[49]). While the average Con Edison monthly residential electric bill for 1981, (500 kwh consumption), was $58.82, the national average was $32.61, making Con Edison rates easily the highest in the nation.[50] By 1984 Con Edison's average monthly residential bill rose to $75.47.[51] The 200% increase in Con Ed's revenue per residential kwh consumed compares unfavorably with the

approximately 125% rise in the Consumer and Producer Price Indexes during those same years.[52] This belies the claim made by the company in its 1982 Annual Report to Stockholders that "Because the Company's rates are regulated, it cannot readily increase the prices charged to its customers to keep pace with inflation."[53] In fact, over the past decade the NYPSC has allowed Con Edison's rates to rise approximately 70% higher than the corresponding rise in the Consumer Price Index. These facts point out that the dramatic rise in the overall value of Con Edison, (total assets, valued at original cost, increased 52% from $5.6 billion in 1973 to $8.5 billion in 1983, and the market price for the company's stock rose from $3.75 in 1974 to $50 in 1983), resulted not only from a transfusion of state cash, but from an accommodating and politically insulated P.S.C. Indeed, the NYPSC has granted Con Edison at least one electric rate increase each year between 1970 and 1983, with the sole exception being 1978. In the ten years between 1974 and 1983, the P.S.C. has granted over $1.5 billion in electric rate increases to Con Ed. (This figure is in addition to fuel cost increases, as these are passed on automatically by virtue of the fuel adjustment clause, discussed in Chapter One.) The average amount granted by the P.S.C. for major rate cases since 1970, as a percentage of Con Edison's initial request, is almost 70% (68.6%). If we include all rate increase requests for those years the percentage increases to 81.5%. Compare this with national figures which show that the average amount granted by state P.U.C.s as a percentage of initial request, for the years until 1982, to be a more moderate 59.6%.[54] Thus, the NYPSC, has been an essential vehicle by which the state has aided Con Edison

and insulated it from unfavorable market forces. As annual residential electricity use has declined 12%, from a peak in 1973 of 3,609 kwh to 3,199 kwh in 1982, the cost per residential kwh increased 200%, seventy percent higher than the rise in the Consumer Price Index. To a considerable extent Con Edison has been insulated from adverse market conditions and its rates have increased in compensation for its contracting market and reduced sales. (See Chapter One, Part IV) Thus, from the perspective of the ratepayer, conservation efforts have led to higher rates: despite a 12% reduction in demand, the average annual residential electric bill increased from $187.02 in 1973 to $490.17 in 1982,[55] and increased to $544.91 in 1983. (though in 1983 residential kwh consumption slightly increased.) As a percentage, these rates have considerably outpaced the inflation rate, which is notable for a company not constructing new powerplants, since soaring construction costs account for the majority of other utilities' rate hikes. (See Chart Two)

CHART TWO
Con Edison's Rate Requests
1970-1983

Year Granted*	Amount Requested by Con Ed	Amount Granted by P.S.C.	Amount NYPSC Granted as % of Request	National Ave. Amount Granted as % of Requests	Annual Revenue per Residential Ratepayer	Annual Kwhr Use per Resident Ratepayer	Cost per Resdtl kwhr
1983	$ 48,418,000#	$ 48,418,000#	100%	not	not	not	15.9¢
	$491,700,000+	$267,035,000	54.3%	available	available	available	
1982	$ 9,100,000+	$ 9,100,000	100%	52%	$490.17	3,199	15.3¢
1981	$ 62,500,000#	$ 62,500,000	100%	70%	$479.69	3,231	14.8¢
1980	$449,500,000+	$449,500,000	100%	55%	$397.28	3,346	11.9¢
1979	$229,466,100+	$158,049,300	68.9%	50%	$342.43	3,255	10.5¢
	$ 12,343,900#	$ 12,343,900	100%				
1978				54%	$312.62	3,255	9.6¢
1977	$249,800,000+	$ 45,400,000	18.2%				
	$ 19,938,000#	$ 19,938,000	100%	59%	$316.47	3,300	9.6¢
1976	$497,071,800+	$118,523,400	23.8%				
	$ 21,271,300#	$ 21,271,300	100%	61%	$290.93	3,314	8.8¢
1975	$ 31,082,500#	$ 31,082,500	100%	78%	$270.65	3,300	8.2¢
1974	$422,601,000+	$338,639,500	80.1%	49%	$248.06	3,248	7.6¢
1973	$181,031,900+	$178,802,000	98.8%	51%	$187.02	3,609	5.2¢
1972	$142,763,200+	$ 94,668,500	66.3%	71%	$154.96	3,367	4.6¢
1971	$ 4,400,100#	$ 4,400,100	100%	60%	$140.52	3,355	4.2¢
1970	$119,387,600+	$ 90,371,500	75.7%				
	$ 11,688,400#	$ 11,688,400	100%	66%	$127,44	3,180	3.9¢
Totals	$2,955,645,800	$1,913,313,400	81.5%	59.6%			
		Major rate cases only	68.6%				
		Tax cases only	100%				

* Request may have occurred in preceding year
\+ Indicates Major rate case
\# Indicates tax pass along request

Sources: N.Y.P.S.C. Rate Increases Requested and Granted, 1967-1980 (unpublished)
Edison Electric Institute, Rate Approval, 1970-1982
Con Edison, 10 year financial and operating statistics, 1962-72, 1972-82

IV. CAPITAL STRUCTURE

To a significant extent Con Edison's rates are high due to the policy the company has been maintaining with regards to its capital structure. As I pointed out in Chapter One, Part V, capital structure indicates how money is invested in a company. Some utility investors purchase bonds, (also known as debt), others purchase preferred stock, and others purchase common stock, (also known as equity). Common stock, historically viewed as holding the greatest risks, has the highest costs associated with it. Con Edison has an abnormally high equity ratio within its capital structure of 54%. According to testimony presented to the P.S.C. in behalf of N.Y.C., Con Edison's abnormal capital structure (heavy equity ratio) unnecessarily cost ratepayers approximately $200 million for 1982 alone.[56]

At present, Con Edison is internally financed, that is, the company does not depend on any external sources of capital other than that generated from ratepayers.[57] The company has not issued new securities since 1974, and not taken a bank loan since 1975. In the capital intensive utility industry this is virtually a unique phenomenon, attesting to Con Edison's financial strength. As of 1983, the investor owned electric utility industry was generating internally only about 40% of the funds they required, (approximately $27 billion annually). Thus, given the enormous amounts of capital involved, one-third of all long-term corporate financing in the U.S., as well as approximately 50% of all new common stock issued is devoted to electric utilities.[58] According to the Investor Responsibility Research Center, this

> "extensive need for external financing by electric utilities, coupled with rising interest rates and lagging earnings growth, has resulted in severe erosion of the industry's earnings coverage and credit ratings. For the industry overall, interest coverage ratios on Mortgage Bonds--the ratio of earnings to fixed charges--deteriorated fairly steadily from the 1960s--when they were generally in the 4.0 times to 6.0 times range--to about 2.5 times in 1980."[59]

Compare this with Con Edison: the company is not dependent on external financing, other than rates, and its mortgage indenture basis interest coverage was 7.16 times in 1983, 5.84 times in 1982 and 5.17 times in 1981.[60]

Bonds, the most secured investment, are the least risky type of investment[61] and carry the lowest service costs for the company. Furthermore, interest payments by the company on bond debt are often tax deductable. Presently, Con Edison's costliest long-term debt carry a 9.3/8% interest rate on a maturation date of September 15, 2000.[62] Although such a rate is not insignificant, when compared with other forms of financing, specifically common equity building, it is comparatively low. Con Edison's long-term bond debt coming due throughout the 1980s carry very low rates which vary between 2.3/4% and 4%[63]. This is less than one-half the industry average of 8.4% for 1980.[64] Conversely, the costs associated with common equity financing or retaining earnings, (these are the same costs, and are considered stockholder funds), are much greater. According to testimony before the NYPSC in August, 1982, presented by Dr. Caroline Smith in behalf of N.Y.C.:

> "Common equity capital is the most expensive of the capital categories included in capital structure

> which finances a utility's rate base. The reasons for this are that (1) common equity is costed at a marginal or current [market] rate whereas senior capital bonds is costed at embedded [fixed by contract] rates; and (2) the common equity return receives an income tax allowance...and thus has a larger pre-tax revenue requirement than debt capital. Thus a higher common equity ratio will result in a revenue requirement that is substantially higher than would be the case if the common equity ratio were low."[65]

Thus, from a perspective of keeping financing costs low --and therefore rates low since the costs associated with financing are in the rate base-- it would seem to make sense for Con Edison to look to finance with lower cost debt rather than higher priced equity. In fact, Con Edison has been following a financing strategy exactly the opposite. According to Dr. Smith, "The appropriate capital structure is the combination of permanent or long-term capital sources (common equity, preferred stock, and long-term debt) which minimizes the cost of capital. Economists refer to this cost-minimizing capital structure as the efficient or optimal capital structure."[66] Instead of financing by debt and lowering, or at least maintaining its common equity as a percentage of its total capitalization, Con Edison has been increasing its equity ratio and, therefore, the costs associated with its financing. The company has been maintaining an unusually low payout ratio, which has increased the common equity account on the company's balance sheet. For example, while the utility industry national average payout ratio was 75% in 1982, Con Edison's payout was 47.3%, less than what it was in 1978, 1979, and 1980. In 1983 it was reduced again to 45.2%. This was the third lowest payout ratio of any investor owned electric utility in the U.S., behind General Public Utilities --owner of

Three Mile Island-- with a payout ratio of zero, and Missouri Public Service, with a payout ratio of 41%.[67] Such a low payout ratio is difficult for the industry's financial leader to justify. While the equity ratio for all investor owned utilities ranged from 34.6% in 1975 to 38% in 1981, and 41% in 1984, Con Edison's equity ratio dramatically increased from 34.6% in 1974 to 51.5% in 1982 and 56% in 1984. (See Chart Four) At the same time, the costs associated with Con Edison's common equity rose to almost twice the national average.[68] According to Administrative Law Judge Robinson in Con Edison rate case 27744, "It is indeed difficult to discern any beneficial effect of the [company's] very substantial equity ratio increase."[69] He suggested to the P.S.C. that the company's equity ratio be reduced. The Commission, however, did not accept Judge Robinson's recommendation. Furthermore, on October 21, 1982, the City of New York, The New York City Energy Office, the Office of the Comptroller and the Department of Consumer Affairs, in a rare showing of unity filed a joint brief to the NYPSC, (Case No. 28211), arguing that Con Edison's capital structure be changed as it adversely affects the City's economy and unjustifiably keeps rates high and growing. To quote at length they argued that:

> "Readily available and reasonably priced energy is basic to the economic health of the City. Con Edison supplies approximately 50% of the energy consumed by end users in N.Y.C., and as a result the City's energy costs are inextricably tied to Con Edison rates. Unfortunately, Con Edison rates are among the most expensive in the country; any additional increase will cause some businesses to leave the City, place additional hardships on the poor, and reduce disposable income for all citizens...
>
> "Con Edison has abdicated its responsibility as a public utility to strive for the lowest

> possible rates which would still enable the Company to provide safe and adequate service and earn a reasonable profit... Con Edison management decisions have unnecessarily cost customers hundreds of millions of dollars.
>
> "Con Edison, in spite of repeated substantive criticisms concerning its abnormally high and unnecessary equity position (e.g. Cases 27353, 27744) has continued to follow a policy which allows its equity ratio to increase further...
>
> "Con Edison cannot justify its failure to act to reduce its equity ratio or surplus capacity. Its failure demonstrates that for Con Edison the cost to its customers is not a high priority. The [N.Y.S. Public Service] Commission has the right and the obligation to correct the Company's failure...
>
> "The capital structure engineered by Con Edison is costly, inefficient and unjustifiable...
>
> "Con Edison, considering its size, amount of internally generated funds, and financing ability, has now and for the reasonable forecasting horizon, low financing requirements. Therefore, in terms of substantive quantifiable analysis, [Con Edison] unquestionably requires less equity than the typical company in the industry. This means that the benefits of an equity-rich capital structure, to the extent that there are any, are not as important to Con Edison and its customers as they may be to other electric utilities in the State of New York...
>
> "Con Edison has been unable to show that the capital structure it has chosen is cost efficient... there is a complete lack of plausable reasons for maintaining the abnormally high equity ratio...
>
> "As long as the Commission refrains from correcting the Company's equity ratio and allows a return in rates on the full equity base without regard to its size, Con Edison has no incentive to use debt financing which costs customers from 9-17% rather than common equity which costs customers 30%."[70]

The City argued for a 37.5% equity ratio to conform with the industry average. Despite such emphatic arguments by this coalition --and even

P.S.C. staff-- to lower Con Edison's equity ratio in behalf of N.Y.C. and ratepayers, the Commission allowed Con Edison to increase its equity ratio to approximately 50%. In allowing Con Edison its 50% equity ratio the P.S.C. demonstrated its understanding of exactly how much higher are the financing costs associated with equity: as the chart below indicates, to cover the costs of financing equity the P.S.C. allowed Con Edison a 15.2% return, more than twice the 6.5% it allowed the company for covering the financing costs of existing bonds, and 33% more than the 10% it allowed the company for covering new long-term debt, (which was never issued).

CHART THREE
Comparative Financing Costs Authorized by P.S.C.
for Con Edison's Capital Structure

Financing Category	Financing Costs Allowed by P.S.C.	Percent of Capital Structure (Recouped)
Equity	15.2%	51%
Preferred Stock	5%	9%
Existing Long-Term Debt	6.5%	35%
*Anticipated Long-Term Debt	10%	4%
Customer Deposits	11%	1.1%

Source: Case 28211, p.84.

* Never issued.

CHART FOUR
Con Edison's Capital Structure
1972-1983

Year	Con Ed Common Equity as %	National Ave. Common Equity as %	Con Ed Preferred Stock as %	Con Ed Long-term Debt as %	National Ave. Long-term Debt as %	Con Ed Payout Ratio	National Ave. Payout Ratio
1983-4	56%	41%	9%	35%	48%	48%	68%
1982	51.5%	N.A.	10.1%	38.4%	N.A.	47.3%	75%
1981	48.9%	38%	10.7%	40.4%	50.2%	46%	75%
1980	46%	37.3%	11.1%	42.9%	50.4%	57.5%	80%
1979	44.1%	37.1%	11.4%	44.5%	50.4%	54.2%	80%
1978	42.7%	37.1%	11.9%	45.4%	50.5%	51.2%	
1977	41.1%	36.4%	12.4%	46.5%	51.1%	44.1%	
1976	39.1%	35.5%	12.8%	48.1%	51.9%	38.3%	
1975	36.4%	34.6%	12.8%	50.8%	52.7%	32.1%	
1974	34.6%		13%	52.4%		31.7%	
1973	34.7%		13.6%	51.7%		76.9%	
1972	34.1%		15%	50.9%		87.4%	

Sources: Con Edison, 10 Year Financial and Operating Statistics, 1972-1982.
Salomon Brothers Inc., Electric Utility Common Stock Market Data, January 3, 1983 and January 2, 1985.
Lehman Brothers Kuhn Loeb Research, The Electric Utility Industry: Rethinking Regulation City of New York Before the Public Service Commission, Case No. 28211, Testimony and Accompanying Exhibits of Dr. Caroline M. Smith, August, 1982.

In deferrring to the request of Con Edison management --unsubstantiated by any cost-benefit analysis-- the Commission noted Administrative Law Judge Furlong's concern with "the effect of a substantial decrease in that [equity] ratio 'on the investment community's perception of Con Edison's financial soundness'... any change in that equity ratio 'could not help but affect investor confidence seriously... [in spite of] the immediate disadvantage to ratepayers of the higher specific revenue requirement flowing from the thick equity ratio."[71] Con Edison has a triple "A" Moody's rating. (cf. discussion in Chapter One, Part III.)

In fact, Con Edison made no cost-benefit analysis supporting the reasonableness of its costly equity ratio. According to Mr. Harvey Arnett, the P.S.C. staff member who undertook the Commission's analysis of Con Edison's equity ratio and determined it should be significantly reduced, "When we asked him [vice-Chairman John Thornton, during the last rate case] how Con Ed justifies its equity ratio we were simply told 'Because it is better for ratepayers.' When we asked for proof, he just kept repeating 'Because it is.' It was riduculous."[72] According to the City, Con Edison's "capital structure is simply unsupportable by any attempt to quantify cost and benefits from the customers point of view, Con Edison has attempted to justify its position by unsupported assertions."[73] Indeed, this was acknowledged by the Commission when, in handling down its decision favorable to Con Edison, it said that "in future cases... the company should be prepared to justify, on the basis of benefits to ratepayers, any equity ratio in excess of the range we identified in our generic financing opinion"[74] and which allowed the

company its 50%+ equity ratio. Thus, despite the fact that the N.Y.C. Energy Office, N.Y.C., the Comptroller, the Consumer Protection Board, the Town of Greenburgh & the Real Estate Owners Committee on Electric Rates --a group not known for its anti-capital positions-- presented cost-benefit analysis emphasizing the economic needs of N.Y.C. and comparative industry-wide data, the P.S.C. nevertheless deferred to the Con Edison position. The City, throughout its brief, referred to Con Edison's position with terms such as "fundamentally flawed", "simply incorrect", "erroneous figure" and "obviously wrong." Examples include Con Edison representatives using an individual maximum tax bracket of 70% in order to show that after-tax bond yields for company bondholders was very low. The company used only individual tax brackets to try to prove its point, when 90% of Con Edison bonds are held by institutions which have much lower effective tax rates. Only under cross examination by the City did the company admit to this.[75] Furthermore, while a Con Edison witness criticized the City's methodology in determining the company's future dividend growth, under cross examination he admitted that Standard and Poors and Salomon Bros. Inc. both use the same assumptions and methodology.[76] Since 1982 Con Edison has continued to increase its equity ratio, which is now 56% of the company's capital structure. According to testimony in behalf of N.Y.C., Con Edison could reduce its equity ratio by repurchasing its common shares and retiring them, or by modifing its dividend reinvestment and stock ownership plans to avoid creating new equity capital.[77] With the acquiesence of the P.S.C., Con Edison chose to do neither.

V. Accumulating Taxes

"Con Edison is New York City's and Westchester County's largest taxpayer. 'Tax collector' would be a better way to describe the company's tax role. We did not ask for, nor do we enjoy the role... You may be unaware that a tax on Con Edison is really a tax on you."

Con Edison
Customer News, February, 1983

"You make the appropriate suggestion: 'If the Government needs more money, let it raise taxes openly and permit the citizenry to judge.'"

John V. Thornton,
Senior Executive Vice President,
Con Edison
Letter to the Editor,
New York Times, March 19, 1983

"Abrams Sues P.S.C. and Con Edison on Phantom Taxes."

Press Release
New York Department of Law
October 21, 1981

So far I have noted three factors which have enabled Con Edison to re-establish its financial strength despite adverse market conditions. These are the N.Y.S. legislature's $612 million bailout/and PASNY's powerplant purchase, P.S.C. approval of over $1.5 billion in major Con Edison rate increases, and the P.S.C. allowing Con Edison to maintain a capital structure which increases the generation of revenues. These all encourage and facilitate Con Edison's capital formation. Another mechanism which the state uses to facilitate the company's generation of revenue concerns the tax laws which are uniquely applied to the electric utility industry. Con Edison normalizes its taxes. (See Chapter One, Part II.)

Con Edison complains about paying taxes. It continually points out that state and local taxes account for a large part of ratepayer's bills, which indeed they do. But as James O'Connor has pointed out, "the supply of social capital [expenditures required for profitable capital accumulation] creates the demand for social expenses [projects and services required to maintain social harmony]."[78] Perhaps this is why Con Edison pays such a high tax relative to the rest of the utility industry. In fact, as the company points out, Con Edison merely collects state and local taxes from ratepayers, passing on any increased tax assessment charged to it. The P.S.C. has never denied Con Edison the right to pass on 100% of every tax assessment against the company. What this amounts to is that Con Edison operates virtually tax free in N.Y. As the company itself points out, "You may be unaware that a tax on Con Edison is really a tax on you."[79] More accurately, it is really a tax on Con Edison which the company passes on to you. New Yorkers not only pay for their share of services through personal income taxes and sales taxes, but they pay Con Edison's share of taxes as well in their electric bills. With P.S.C. approval, Con Edison has passed on every penny in revenue, property or sales taxes ever assessed against it.

As it concerns federal taxes, Con Edison has been doing more than merely playing tax collector: it has been a <u>taxkeeper</u>. This "right" conferred on Con Edison to be a taxkeeper results from the process of tax "normalization," which I discussed in Chapter One, and will again summarize here. Before 1954 depreciation of utility property, which affects a utility's taxable income, could only be accounted for by a

"straight line" method. According to this procedure, the cost of an investment is divided by the number of years it is expected to be in service. The resulting quotient is then deducted each year from the company's taxable income, until the plant is out of service and its total cost recovered. For example, if a plant cost $50 million and is expected to be in service ten years, $5 million is depreciated each year. Since the rates consumers pay are based on the value of the property in a utility's rate base, and since the value of the rate base is lowered by depreciation, the amount depreciated each year lowers rates. In 1954 a revenue Act was passed which fundamentally changed the method by which utilities could account for depreciation. It also altered the method by which ratepayers recover depreciation benefits. The Act allows utilities to account for depreciation according to an accelerated method. "Accelerated depreciation" is a non-straight line method of depreciation and increases its investment incentive. (Depreciation, as I discussed in Chapter One, encourages a faster tax write off of property and its replacement. It is a basically indiscriminate investment incentive.) Accelerated depreciation entitles the company to charge high depreciation expenses against its taxable income during the early service life of its equipment, and charge less during the equipment's later service life. Thus, during the early service years of its equipment the utility pays lower taxes. During the later years taxes are supposed to be increased to compensate for the earlier, larger tax write-off. The added investment incentive comes from allowing taxes to be deferred to the plant's later life.

Utilities can <u>choose</u> to account for accelerated depreciation in

either of two ways. The first way, favored by consumer advocates, is known as "flow-through" accounting. Under "flow-through" accounting, the increased tax savings which utilities realize in the early years of accelerated depreciation are immediately passed on to consumers. The tax actually paid by a utility is the only amount it can recover from ratepayers. The "flow-through" method contrasts significantly with "normalized" accounting, the method more frequently used by utilities in accounting for accelerated depreciation. It is the latter method of accelerated depreciation which allows Con Edison (and utilities around the nation) to keep taxes paid to it by ratepayers who are under the assumption that the "federal taxes" portion of their bill is headed to the government.

Under normalized accounting the utility recovers from ratepayers the taxes it would have been liable for had it calculated depreciation according to the 'straight-line' method, while it actually pays taxes according to accelerated depreciation. Thus, while the utulity is actually paying lower taxes in the early years of accelerated depreciation, ratepayers are paying a higher tax rate according to a hypothetically calculated straight-line depreciation. The difference between the tax-rate consumers are charged and the rate the utility actually pays is placed in an accumulated deferred income tax account. Theoretically, during the later years of accelerated depreciation, the utility will pass on to the government the accumulated deferred income taxes.[80]

In fact, Con Edison has been accumulating more taxes than it has been passing on to the federal government and the data indicates that

there is no sign of the company soon passing on the taxes we pay to it. The following chart shows the dramatic increase of Con Edison's accumulated deferred income taxes over the past ten years.

CHART FIVE
Con Edison's Accumulated Deferred Income Taxes
(Accounts 281, 282, 283 and 190 only)

1973	$ 12,365,627
1974	$ 62,986,866
1975	$112,486,866
1976	$149,739,866
1977	$164,569,865
1978	$195,739,865
1979	$263,027,167
1980	$342,397,167
1981	$377,459,167
1982	$448,484,000
1983	$459,216,000

Source: Con Edison, Annual Report to P.S.C., p.56, 42b. For years indicated.

Clearly Con Edison's tax account bears out consumer's criticism that the company is collecting and keeping more taxes than it passes on to the government: as the data indicates, between 1973 and 1983 Con Edison collected from ratepayers $459,216,000, almost one-half billion dollars, in federal income taxes which it never passed on to the government. This is an increase in the size of this account of over 3600%. Interestingly, this occurred in spite of a drop in Con Edison's construction budget from $685,623,000 in 1973 to $390,946,000 in 1983.

On October 21, 1981 Attorney General Robert Abrams, the Simpson St. Development Association, (a non-profit organization serving low income people in the South Bronx), and the Fort Greene Senior Citizens Council of Brooklyn, filed a lawsuit against the NYPSC and Con Edison, which sought to stop the utility from collecting these so-called "phantom taxes" from ratepayers. It also sought to force the company to rebate $350 million, the approximate amount collected until 1980. The Attorney General said Con Edison misrepresented these funds as federal tax liabilities, when in fact the money was never to be paid to the government. His suit claimed that this was a fictitious tax liability which violates the State's public service law because it allows Con Edison to set rates on the basis of non-existent costs. According to Abrams, the P.S.C. "abused its discretion" in allowing Con Edison to collect and retain these phantom taxes. Furthermore, the Attorney General stated that

> "The escalating cost of utility service has forced many low and moderate income people to cut back on food and other basic necessities just to pay their utility bills. It is unconscionable that the P.S.C. allows utilities to disguise part of every New Yorker's gas and electricity... bills as taxes, when in fact these taxes are not actually paid by the companies.
>
> "The inequity arises because utilities are allowed to collect millions of dollars from ratepayers because they claim that these tax liabilities are only deferred, not cancelled altogether, and that they will eventually have to make these payments to the I.R.S. Even if that were true, and there is no evidence that it is, we argue that this practice unlawfully discriminates against current ratepayers, because it requires them to provide revenue for tax expenses which do not relate to their own years of service use.

> "Moreover, the allowance of phantom tax overcharges is highly inflationary, and amounts to an interest free loan from customers to the company."[81]

The case went to the Appellate Courts and Attorney General Abrams lost his suit. (See footnote 80 for Con Edison's position on tax normalization.) Similarly, Con Edison also normalized and thus withheld from crediting ratepayers $240,990,000 in investment tax credits accumulated between 1975 and 1983. (See Chart Six)

CHART SIX
Investment Tax Credits Received by Con Edison
But Not Passed to Ratepayers

1975	$ 24,710,000
1976	$ 92,730,000
1977	$109,190,000
1978	$132,860,000
1979	$150,200,000
1980	$167,400,000
1981	$196,200,000
1982	$225,280,000
1983	$240,990,000

Source: Con Edison, Annual Report to P.S.C., p.54A, (Account 255). For years indicated.

Together, the taxes normalized by the company, as well as I.T.C.s not passed on to consumers amount, for the years mentioned, to $700,206,000, almost three-quarters of a billion dollars. Apparently Con Edison believes this amount of accumulated deferred taxes is not enough. According to its 1980 Annual Report to Stockholders, "the

Company is advocating [before the P.S.C.] a revised approach to original cost depreciation which would permit more of the depreciation to be recognized in earlier years..."[82] In fact, President Reagan's Economic Recovery Tax Act of 1981 did allow for an increase in accelerated depreciation. As O'Connor points out below, the fact that Con Edison collects taxes it doesn't pay to the government and receives tax benefits it doesn't pass on to consumers is a direct reason why its state and local taxes --which the company so bitterly complains about-- are so high.

> "In addition to forcing local governments to raise taxes on workers and small businesses, monopoly capital has won [tax] concessions... A contradiction thus exists between the expanded fiscal burdens heaped on the state and localities and their ability to meet this burden. The contradiction reflects conflicts within the existing power structure--monopoly capital is relatively powerful at the federal level whereas competitive capital is comparatively strong at the state and local levels. In effect, monopoly capital forces small business and labor to underwrite the expansion of the monopoly sector but does not increase their ability to finance social capital and social expense outlays.
>
> "Consequently, state and local governments must raise taxes and introduce new taxes... Moreover, since the 1950s, the federal government has had to channel more and more tax revenues to the states, and state governments in turn have had to allocate more funds to local governments."[83]

Con Edison and the multi-billion dollar electric utility industry are keeping a greater and greater share of taxes supposedly directed to the federal government. As shown above, the amount of accumulated taxes deferred, (not including I.T.C.s), grew over 3600% in just ten years for Con Edison alone. Since electric utilities nationally represent one-fifth of all investment made in the U.S., the cumulative impact of

these companies keeping taxes is enormous. Thus, the federal government is being deprived of enormous amounts of tax revenue --although paid by ratepayers-- and must therefore increase its deficit spending, cutback on aid to states and localities and/or cutback on necessary social services. As O'Connor pointed out, states and localities then raise taxes, or institute new taxes to make-up the difference and fund increasingly necessary social expenses. However, when taxed by the state or the city Con Edison has, with P.S.C. approval, simply passed on these tax increases to consumers who have been paying their taxes all along. Other citizens move away, as do some businesses, some take second jobs, enter the underground untaxable economy or simply face increasing impoverishment. In the meantime, Con Edison's revenues soar. Thus, the complaint made by Con Edison that its state and local taxes are too high is to a considerable extent the consequence of the company, and the rest of this giant industry, keeping federal taxes and their passing on as well, the resulting higher state and local taxes.

Not only is Con Edison charging consumers federal taxes which it keeps, but the company is reaping another tax revenue windfall by claiming to the P.S.C., during rate requests, that it will be paying the 46% corporate income tax rate after deductions. In an interview I conducted with the senior P.S.C. accountant in charge of overseeing Con Edison, I asked: "In rate cases [does] the P.S.C. assume that Con Edison will be paying the 46% corporate tax rate after all taxes to be flowed through have been accounted for?" His response was "Yes. After deductions have been accounted for."[84] However, according to calculations determining the percentage Con Edison has paid in taxes on

its net income, after deductions, the company has only paid taxes amounting to above 30% in three years since 1972.[85] As Chart Seven indicates, Con Edison has never paid 46% in taxes even after deductions have been accounted for --even less before deductions-- despite the fact that consumers are charged for that higher tax rate.

CHART SEVEN

Percentage of Federal Income Taxes Paid by Con Edison on Net Income

	Net Income	Federal Taxes Paid	% of Income Paid as Taxes
1972	$148,127,302	$ (796,000)	0
1973	$207,706,754	$ (744,000)	0
1974	$194,504,735	$ 100,000	0005%
1975	$251,383,602	$ 49,664	0002%
1976	$301,411,789	$ 6,789,662	023%
1977	$323,573,258	$110,116,410	34%
1978	$309,568,612	$ 64,193,614	21%
1979	$323,912,009	$ 55,122,862	17%
1980	$334,676,341	$ 41,501,217	12%
1981	$448,026,013	$169,155,005	38%
1982	$492,551,100	$197,415,475	40%
1983	$575,835,793		

Source: See footnote 85

VI. Capital Productivity

> "Over the past three decades, Con Edison decreased its work force from 27,222 employees to 22,282, an 18% reduction... Better productivity is one way to describe it."
>
> Con Edison Customer News
> April/May, 1983

"In order to measure system efficiency we have examined

> the best rate of generating facilities, the load factor at which the companies operated in the most recent calendar year as well as the capacity factor, and the sales per non-construction employee... Con Edison, which had been in 75th [last] place at the time of our 1980 analysis, remains in 75th [last] place in our 1981 update."
>
> First Boston Corporation
> Electric Utility Quality Comparisons

Electricity production is enormously capital intensive. Con Edison provides a good example of this. Although the company's capital outlays for construction were significantly cut due to its declining market and financial problems, by the measures generally used to assess capital intensity Con Edison is still much more capital intensive than other industrial sectors in our economy. The amount of aid the state has provided to this company over the past ten years is an indication of this. Basically, there are two ways by which capital intensity can be measured, although most economists concern themselves almost exclusively with only one of them.

Most popular is the capital/output or capital/earnings ratio which measures the amount of capital needed to produce a unit of output or, more specifically, a dollar of revenue. Less widely studied is the capital/labor ratio which measures the amount of employees per dollar invested.

It is worth repeating the summary of data supplied by the Energy Information Administration and quoted at the beginning of this disseratation:

> "As of 1980, investor owned electric utilities had invested an average of $3.07 in utility plant to support each $1 in annual revenue from kilowatt-hour sales. In contrast, in 1980 General Motors

> had a fixed asset investment of .16¢ per dollar of sales revenue and Exxon had an investment in plant, property and equipment of .31¢ per dollar of sales revenue."[87]

In testimony to its being allowed the highest rates in the country, Con Edison has a lower capital/output ratio than the average for the rest of the industry, generating each revenue dollar with less plant investment. While the industry average in 1980 was $3.07 invested for each dollar generated, for Con Edison the figure was $1.91.[88] Thus, although this measure is staggeringly high relative to other industrial sectors within our economy --an investment eleven times the amount needed by G.M.-- the company seems to have outperformed the rest of the industry as it concerns this important measure. A closer look however, suggests we should not be too sanguine.

This relatively favorable capital/output ratio can result from two phenomena, either by themselves or in combination. First, it can result from a higher return to the company per unit of output, i.e. higher rates. Second, it can result from the company operating more efficiently than the rest of the industry. As is well known, Con Edison maintains the highest rates in the nation. While the national average cost per residential kwh in 1982 was about 6¢, it was 15.3¢ for Con Edison ratepayers. The U.S. average monthly electric bill in 1981 was $32.61, while for Con Edison ratepayers it was $58.82, (500 kwh consumption rising to over $75 per month by 1983).[89] (The New England average was $43.76 and the Middle Atlantic average was $43.91)[90] Thus, high rates had a lot to do with Con Edison generating more revenue per investment.

On the other hand, system efficiency is not applicable to Con Edison. In fact, the Electric Utility Quality Comparisons published by the First Boston Corporation which, as mentioned earlier, rated Con Edison as the nation's strongest electric utility in terms of financial criteria, rated the company absolutely last in terms of system efficiency.[91]

Efficiencies of electric utility systems are important because utilities consume enormous amounts of energy as they convert primary energy forms into electricity. In 1981, for example, electric utilities consumed 82% of all the coal used in the U.S., (approximately 600 million tons[92]). Collectively, the industry consumed exactly one-third of all primary energy used in 1981, up from 25% ten years earlier.[93] According to Con Edison, it is "by far" the largest consumer of fuel in NYC and Westchester. However, highlighting the significance of being an inefficient utility is the fact that in thermodynamic terms electricity production and distribution is inherently inefficient: it takes three BTUs of primary energy, e.g. coal, oil or gas, to produce one BTU of electricity. Another way of saying this is that approximately 75% of all the energy present in the primary fuel is used or lost in converting and distributing electricity. That Con Edison rates last in terms of system efficiency, yet first in terms of overall financial strength and flexibility, is a telling statement about the economic logic of this capital intensive industry, the role of the state in supporting it, and perhaps American capitalism itself.

According to the First Boston Corporation Comparison, "In order to measure system efficiency, we have examined the heat rate of generating

facilities, the load factor at which the companies operated in the most recent calendar year as well as the capacity factor, and the sales per non-construction employee... Con Edison, which had been in 75th [last] place at the time of our 1980 analysis, remains in 75th [last] place in our 1981 update." Con Edison's heat rate* in 1981 was 11,503 BTU/Kwh, the second worst in the entire industry, behind Kansas Power and Light.[95] In 1982 it was 11,431, reflecting no significant change. In fact, Con Edison's heat rate reflects an efficiency level equal to a pre-1956 industry average of approximately 30 years ago.[96] The company's capacity factor --the ratio of the average load on a machine for a given period of time relative to the capacity of the machine-- was 28.6%, again the second worst in the industry, this time behind Philadelphia Electric. The company's load factor --the ratio of the average load in kilowatts supplied during a designated period to the peak or maximum load in kilowatts occurring in that period for the entire system-- was 48.7%, the fifth worst load factor in the nation (but not by much: the worst load factor in the nation was 46.9% of the Florida Progress Corp.[97]) Furthermore, not only are Con Edison's oil and gas generating plants among the most inefficient in the nation, but so is the company's nuclear powerplant. According to the N.R.C. the Indian Point units rate second only to the troubled Salem 1 nuclear powerplant as the most unreliable --capacity factor, power actually produced, shutdowns-- of all nuclear power plants in the Northeast.[98] (Indian Point #3, one of the two plants the state bought from Con Edison in 1973 is even worse than its brother #2, operating with a capacity factor of 47.%)

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*Heat rate, as defined in Chapter One, is a measure of powerplant efficiency, generally expressed in BTU per net kilowatthour produced. It is computed by dividing the total BTU content of fuel burned for electricity generation by the resulting net kilowatthour generation.

Over the past ten years N.Y. State has directly made available in various ways approximately $2.5 billion to Con Edison. One doubts whether any company would have a problem reestablishing financial solvency under such conditions. At the same time, however, the market demand for Con Edison's electricity has declined. In addition, the company is rated among the most inefficient utility in America, even by investment houses. Such is the logic of the "hypothetical marketplace" enforced by the NYPSC that it rewards an inefficient utility whose market is contracting with increased assets and soaring profits .

Notes

1. N.Y.S. Public Service Commission, Annual Report 1977. p.1

2. Salomon Bros., Inc., Industry Analysis: Electric Utility Monthly, January 3, 1983. p.7

3. Con Edison, Ten Year Financial and Operating Statistics, 1973-1983. p.14-15.

4. First Boston Research, Electric Utility Quality Comparisons, (New York: The First Boston Corporation, 1983) p.26.

5. Fortune, September, 1974. None of these figures have been adjusted for inflation.

6. Con Edison, Ten Year Statistics, op.cit., p.12.

7. New York Times, November 19, 1981.

8. Forbes, July 10, 1978.

9. Fortune, December 14, 1981.

10. New York Times, October 28, 1981.

11. Wall St. Journal, January 26, 1983.

12. Electric Utility Quality Comparisons, op.cit., p.12.

13. Con Edison, 10 Year Statistics, op.cit., p.13, Electric Utility Quality Comparisons, op.cit., p.17.

14. Con Edison, Annual Report to Public Service Commission, 1981 and 1982, p.26-27.

15. Fenn, op.cit., p.23.

16. William H. Haugan, E.F. Hutton Equity Research, Consolidated Edison Company of New York, Inc., May 27, 1981. p.1-2.

17. Interview with Norm Greenberg, vice president for Utility Analysis, Kidder Peabody Inc., October 11, 1982.

18. Fenn, op.cit., p.25.

19. Con Edison, Ten Year Statistics, op.cit., p.26, and Annual Report to the P.S.C., 1983, p.20.

20. Con Edison, Annual Report to P.S.C., p.6-7. For years mentioned.

21. Con Edison, Annual Report to Stockholders, 1981. p.2.

21.1 Leonard S. Hyman, America's Electric Utilities: Past, Present and Future, (Arlington, VA: Public Utilities Reports, Inc., 1985) pp.109,114.

22. Con Edison, Annual Report to Stockholders, 1970. p.2.

23. Data in Fenn, op.cit., p.38.

24. Con Edison, Ten Year Statistics, op.cit., p.6-7.

25. See Con Edison, Annual Report to P.S.C. Notes to Balance Sheet, op.cit. For years mentioned.

26. Calculations derived from Con Edison, Ten Year Statistics, op.cit., p.6-7, 12.

27. Interview with Alfred Kahn, December 20, 1983, Ithaca, New York.

28. Con Edison, Ten Year Statistics, p.12.

29. Interview with John Thornton, October 20, 1983, New York City.

30. Ibid.

31. Kahn interview, op.cit.

32. Interview with Joseph Swidler, February, 1984, Washington, D.C.

33. Con Edison, Annual Report to Stockholders, 1974.

34. Science, June 28, 1974. p.1353.

35. New York Public Service Commission, Rate Increases Requested and Granted: Major Utilities, 1967-1980. p.1. Unpublished mimeo.

36. Con Edison, Annual Report to Stockholders, 1975. p.19.

37. Ibid. The exact figure is $509,515,000.

38. Business Week, May 30, 1977. p.44.

39. P. DuBrul and J. Newfield, The Abuse of Power (New York: Penguin, 1977), p.287.

40. Con Edison, Ten Year Statistics, op.cit., p.12.

41. Ibid.

42. Ibid, 1971-1981, p.14-15.

43. Ibid.

44. This data, and all which follow regarding Con Edison's Temporary Cash Investments are from Con Edison, Annual Report to P.S.C., p.26, for years mentioned.

45. State of New York Public Service Commission, Petition by Robert Abrams Attorney General of the State of New York to Investigate and to Establish Rules Regarding Utilities' Conflicts of Interest and Certain Purchasing Practices, 1983. p.5.

46. Title of a July 10, 1978 Forbes article on Con Edison.

47. Fenn, op.cit., p.23.

48. Con Edison, Ten Year Statistics, op.cit., p.6-7.

49. Ibid, p.19.

50. Energy Information Administration/Department of Energy, Typical Electric Bills (Washington, D.C.; January, 1981). p.7.

51. Ibid, for 1984.

52. Bureau of Labor Statistics/Department of Labor.

53. Con Edison, Annual Report to Stockholders, 1982. p.41.

54. Derived from Edison Electric Institute data found in Fenn, op.cit., p.40.

55. Con Edison, Ten Year Statistics, op.cit. p.19.

56. State of New York Before the Public Service Commission, Testimony and Accompanying Exhibits of Dr. Caroline M. Smith, Consolidated Edison Company of New York, Case No. 28211, August, 1982, p.7.

57. During the week of June 7, 1983, however, Con Edison requested permission to issue $150 million in First Mortgage and Refunding Bonds, to be issued before December, 1984. (P.S.C. Case No. 28018. See weekly bulletin of P.S.C. for week of June 7, 1983.) Although Con Edison was granted such permission, John Thornton has indicated that the Company never intended to use the permission to actually issue these bonds. "Just because we got it doesn't mean we have to use it." The reason is as follows: The Bonds were to be issued so that the company could buy back some common stock and lower its high equity ratio, substituting instead long-term debt. However, the company does not wish to lower its equity-ratio and has since informed the P.S.C. of its intention not to issue the Bonds.

58. Lehman Brothers Kuhn Loeb Research, The Electric Utility Industry:

Rethinking Regulation, February, 1983, p.47.

59. Fenn, op.cit., p.42.

60. Con Edison, Ten Year Statistics, op.cit., p.13.

61. Recently, with the fluctuations in interest rates, the fixed nature of bonds have made them more "risky" insofar as they cannot adjust to higher or lower interest rates. For example, see testimony of Smith, op.cit., p.67 and passim.

62. Con Edison, Annual Report to P.S.C., op.cit., 1982, p.47A.

63. Ibid.

64. Edison Electric Institute data found in Fenn, op.cit., p.23.

65. Testimony of Smith, op.cit., p.22-23.

66. Testimony of Smith, op.cit., p.9-10.

67. Salomon Bros., Industry Analysis, op.cit. and Con Edison, Ten Year Statistics, op.cit. p.12.

68. Comparison of data found in Con Edison, Ten Year Statistics, op.cit., p.12-13 with Salomon Bros., Industry Analysis, op.cit., p.15-16.

69. New York Public Service Commission, Case No. 27744, Recommended Decision, p.260, 268.

70. State of New York Public Service Commission, Initial Brief on Behalf of The City of New York, Case No. 28211, Albert A. Natoli, Litigation Counsel, New York City Energy Office, October, 21, 1982. pp.2, 3, 5, 19, 20, 22, 23, 24.

71. State of New York Public Service Commission, Case No. 28211, Opinion No. 83-7, March 9, 1983. p.72.

72. Conversation with Harvey Arnet, N.Y.P.S.C., March, 1984, New York City.

73. State of New York Public Service Commission, Reply Brief on Behalf of The City of New York, Case No. 28211, Albert A. Natoli, Litigation Counsel, New York City Energy Office, November 3, 1982. p.14-15.

74. Opinion 83-7, op.cit., p.78.

75. Natoli Brief of November 3, 1982, op.cit., p.11-12.

76. Ibid.

77. Testimony of Smith, op.cit., p.12.

78. James O'Connor, The Fiscal Crisis of The State (New York: St. Martins, 1973) p.8.

79. Con Edison, "Customer News", February, 1983.

80. Following is Con Edison's public position on tax normalization. Before reprinting this public document, however, I would like the reader to bear in mind the following politico-literary points written by George Orwell;

> ["V]agueness and sheer incompetence is the most marked characteristic of modern English prose, and especially any kind of political writing... The whole tendency of modern prose is away from concreteness... [W]riting at its worst does not consist in picking out words for the sake of their meaning and inventing images in order to make their meaning clearer. It consists in gumming together long strips of words which have already been set in order by someone else, and making the results presentable by sheer humbug... A speaker who uses that kind of phraseology has gone some distance towards turning himself into a machine... And this reduced state of consciousness... is at any rate favorable to political conformity.
> "In our time, political speech and writing are largely the defence of the indefensible...
> "I have not here been considering the literary use of language, but merely language as an instrument for expressing and not concealing or preventing thought... [O]ne ought to recognize that the present political chaos is connected with the decay of language, and that one can probably bring about improvement by starting at the verbal end. If you simplify your English, you are freed from the worst follies of orthodoxy."
>
> From George Orwell, "Politics and the English Language" in A Collection of Essays New York: Harcourt Brace Jovanovich, 1946) p.159, 164, 166, 170.

With this in mind, I submit to the reader the "Con Edison Position on Tax Normalization", which was prepared for public consumption.

Con Edison Position on Tax Normalization

Normalization is Consistent with Basic Ratemaking Principles:

Under basic ratemaking principles, a utility is permitted to earn an amount sufficient to cover its cost of service; that is, operating expenses, and a reasonable return to its investors. An objective of the ratemaking process is to determine the cost of service associated with a specified period of time, called the "test year." The utility is then allowed the opportunity to recover that level of cost from customers during that period. Utility ratemaking is thus said to be "cost-based."

In the process of determining utility rates, transactions and events are generally accounted for in the periods in which these transactions and events occur, as is the usual practice under accrual accounting. Thus, sales revenues are recorded in the period in which customers are billed. In other cases, the ratemaking process will specifically determine that recovery of the cost be in a period other than when incurred. For example, the ratemaking process requires that certain costs incurred in relation to a company's construction program be capitalized and deferred for recovery purposes to future periods.

Like other costs, federal income taxes may be more properly chargeable to periods that match those periods when revenues and/or expenses are reflected in financial statements, rather than the periods in which the federal income taxes are actually paid by the utility. Under normalization, the amount of federal income tax expense included in a utility's cost of service is based upon the current period revenues and expenses reported for ratemaking purposes. Therefore, when overhead costs related to a construction project are capitalized in the current

period and are not recognized as expenses for book and ratemaking purposes, even though they are deducted from taxable income for tax purposes, the related federal income tax expense for the period should be treated in a similar fashion. The tax savings represented by the tax deductibility of such expenses for tax purposes should be recognized in the period in which the expense itself is recognized in the financial statements. Normalization accomplishes such a matching of revenues and expenses. Thus, under normalization, federal income tax expense is treated in the same manner as other operating expenses; that is, federal income taxes are recorded on a prepayment or deferral basis, as appropriate. Normalization of income taxes is thus cost-based in the same manner as other aspects of rate determination are cost-based.

In contrast, flowthrough accounting is cash-based rather than cost-based, and represents a departure from accrual accounting which is unique in cost of service determinations.

Normalization is Equitable to Customers:

A frequently enunciated ratemaking principle is that each generation of ratepayers should pay the costs--neither more nor less--associated with the providing of utility service to those customers. In other words, the ratemaking "matching principle" requires that costs be associated with the specific periods in which the associated services were provided by the utility. Revenues and other credits, including tax benefits, are also properly matched with the associated services. Tax normalization appropriately matches the tax effect of an expense--specifically, the benefit resulting from the tax deductibility of that expense--with the expense itself. Thus, the

ratepayers who bear the expense also receive the tax benefit. It is both unfair and unreasonable for ratepayers who do not bear a cost to receive the associated tax benefits, and thus to receive a windfall which is subsidized by those ratepayers who do bear the expense.

The inequity of flowthrough is demonstrated where overhead costs which were capitalized during construction are recovered from customers through depreciation charges. If tax benefits are flowed through to ratepayers during the construction period, customers receive a windfall benefit during that period, while later customers, who pay the overhead costs through higher depreciation charges, must pay the entire cost, without benefit of the off-setting tax deductions.

Normalization Lowers the Cost of Money:

There are several reasons why normalization lowers the utility's cost of capital and thereby reduces customer rates. First, normalization stabilizes the utility's cash flow by offsetting cash outflows in periods when payments are being made but the related expense recognition is deferred. The corresponding reduction in cash inflows occurs when the utility's cash needs are less, because the tax benefits are amortized to ratepayers in the periods in which the related expenses are recovered. This stabilizing influence on cash flows reduces the risk that the utility will not be able to meet its short-term financial obligations.

Second, because normalization increases the utility's cash flow at the time when cash is most needed, it reduces the need to raise capital from external sources. Higher and/or more frequent demands for debt and

equity financing will generally increase the cost of capital to the firm.

Third, under flowthrough, the utility's future rates will have to be increased to make up for lower current rates. There is a perception in the investment community, however, that regulatory commissions which require flowthrough commission may withhold adequate rate relief in the future. Indeed, the failure of a commission to follow standard principles in cost of service determinations, which would lead to normalization, provides investors with a valid basis for their concern.

Finally, under normalization, the utility's pre-tax interest coverage is improved, which reduces the cost of borrowing. All of these factors tend to enhance investors' expectations and lead to higher ratings of stock and bond issues by rating agencies. Not only is the cost of capital reduced as a result, but even more important, the field of investors from whom the company can borrow funds is expanded.

Normalization Promotes National Energy Goals:

We are all familiar with the need for conserving energy and for making the wisest possible use of the energy we consume in order to best allocate our scarce resources. Flowthrough accounting is, in a very real economic sense, contrary to our national energy goals because it artifically lowers the current cost of service in the early years of a facility's life. In fact, because so many book/tax timing differences are related to construction costs, the larger the construction program of a utility, the larger the flowthrough subsidy to current customers will be. Current ratepayers thus receive false price signals which encourage them not only to utilize more energy at present, but possibly

also to make commitments involving higher long-term energy use. These commitments will make it harder for them to cut back on energy use in the future when they will not only have the higher costs resulting from an even greater scarcity of energy resources, but will be unable to mitigate this burden through the application of the tax benefits which were rightfully theirs, but which have been used up by an earlier generation of ratepayers under a flowthrough policy. Under normalization, the charges to ratepayers during the construction period are the same as they would have been without the construction. Source: Con Edison.

81. News from Attorney General Robert Abrams, October 21, 1983.

82. Con Edison, Annual Report to Stockholders, 1980. p.20.

83. O'Connor, op.cit., p.211-212.

84. Interview with George Trahan, P.S.C. Senior Accountant, August 30, 1982.

85. To determine the percentage Con Edison pays on its net income I took the company's federal income tax accrual, listed on p.71B of its Annual Report to P.S.C., and subtracted the company's tax liability for non-utility income, (in order to purify for taxes only associated with its utility operations), listed on p.57 of its Annual Report to the P.S.C., and divided the result into the company's net income for federal income taxes, found, among other places, in its report to stockholders. This procedure was ascertained as correct by Mr. J. Mantarro, chief accountant of the P.S.C.

86. Fenn, op.cit.

87. Fenn, op.cit, p.26.

88. Derived from Con Edison, Ten Year Statistics, op.cit., p.4 and 6.

89. Energy Information Administration/Department of Energy, Typical Electric Bills (Washington, D.C., January, 1981) p.7.

90. Ibid. p.7.

91. Electric Utility Quality Comparisons, op.cit., p.25.

92. Fenn, op.cit., p.5.

93. Ibid. p.9.

94. Electric Utility Quality Comparisons, op.cit., p. 4 and 23.

95. Ibid. p.24, and Con Edison, Ten Year Statistics, op.cit., p.14-15.

96. Derived from comparison of data found on Con Edison, Ten Year Statistics, op.cit., p.14-15 and Fenn, op.cit., p.29.

97. Electric Utility Quality Comparisons. op.cit., p.24.

98. New York Times, June 6, 1983, p.6E.

Chapter Three

Dominating the Market: Con Edison's Energy Strategy for the Future

"Con Edison's customers continue to be burdened with an outdated energy policy which evolved during the 1960s as a response to a combination of economic, political and environmental objectives... Since the 1960s, however, basic changes have occurred in national energy policy... But in New York City and Westchester County, Con Edison's customers still bear the brunt of the outmoded local policy which each year adds hundreds of millions of dollars to utility bills."

Con Edison,
An Energy Strategy for The 80s

I. GROWING AND BUILDING

The previous chapter reviewed the financing of Con Edison during a transition decade which saw the company's market contract. With the assistance of the N.Y.S. legislature and the P.S.C., Con Edison was insulated from adverse market conditions and emerged from that difficult decade as a favorite on Wall St. This chapter will review and assess Con Edison's response to our society's heightened concern with the environment, new technological possibilities and the efficient use of natural resources.

To begin it will be useful to review the operational assumptions of our previous energy era. A brief journey through the company's Annual Reports to Stockholders issued during the 1960s and early 1970s will suffice to remind us of the paradigm guiding our earlier energy era. In addition, the 1960s and early 1970s were a birthing period for virtually all the challenges confronting electric utilities today. Therefore, reviewing Con Edison's Annual Reports will not only give us a perspective on the company's commitment to the "grow and build" strategy of the past, but a perspective as well on Con Edison's initial responses

to a changing political and economic environment.

Con Edison's promotional and advertising efforts and its past construction activities reveal its historic commitment to the earlier energy era of growing and building. Promotion and advertising is fundamental to all firms seeking growth. As pointed out in Chapter One, Part I, utilities argue that advertising helps attract investors, raise employee morale and inexpensively communicate with ratepayers. However, given the size of electric utilities and the importance of electricity in industrial societies, promotion by utilities has historically entailed wideranging political, economic and environmental impacts. In 1925 an industry representative, referring to utility advertising, stated that "public utility information [has]... done much to change and direct the economic thought and economic practice of the American people... [and] You can not affect economic thought without affecting political thought."[1] Con Edison's 1962 Annual Report bears out its own relation to this controversial issue:

> "Our mass promotional programs designed to bring about the increased use of electricity are directed chiefly at the residential customer. Emphasis on home lighting, the important base of our residential electric load was greatly intensified. Through cooperation with local builders' organizations, modern lighting systems of Con Edison design were installed in the model homes. Prospective buyers showed overwhelming preference for the well-lighted homes despite the somewhat greater cost.
>
> "To encourage increased use of electricity, we assist dealers in the sale of major appliances. Our campaigns in 1962 centered around dishwashers, refrigerator-freezers and clothes dryers. The three were linked together with the theme, 'Kitchen Three Step,' which promoted the concept of modernizing a kitchen one step at a time. Each appliance was pushed in turn over an eight week period, and sales... of all three appliances substantially exceeded... sales in... the comparable

1961 period.

> "The Company's Adequate Wiring Program, aimed at eliminating a major obstacle to increased usage of electricity, entered its tenth year... [and] Aggressive efforts to promote commercial and industrial rewiring continue... "[2]

Although the company viewed cool summers of the early 1960s as having "an adverse effect because of diminished air conditioning needs,"[3] the never ending construction taking place in N.Y.C. would always leave company officials optimistic. In 1962 the company was looking forward to the completion of Lefrak City, a housing development in Queens where, because of Con Edison's help, "The 6,000 apartments have all electric kitchens." By 1965, (the year efforts to control air pollution are mentioned in the company' Annual Report for the first time), Con Edison came to understand that electric kitchen promotion was not as productive as promotion of electric heat: "In the residential market, the installation of electric heat results, in nearly every instance, in a total electric home... The average total electric home uses seven to ten times as much electricity as the household heated by other fuels." Throughout the decade company "campaigns... promoted color television... in the early part of the year and again at Christmas--and frost-free refrigerator-freezers during the summer. Sales of both of these appliances more than doubled during the... campaign periods... Also promoted... through advertising, direct mail and cooperative campaigns with manufacturers and retailers were automatic dishwashers, dryers and student lamps... The Company's Adequate Wiring Program... continued to attack a major obstacle to increased residential use of electricity."[4]

1967 was Charles Luce's first year as Chief Executive Officer and the company was seeking to raise its revenues "toward the one billion dollar mark by an intensive sales program calling for the vigorous promotion of all Company services..." However, to do so the company had to overcome the obstacle that "63% of our residential customers live in apartments, and apartment dwellers don't use as much electricity as homeowners. We're working on that problem..." By 1969 the company had found a solution and managed to get residential customer electric use up by 7.8%. "A prize-winning lighting campaign, 'To Stop A Thief, Light A Light' contributed significantly to these gains."[5] The company also initiated a "low-cost customer financing plan... for appliances."

Hundreds of examples of Con Edison's efforts to promote its services, (especially before 1971), could be cited. These early promotional efforts were supported by the regulatory commission, which also viewed increased energy consumption, however indiscriminate, as economically beneficial and socially developmental. The PSC allowed promotional advertising costs to be recovered in rates. Furthermore, "Rate schedules [were] designed to encourage growth of business by charging a progressively lower price as consumption... increased..."[6] (See Chapter One, Part IV, on rate discrimination) Although this is understandable given the assumptions of that energy era, it is nevertheless notable because even as the company was promoting its services it occasionally had to reduce voltage output on some days throughout the decade because it did not have adequate capacity. By 1970 the company began to recognize this contradiction and made its promotional activities "selective." With interest rates rising and

siting problems mounting, the company decided to end its promotional activities in 1971, but only after reassuring its stockholders in the following way: "New office buildings, dwellings units and redevelopment projects will increase load without promotion."

Con Edison's promotional activities were not limited to simply supplying information about the services it provided. The company entered into wideranging business alliances and also promoted itself. Writing fifty years ago about electric power trusts "Mobilizing to Mold Public Opinion," Carl Thompson wrote:

> "To carry out the purpose of the utility corporations... called for a very far-reaching and effective control of public opinion... To carry out these plans required changes in public thought and action and, therefore, a molding and recasting of public opinion that were almost revolutionary. But the corporation set out to accomplish this task with thoroughness and determination."

In the case of Con Edison, some elements of corporate promotion took the following form:

> "The Company's services, operations and policies have a direct and often personal impact on the daily life of the public in the communities it serves. This emphasizes the need for effective communications with the public and is accomplished by coordinated public relations, advertising and community relations programs that have the objectives of promoting favorable attitudes toward the Company and greater uses of our services. Both are essential to the efficient operation and growth of the Company's business.
>
> "To accomplish these objectives, the Company uses all appropriate mass and specialized communications media at its disposal. News about the Company and its plans is disseminated broadly to metropolitan area daily and weekly newspapers, television and radio stations, national and trade magazines, and wire services. Close liaison is maintained with editors and writers covering general, business and financial news. Newspapers can reach the Company's press information staff anytime day or night, seven days a week.

> "A coordinated schedule of advertising to promote increased use of the Company's services and build goodwill through better understanding is carried out in newspapers, and subway, bus and billboard posters..."[8]

The company's promotional efforts worked to generate a favorable public persona and increase the demand for electricity. Consequently, Con Edison was annually increasing its construction budget which, as the company itself recognized, was "enormous." During our previous energy era, when the cost of borrowing capital was less than the allowed return on its investments and the company could expect to realize economies of scale to meet growing demand, and when environmental concerns did not impair its freedom to build, such an aggressive growth orientation made reasonably good business sense. Following this logic, by 1968 Con Edison had planned or under construction 13 major generating facilities: one 515,000-KW coal fired plant, two 600,000-KW oil units, eight nuclear powerplants, (with lower New York Bay as a potential site for four of these); a 2,000,000-KW pumped-storage hydro-electric powerplant and one 300,000-KW breeder reactor. (A few of these were joint ventures.) This list is of only powerplant construction. An enormous amount of transmission facilities were also being constructed or under consideration. (A construction plan on this scale today by any one utility is inconceivable.) None of these projects were designed to meet specific end-use tasks. They were simply to meet unclassified anticipated growth in demand. As a consequence, when the cost of fuel dramatically increased in the early 1970s and the electricity markets elasticity was revealed, Con Edison found itself with an excess in generating capacity approaching fifty percent.

Not only were the annual construction plans of Con Edison "enormous," so was each individual project. Seeking to realize maximum economies of scale, the company regularly planned its projects to be "the world's largest." Often they were "the world's first" as well. In 1962 Con Edison "announced plans to build the world's largest pumped storage hydroelectric plant on the Hudson River near Cornwall, N.Y."[9] That same year Con Edison also "applied to [the] Atomic Energy Commission for [a] license to build the world's largest nuclear power plant at Ravenswood, Queens... This [was] the first request to locate a nuclear power plant in a metropolitan area." Another "new 1,000,000 kilowatt generating unit, the largest on order anywhere in the world"[10] was then also under construction at the company's Ravenswood site. It "will comprise one-eighth of the system's generating capacity." With the completion that same year of a unit at the company's Astoria facility the total net capacity was raised "to almost 1,600,000 kilowatts... making it the largest investor-owned power station in the world." Also that year "work began on the world's first [and largest] 345,000 volt underground transmission line..."

When Con Edison began to address air pollution for the first time, (1965), the technologies it used to do so were also large. This is logical since the generating stations whose emissions they were to control were often "the world's largest" as well. At Ravenswood, where Con Edison was building "the world's largest generating unit by an investor owned utility", the "world's largest electrostatic precipitator... over 16 stories high" was also being built. (Electrostatic precipitators accumulate particulate combustion by-products so that they might be dumped elsewhere.)

This effort to use one large technology to solve environmental problems associated with another large technology was not unique. For example, to avoid the environmental problems associated with large central station fossil-fueled plants, the company was increasing its plans to build large central station nuclear power plants, which it considers to be "the cleanest form of energy." To quote again:

> "To emphasize our deep concern for protecting the total environment of our service area, we created a Bureau of Environmental Engineering. And we purchased our fourth nuclear generating plant, a 1,115,000-KW unit."

The company also emphasized its "deep concern for protecting the total environment of its service area" by examining "the environmental feasibility of placing nuclear or fossil generating stations on artificial islands in the Lower [NYC] Bay."[11]

These examples briefly summarize Con Edison's commitment to the outlook of our earlier energy era which emphasized large centralized facilities while encouraging energy consumption. Such an operating strategy also facilitated the industry's consolidation, integration and growth which were also integral to the orientation of our earlier energy era. In 1965 and 1966 Con Edison took two steps furthering utility consolidation by taking part in the formation of the Northeast Coordinating Council and the New York Power Pool. These newly consolidated industrial agencies also reflected the then fashionable predisposition to build big. Operationally, if not in financial structure, the agencies resembled the utility holding companies outlawed by the Public Utilities Holding Company Act of 1935:

> "Under the NYPP Contract, participating electric utilities in N.Y.S. will construct larger and more economical generating stations. Surplus power from the stations will be sold or exchanged with other

> utilities in the pool through an interconnected system. To reach the power-pool objectives, standing committees for management, operation and planning have been formed."[12]

These particular efforts to further integrate already consolidated generating systems were instigated by the 1965 Northeast blackout. This great calamity affected 25 million people in eight states and two Canadian provinces. Sensitive to the charge that the vast interconnection of centralized technologies supplying the Northeast's utilities actually facilitated cascading power outages which blacked-out North America's most populous region, Con Edison made the following observation:

> "A return to the operation of numerous, relatively small, completely isolated systems would certainly be a step backward."[13]

This outlook was the underlying theoretical defense of the Coordinating Council and the Power Pool. To quote again:

> "Formation of a Northeast Power Coordinating Council was announced on January 19, 1966 by 22 utility systems, including Con Edison... The purpose of the Council is to promote maximum reliability and efficiency of electric service in the Northeast. The member utilities have for many years coordinated their engineering design and operating procedures through working committees. The Council will provide a permanent organization for greater administrative direction and continuity of these activities."[14]

Similarly,

> "A New York Power Pool, consisting of Con Edison and the six other principal investor-owned utilities in the state was formed July 21, [1966. The New York Power Authority joined in 1967.] The new power pool, which represents a significant development in the evolution of power supply for N.Y.S., will provide for increased coordination in the development and operation of the electric facilities serving 98 per cent of the consumers in N.Y.S."[15]

Members of the power pool were also tied together by membership in the Empire State Atomic Development Associates, (ESADA) another agency promoting utility growth and consolidation. This was a "cooperative nuclear research group... [which sought] to develop breeder reactors for nuclear power use." One of ESADA's ambitions during the 1960s was the "construction of a 300,000-kilowatt breeder reactor demonstration plant somewhere in N.Y.S., beginning in the early 1970s."[16] When this effort failed, the ESADA member utilities, including Con Edison, turned to funding the Clinch River Fast Breeder Reactor in Tenn. (This has recently been killed by the U.S. Senate and Con Edison's participation in the project was subject to litigation by N.Y.'s Attorney General.)

Con Edison's historic commitment to the grow and build energy era might be complemented with commentaries made by the company about the economic development taking place in its service area. These commentaries also reveal a predisposition in favor of large construction projects. Con Edison's reportage of its N.Y.C. service territory is overwhelmingly skewed by emphasis on economic growth as the large, and seemingly never-ending construction project. According to the company, "The continuing vitality of this great metropolitan center is reflected in the high levels of construction activity throughout the area."[17] In fact, as the three lengthy quotes which follow indicate, Con Edison's outlook on urban development has remained fairly consistent over the past three decades.

From 1965:

> "New office buildings continue to alter the city's skyline. Nearly half of all the office space built in the United States since 1947 is in New York City, and the demand for more such space continues to be high. Seventeen office buildings... added more than

four million square feet of rentable space... [A]nother 11 million square feet of office space were under construction. Being planned are 28 buildings that will add about 28 million square feet of office space.

"Twenty new industrial buildings were completed... Now under construction or in the planning stages are 41 more...

"During the year, 313 apartment buildings with over 40,000 dwelling units were completed; another 293 with 32,000 dwelling units were under construction... Among the new projects planned is Co-op City, the largest and one of the most outstanding residential developments in the United States. It will occupy nearly 300 acres in northeast Bronx, and will include 15,500 dwelling units in thirty-nine 24 to 35-story buildings... four shopping centers were completed... Nine more are planned... 28 new school buildings... Two motels with 155 rooms... two more with 240 rooms... one hotel... In the planning stage are 18 more... four hospital buildings were completed... ten... are in advanced planning stages... Three nursing homes... One of these was an all-electric installation. Also under construction... were four other nursing homes... Planned are twelve more...

"To help promote economic and business development, the Company has established an area development group... As part of this effort, a long-range national advertising program to promote New York City and Westchester was launched last year. It identifies Con Edison as a source to which businesses can turn for help and information. The Company works closely with... city and state agencies, business and real estate groups, and civic organizations. It participated in the establishment of the Economic Development Council for NYC..."[18]

From 1976:

"Looking into the future, the City has put forward an economic recovery plan designed to make the City more attractive for business. Among its goals is to ease the tax burden that is today a deterrent to private industry.

"Even before this program was announced, there were signs of a slight economic recovery. For example, there was an increase in leased commercial space, and slight increase in the use of electricity. And private groups have projected an investment of more than $7 billion in privately financed projects if, among other

> things, the proposed Westway Interstate Highway is built. The Westway, an estimated $1.2 billion project to be financed 90 per cent with federal funding, would unclog the traffic congestion of Manhattan's West Side below mid-town, improve commercial opportunities in the area and remove a section of the old West Side Highway, a longstanding and dilapidated eyesore.
>
> "The Westway project is just one example of the many endeavors aimed at improving our City in which the Business community has thrown its efforts behind those of government. Top officials of major firms are daily working in the public sector and behind the scenes to help shape the City's recovery."[19]

From 1983:

> "New York is the capital f world finance... The center of financial activity, Manhattan, has perhaps the largest concentration of computer power anywhere, and its growing steadily. New office buildings, all with computers, rise in Manhattan at a record pace--10 buildings totaling 6.1 million square feet were completed in 1982, and 57 buildings with a total of more than 41 million square feet are scheduled for completion through 1986. An increasing number of buildings rely on computerized energy management systems to regulate heating, air conditioning and lighting as well as security, fire protection and electronic office services.
>
> "An attraction for the future is Metrotech, a high technology commercial and research park being developed by the Polytechnic Institute of New York in Brooklyn, with city and state backing. ...Another lure is the Teleport, the world's first satellite communications center and office park, now under construction on northwest Staten Island. Fiber-optic data transmission cables will link the Teleport's earth stations with New York's financial and communications districts."[20]

II. HARD PATHS, SOFT PATHS

In 1964 Con Edison described its research and development efforts in the following way: "Research and Development work in which the company is involved covers the entire spectrum of technology associated

with utility systems operation and modern business practice."[21] The "utility systems operation and modern business practice" referred to by Con Edison was basically consistent throughout the industry at that time and was built upon a number of fundamental assumptions, however inexplicit. Howard Brown has deciphered these postulates as follows:

> "Economic growth can and should be sustained into the foreseeable future.
>
> A healthy economy requires increasing demand for electricity.
>
> An increased supply of electricity fosters economic growth.
>
> There are sufficient resources to sustain continued economic expansion.
>
> There are no particular ecological limitations to sustained growth.
>
> No particular social or political circumstances will inhibit growth or interrupt supply.
>
> Descriptive mathematical models can be objective.
>
> The future can be predicted by such models with a considerable degree of accuracy."[22]

Energy analyst Amory Lovins has designated this logic of our earlier energy era the "hard energy path" and described the chain of argument underlying this "hard path" as follows:

> "1. To meet our social goals (however unspecified or platitudinous) we need
>
> 2. rapid undifferentiated economic growth, which requires
>
> 3. more or less correspondingly rapid growth in primary energy use, so
>
> 4. we rapidly run out of (that is, encounter increasing economic, geopolitical, or ultimately geological difficulties in obtaining) oil and gas, so
>
> 5. we must switch to the more abundant solid fuels (coal and uranium), but

6. direct use of coal is not generally feasible or convenient, so

7. we must burn the solid fuels in power stations (and perhaps, ultimately, in coal-synthetics plants), and because of

8. economies of scale

9. we need the power stations to be big, so

10. the only question is which kind of big electric plant to build, and the canonical answer is

11. nuclear (and perhaps coal-fired)--built rapidly and profusely."[23]

Over the past twenty years a combination of political, economic, ecological, social and technological developments have emerged to challenge the logic of our earlier energy outlook, the hard energy path. Economic growth and energy consumption are no longer correlated. The entire spectrum of technology associated with utility systems operation and modern business practice has changed. Fossil fuel costs have skyrocketed. Interest rates rest at historically high levels. Large powerplant siting is increasingly difficult, if not impossible, due to opposition from local communities and environmental laws. Smaller-scale technologies and conservation are now legislatively encouraged and overwhelmingly cost effective compared to constructing giant facilities. To quote again from Brown, "Utility planning, once a primary force in directing the economy, is now being driven by forces outside the economy."[24] As a consequence, the extrapolated linear projections historically used by utility executives to estimate future electricity consumption and plan system development has become socially and economically untenable. Electric World and Business Week have given two perspectives which affirm the practical meaning of this last

observation. According to Electrical World:

> "The stunning and unexpected results of our 29th Annual Forcast... continue to haunt... The results--a peak increase of only 1.4%... --were so unexpected under the economic and weather conditions that obtained that they are extremely difficult to accept. The seeming inability of competent forecasters to project industry growth with any accuracy... and the extra-ordinary range of present forecasts betrays... a basic weakness in the data base from which we all are working.
>
> "The inexplicable lack of growth this year brings into question the validity of past assumptions and existing data on consumption and demand. Throughout the long winter ahead, however, we 'experts' will undoubtably spend countless hours evaluating this year's results and fitting them into the old concepts, no matter what Procrustean methods are necessary to do so. But this will not ultimately be of any value save that of providing intellectual exercise."[25]

More recently, a Business Week Editorial stated:

> "Every day it seems, yet another electric utility cancels plans to build or finish a new powerplant, or announces an austerity program designed to avert a financial crunch, or flirts with default...
>
> "The fundamental problem is that too many utilities have committed themselves to power plants--nuclear, coal, and other types--that they do not need."[26]

As these authoriatative editorials suggest, the operating orientation of our previous energy era which emphasized construction, largeness and centralization is inappropriate and now incurs many diseconomies. These diseconomies have combined to undermine large scale generating efficiencies. The distribution costs of large scale systems are costly by virtue of their being widely spread out. In combination with electricity distribution losses of up to 75% which occur as large, thermodynamically inefficient systems send power long distances, "we have gotten to the point, with electricity in 1972 and gas in 1977, where an average residential customer was paying about 30 cents of each

utility bill dollar to buy energy and the other 70 cents to get it delivered."[27] Large single powerplants also require larger reserve margins. Numerous smaller scale systems, unlikely to all fail at the same time, need less reserve margin; should any failure occur, it will be associated with a smaller generating facility more easily replaced. In addition, large complex technologies are more likely to break-down than smaller, simple technologies for the simple reason that there are more components able to fail. This leads to more down-time. Also, larger technologies have greater siting costs since, being more obtrusive, they are less likely to be accepted by a community. The logical outcome of the utility industry's emphasis on large, costly and complex generating technologies was its promotion of nuclear powerplants. Needless to say, however, the recent political and economic changes which have combined to undermine utilities' traditional operating and economic strategies wrought their greatest damage on the industry's largest technological investment. According to Forbes:

> "The failure of the U.S. nuclear power program ranks as the largest managerial disaster in business history, a disaster on a monumental scale. The utility industry has already invested $125 billion in nuclear power, with an additional $140 billion to come before the decade is out, and only the blind, or the biased, can now think that most of the money has been well spent... Without even recognizing the risks, the U.S. electric power industry undertook a commitment bigger than the space program ($100 billion) or the Vietnam War ($111 billion)... "[28]

Thus, the hard energy path is now plagued with many diseconomies, for both nuclear and non-nuclear facilities.[29]

In opposition to the hard path is what Lovins labels the "soft energy path." The soft path emerged in response to hard path

diseconomies (see footnote 29) and became more cost effective following the quadrupling of oil prices in 1973-1974. Soft energy processes emphasize efficient and renewable energy sources such as conservation, cogeneration, wind, the sun and water. These renewable sources already supply more than twice as much primary energy as nuclear power.[30] The soft path conforms with political rhetoric espousing "energy independence" as well as legislative mandates (such as PURPA) which encourage conservation and diversified energy production systems. The soft energy path seeks efficiency by matching technological scale and energy quality to end-use needs, thus reducing the tendency of the industry to overbuild. It takes account of social realities as well by minimizing environmental disruption and capital consumption. The viability of the soft energy path has been brought about by changed political and economic conditions and is supported by economic benefits, legislative mandates and popular rhetoric. However, the soft energy path should not be interpreted as being similarly predisposed to a certain scale, in this case small scale. To quote Lovins again:

> "These disadvantages of large-scale energy systems... do not mean everything should be small. But they do mean that in order to minimize costs (including social costs), energy systems should be scaled to be appropriate to their task... [I]t is the hard path, with its bias toward homogeneity and large scale, that is ideologically rigid..."[31]

III. EARLY CHALLENGES TO CON EDISON'S HARD ENERGY PATH

Challenges to Con Edison's hard energy path emerged well before the 1973 OPEC fuel price rise. Although the latter event accelerated soft

path energy challenges to the company, such challenges were visable even in the early 1960s. Mr. John Thornton, Con Edison's Vice-Chairman of the Board, has argued that Charles Luce, (Chairman of the Board 1967-1980), was prescient in recognizing and preparing the company for a new operating environment.[32] This environment, Mr. Thornton stated, brought forth not only a concern for environmental protection, and conservation of resources and high-cost capital, but "collegial decision-making" as well.[33] However, in deeds Con Edison seemed reluctant to acknowledge the fundamental nature of its changed environment. In fact, one of the first actions undertaken by Chairman Luce in his effort to address the social emphasis on softer energy paths was to build-up the first in-house utility law department.[34] Contrary to preparing for "collegial decision-making" Con Edison seems to have strengthened and diversified its ability to litigate in behalf of the hard energy path. Instead of responding to changed market demands, it has apparently sought to insulate itself from these changing values and, where possible, reverse them.

Con Edison's response to environmentalists and soft energy path challenges have been of two sorts. On the one hand the company has undertaken limited rhetorical and technological fixes in an effort to relieve political, economic, and environmental pressure on the company in the short term. The company repainted and re-landscaped some of its generating facilities. It publicized its creation of a "Bureau of Environmental Engineering" and its hiring of a "Design Coordinator" and "specialists in scenic beauty." On the other hand the company has litigated against any legislative or administrative legitimation of the

challenges to its traditional operating outlook, in this way seeking to relieve pressure for the long term.

Perhaps the first, and certainly the most notable challenge to Con Edison's hard energy orientation began in the early 1960s. As mentioned earlier, in 1962 the company announced plans "to build the world's largest pumped-storage hydro-electric plant on the west bank of the Hudson River..."[35] In a response which is credited with initiating the birth of modern environmentalism, (and furthering the political challenges to the company's hard energy path more generally), a combination of east bank homeowners (who would have had a direct view of the plant and the transmission lines spanning the river), hiking enthusiasts (whose trails would be obliterated by the plant), and Hudson River sportsfishermen (who feared the plant would impair the breeding and survival of Hudson River fish), challenged Con Edison's ambitious plans. Initially they challenged the plant on environmental and aesthetic grounds. Soon, however, they broadened their challenge to include conservation, systemic planning assumptions, and the company's resistence to using smaller scaled technologies.

This initial environmental conflict reflected (and ultimately reinforced), the then developing social emphasis on environmental protection. In fact, the dispute over the company's Cornwall hydro-electric pumped-storage powerplant instigated landmark court decisions reinforcing the emergence of environmentalism.[36] Con Edison has never denied --in rhetoric if not in deed-- the value of environmentalism. Rather, while seeking to present itself as environmentally sensitive, if not benign, (during the height of the Cornwall dispute the company

changed its motto from "Dig We Must" to "Clean Energy"), Con Edison has argued that popular expressions of environmental values are economically shortsighted for the consumer as well as the company in that they "raise rates... and may even decrease productivity."[37] Furthermore, the company has argued that popular environmentalism, at least as it was applied to the Cornwall plant, lacks aesthetic taste. For example, contrary to the widespread impression that the Cornwall powerplant would irreparably deface one of the most majestic mountains in the Hudson Highlands, Con Edison generated testimony from "Nationally recognized authorities in scenic beauty... [to] support the project."[38]

Even before construction began on the project the plant suffered from many of the diseconomies associated with hard energy paths. If completed, the plant would have accounted for fully one-quarter of all Con Edison's generating capabilities, and would have sent that power via only one transmission corridor. Such a large single project necessitates a correspondingly large reserve margin should the plant go down. Besides thermodynamic inefficiencies (the facility was to consume three kilowatts of electricity for every two it produced), the plant suffered from many other social, environmental and economic diseconomies.[39] Given the impact of this giant plant, ("the largest in the World"), Con Edison and the project's opponents were endlessly engaged with start work/stop work applications to state and federal agencies, continuous litigation, and modified plant designs. In 1980, <u>eighteen years</u> after the plans for the plant were first announced, Con Edison signed an agreement canceling its option to construct the facility.[40] This agreement was concluded only after the company

extracted concessions from the U.S. Environmental Protection Agency, local and national environmental groups and other N.Y.S. agencies, (including the N.Y. Attorney General and Department of Environmental Conservation), which insulated other Con Edison plants located on the Hudson River from having to meet environmental protection requirements on water pollution. In effect, the 1980 Storm King settlement, (of which the President of Hudson River Fisherman's Association said "It killed me to sign it."[41]), postponed until at least 1995 the construction of cooling towers by Con Edison --which were mandated by the A.E.C. in 1972-- at the company's other Hudson River plants, including Indian Point. The towers were mandated in response to "massive" fish kills which the plants were causing -- and the public outrage against these kills -- due to water intake designs which allowed fish to be sucked into the plants and discharges of heated water 15° above the River's normal temperature. In 1972 Con Edison referred to the cooling towers as the "largest single environmental question facing us."[42] Thus, the company alleviated one environmental obtrusion associated with its hard energy path by reinforcing it in another area of its operations.

Because of Con Edison's disposition toward building "the world's largest" technology, its licensing and siting processes have become increasingly difficult. The Storm King dispute, begun in 1964 is an early example. There are others. On May 18, 1966 Con Edison entered into a "Memorandum of Understanding" with the City of New York indicating that it will not build any new powerplants within City limits due to their disruptive environmental impact. The Memorandum, another

reflection of emerging challenges to the company's hard energy path, called for the company to submit to the City no later than November 1966, "a detailed ten-year plan designed... to reduce stack emissions by decreasing significantly the amounts of coal and oil burned in the City to produce electricity and steam." (Three years later a $4 billion class action suit was filed against Con Edison "for damages suffered as a result of air pollution from the company's generating units." The case was dismissed in October 1970 by N.Y.S.'s Supreme Court) By 1973, the year of the OPEC oil embargo, Con Edison had cancelled plans for at least six nuclear powerplants, including one breeder reactor, for which plans were previously made public and sites chosen. Primarily these cancellations were the result of difficulties involved in siting these giant dynamos and their enormous cost.

In 1971 Con Edison indicated it was aware of at least some of the diseconomies associated with giant powerplants. In terms of extracting ever greater economies of scale, the company recognized that such possibilities were thermodynamically limited: "Technologically, the production and transportation of these forms of energy have been on a productivity plateau for the past five or more years."[43] Such technological limitations became even more significant and costly with the introduction of environmental laws and the quadrupling of fuel prices. Nevertheless, the company's financial imperatives and its attachment to hard energy technologies limited Con Edison's ability to efficiently respond. Instead of facilitating the licensing process by choosing smaller scale technologies, or avoiding it altogether by investing in conservation, the company maintained its emphasis on

maximizing installed capacity. To do so however, plants began to be planned "ahead 20 years."[44] Thus, in anticipation of local opposition and siting and licensing problems, Con Edison is currently studying plans for a "large" powerplant in Red Hook, N.Y., (approximately 1,500 megawatts) originally expected to be on line in 2005, but now expected in 2010. However, the plant is already meeting with well organized local and environmental resistance.[45] Still, according to the company, "we continue to see the need for building a large plant." Nuclear and coal are the only "practical fuels."[46]

For Con Edison, the effort to pursue an energy strategy in conflict with political and economic realities has led to diseconomic cycles throughout the past 25 years. Note the following initial justification for the construction of Indian Point #2 and Astoria #3:

> "The delay in the construction of the Cornwall project has made it necessary to adopt an accelerated program for the installation of additional generating equipment. In order to meet projected load requirements for the system for 1968 and 1969, the company will install two new electric generating units with a combined capacity of nearly 1.4 million kilowatts. One of these will be a conventional generating unit, the other a nuclear unit."[47]

Essentially, the company responded to the postponement of one facility due to its obtrusive giant scale by building two other giant facilities. However, due to the disruptions caused by <u>their</u> scale, these plants were themselves subject to a host of social conflicts and diseconomies. The problems and challenges to Indian Point are numerous and range from mandated cooling towers costing hundreds of millions of dollars, to requiring civil defense evacuation procedures for communities within a ten mile radius of the plant, to years delay in the

plants' construction schedule even in a pre-Three Mile Island regulatory environment. As soon as the project was completed it was met by a $5 million suit from New York's Attorney General, as well as an injunction against Indian Point's operation because of the fish kills the plants were causing. New York courts held that the plants violated New York's conservation laws. At the same time, (1972), the AEC mandated the cooling towers because of the plant's anticipated "long-term, irreparable damage to aquatic biota."[48] Once again, to compensate for the delay in bringing Indian Point #2 on line, Con Edison announced it was initiating construction of "two additional conventional units rated 800,000 kw each, at the Astoria [site]... in Queens."[49] Predictably, this large scale response to a large scale delay had its own large scale local impact which engendered a large diseconomy. As the company reported:

> "In October 1970 a bill was introduced in the Council of the City of New York which, if enacted... could have the effect of prohibiting the operations of this Astoria unit. [Additionally, in] December 1972 opponents of the project filed a motion to renew their previously rejected application for an injunction to halt construction of the water intake and discharge structure of the facility... If determined adversely, these actions could delay the completion of the facilities involved and consequently result in increased costs and impair the company's ability to supply the requirements of its customers especially during periods of peak demand."[50]

Astoria #3 (an oil fired plant) suffered delays and instigated social conflicts. As soon as the plans for the plant were made public, N.Y.C.'s City Council responded by passing a new air pollution control law calling for "step decreases in the sulfur content of coal and oil [used by powerplants] to a 1 percent level by 1971."[51] As a

consequence the design of Astoria #3 had to be modified even before ground was broken on the project.

These are some early examples of Con Edison addressing one political or economic challenge by intensifying the environmental and social costs of its other operations. They indicate the emergence of diseconomies associated with the company's historical commitment to giant scale technologies and begin to suggest the company's limited ability to respond in an operational and technologically flexible way to changes in social preference.

IV. PURPA: THE CURRENT CHALLENGE TO CON EDISON'S HARD ENERGY PATH

These were some of the many pre-1973 OPEC embargo signals indicating that Con Edison's traditional grow and build energy strategy was becoming economically and politically obsolete. Throughout the 1960s the company was under increasing pressure to minimize the environmental impact associated with its giant technologies. The company's Hudson River plants were cited as causing massive fish kills and improperly discharging effluents into the River. The latter problem was also ascribed to the Astoria facility. Air pollution devices became mandatory on all the company's plants, raising costs and, according to the company, "lowering productivity." At the same time, the lead time associated with the construction of these large facilities was growing greater and greater. A number of the company's major projects were canceled, most notably Storm King, and the company was required to enter

into an agreement with NYC not to build any more facilities within City limits. Additionally, as early as 1968 Con Edison was reporting its concern with having to pay "historically high" interest rates which was making the financing of its enormous construction budget more costly and difficult. The company reported that hard path generating technology had reached a "productivity plateau" and, in fact, even before 1973 the company was reporting a slowdown in electricity sales, environmental pressures, longer lead times, siting problems, and high interest rates. Clearly, for Con Edison, the times were changing.

By 1973 the company's five year construction budget was over $3 billion, and this was targeted for giant technologies with long lead times which would not return any profit to the company for years. This placed enormous pressure on the company which, as we saw in the preceding chapter, forced it to sell two powerplants in 1974. The 1973 fuel price rise was the most significant factor contributing to the redefinition of how energy should be produced and consumed. There are hundreds of examples which indicate the reorientation in political and economic logic which derived from the OPEC oil embargo of 1974. However, for the electric utility industry the clearest expression of changed values can be found in the Public Utilities Regulatory Policies Act of 1978, (PURPA).[52] If neither Con Edison or other utility observers recognized the soft path signals which were emerging throughout the 1960s, they knew after PURPA was signed into law by President Carter.

PURPA is the most fundamental redefinition of the public interest undertaken by Congress as it concerns electric utilities since the

Public Utility Holding Company Act of 1935.[53] In general, PURPA promotes diversified smaller-scale generation, opens the utility grid to co-generation and rejects rates that encourage electricity use. By promoting conservation "of energy or capital," and encouraging small-scale generation, PURPA represents the Federal government's recognition and codification of the fact that America has moved into a new energy era. Most fundamentally, by taking away the exclusive right of investor owned utilities to generate and sell electricity within their formerly exclusive service territories, PURPA at once challenges the historic assumption that electricity can only be provided by a single company acting as a natural monopoly. It redefines that historic assumption to mean that while distribution might be naturally inclined to monopolization, generation isn't so long as a generator has access to a distribution grid. PURPA is part of the 1978 National Energy Conservation Policy Act (NECPA). Other sections of NECPA deregulated oil and natural gas prices and encouraged utilities to convert oil fired powerplants to coal.

PURPA was originally drafted by Mr. Ross Ain when he was a legislative aid to Democratic Congressman John Dingell. According to Mr. Ain, PURPA as it now stands is a "watered down" version of an original, more aggresive draft.[54] All of the provisions of PURPA, which are now left to be implemented by the individual states, were originally designed as a federal mandate. According to Mr. Ain, the revision making PURPA open to state-by-state interpretation was the outcome of utility lobbying which assumed that each utility would be more successful in shaping PURPA's implementation with their home

commissions than with the federal government. Because NECPA contained many major issues affecting utility operations, Mr. Ain said, "the utilities managed to water down many of the sections, especially the wheeling provision [Section 203]. However, the industry's lobbying resources were strained [in dealing with NECPA]. They picked some issues to fight and let some things go by. They had a lot to deal with and [Section] 210 slipped by." (PURPA section 210, as discussed below, requires utilities to allow the interconnection of small-scale alternative generating technologies into the transmission grid, given certain constraints to be defined by state commissions.) "The utilities figured they would fight 210 in Federal Energy Regulatory Commission PURPA 210 was a small piece [of NECPA] and was basically underlobbied."[55] (Ironically, after the passage of PURPA, Mr. Ain moved to F.E.R.C., which was charged with making specific interpretations of the law. Mr. Ain's presence at F.E.R.C. stymied the utility industry's effort to water down PURPA at that agency.) PURPA states at the outset that:

> "The Congress finds that the protection of the public health, safety, and welfare, the preservation of national security, and the proper exercise of Congressional authority under the Constitution to regulate interstate commerce require--
> (1) a program providing for increased conservation of electric energy, increased efficiency in the use of facilities and resources by electric utilities, and equitable retail rates for electric customers...
> (3) a program to provide for the expeditious development of hydroelectric potential at existing small dams to provide needed hydroelectric power."[56]

To bring these goals about, PURPA specifically invalidates the grow and build assumptions historically motivating electric utilities. The law requires "overall conservation of energy or capital"[57] as well as

"conservation of energy supplied by electric utilities."[58] PURPA is "designed to protect public health... [and] the environment"[59] by stipulating that "the energy component in a rate... may not decrease as kilowatt-hour consumption by such class increases..."[60] Those who justify by their large use of electricity that "additional capacity is added to meet peak demand relative to base should pay premium prices."[61] Attacking the foundations of our earlier energy era, PURPA stipulates that "promotional" or "political advertising", historically charged as an operating expense to ratepayers, may not be recovered "from any person other than the shareholders (or other owners)" of the utility.[62]

PURPA categorizes the development of diversified electricity grids supplied by small-scale systems as in the national interest. To facilitate this the law requires that existing centralized utility systems pay new small power producers who connect with the central grid "avoided costs." Avoided costs are the costs a utility would have incurred by having to develop the generating power supplied instead by a small producer. It represents the costs the utility was able to avoid by not having to build generating capacity or transmission facilities. Attacking the idea developed by Samuel Insull and held for almost a century, that electricity generation is best supplied by a utility acting as a "national monopoly," PURPA requires:

> "(A) the physical connection of any cogeneration facility, [or] any small power production facility... with the facilities of existing utilities and
> (B) such action as may be necessary to make effective any physical connection described in subparagraph (A)...
> To encourage cogeneration and small power production... [PURPA] rules require electric utilities to offer to
> (1) sell electric energy to qualifying small power

> production facilities and
> (2) purchase electric energy from such facilities... at the cost to the electric utility of the electric energy which but for the purchase from such a cogenerator or small power producer, such utility would generate or purchase from another source."[63]

PURPA codified the nation's reassessment of how electricity should be produced and marketed. It emphasizes environmental protection, decentralized electricity generation, thermodynamic efficiency and capital minimization. While such values had their birthing period during the 1960s, it was the quadrupling of oil prices in 1973-74 which made the attainment of these goals most cost effective. In assessing Con Edison's ability to adapt to changed social values regarding how electricity should be produced and marketed, we must note the company's reaction to PURPA.

According to Con Edison's senior V.P. Bertram Schwartz, "We are not against co-generation."[64] In a statement remeniscent of those made by the company during the 1960s for its emphasis on scale, Mr. Schwartz went on to point out that Con Edison is "the biggest co-generator in the world."[65] He also stated that Con Edison favors "alternative power facilities" and cited as proof the company's 25 year contract to "buy all the power produced by a garbage burning facility in Peeksville" and the company's "similar offer to N.Y.C. for a Brooklyn Navy Yard plant."[66]

However, Mr. Schwartz' statement that Con Edison is not against cogeneration should be qualified to read 'so long as Con Edison remains the monopoly cogenerator.' Immediately after President Carter signed PURPA into law Con Edison initiated a lawsuit to block implementation of the legislation. The Company also fought against PURPA within the

Federal Energy Regulatory Commission which is charged by Congress with defining the details of the law. According to Ross Ain, who wrote PURPA and the F.E.R.C.'s implementation of the law, "Con Edison was very aggressive in fighting PURPA."[67] Similarly, a 1980 N.Y. Times article titled "Con Edison Battles Energy Officials On Cogeneration" stated:

> "One of the hottest fights in town [Washington] these days is between Consolidated Edison and the government's attempt to encourage cogeneration. The outcome of the struggle could influence how electrical power will be produced and priced in New York and the nation."[68]

Mr. John O'Sullivan, Chief Counsel for the F.E.R.C. commented on Con Edison's arguments against P.U.R.P.A. in the following way:

> "Many electric utilities used their monopoly powers to exclude cogeneration by setting discriminatorily high backup or standby power rates, or they simply refused to buy or sell power to cogenerators."[69]

Con Edison was doing exactly that. According to an assessment by the NYPSC, Con Edison was willing to provide back-up service[70] "only under Service Classification 3; Breakdown, Reserve, and Auxiliary Service tariffs, and offered to buy electricity only from customers operating windmills."[71] S.C.3 offers service under the most disadvantageous terms. It required "a customer to contract for a specific amount of power, and pay a monthly demand charge for... the highest actual demand over the past eleven months, whether service is taken or not. Customers also pay an energy charge based on their actual monthly consumption." In the view of the PSC staff, this was "highly discriminatory."[72] So was the company's policy to buy back-up power only from windmills.

As the Chief Counsel to the F.E.R.C. had pointed out, Con Edison was able to impose high and discriminatory rates against cogenerators

because of its monopsonist position regarding the purchase of electricity from outside its system. Con Edison's position as a monopsonist derives from its position as a monopolist in the distribution and sale of electricity. In carrying out its responsibility to enforce PURPA on the state level, the NYPSC noted Con Edison's monopsonist position and the regulatory need to counter the power associated with that market position:

> "no party contends that Con Edison is not a monopsonist; thus, the necessity for establishing some sort of legally-mandated floor under purchases [from small producers] is uncontroverted."[73]

Con Edison's opposition to PURPA was aggressive as the company sought to insulate itself from the new political and economic realities associated with our current energy economy. While the NYPSC was undertaking public hearings on how to implement PURPA within Con Edison's territory, the company initiated at least two lawsuits, one federal and one state, to block PURPA. According to a N.Y. Times article about PURPA published in 1982, "Con Edison... is leading the opposition locally and nationally..."[74] Indicative of the vigor with which Con Edison fought PURPA is one case the company litigated all the way to the U.S. Supreme Court. The verdict went against the company in an 8-0 decision issued May 16, 1983 (Associate Justice Lewis Powell did not take part in the case presumably because of stock holdings). The Court's decision reaffirmed that America has evolved into a new energy era and stated, in part, that "it [is] most important at this time to provide the maximum incentive for the development of cogeneration and small power production."[75] Con Edison made essentially two arguments before the Court. First, it argued that an evidentiary hearing should

be held before every interconnection with a small-power producer. Second, it argued that having to pay "full avoided costs" to small producers, as PURPA requires, was not "just and reasonable."

According to the view of five national environmental groups, the effect of requiring an evidentiary hearing before the PSC before every interconnection would

> "all but destroy the incentives for cogeneration and small power production set forth in PURPA. Without published rates to guide them, would-be power producers will have to bear the time and expense of a full commission hearing process to find out if their projects are financially feasible."[76]

The Supreme Court recognized this and in its unanimous decision against the company stated that what Con Edison was asking for "would seriously impede the very development of cogeneration and small-power production that Congress sought to facilitate."[77] The Court upheld rules issued by F.E.R.C. which (A) required the interconnection with on-site generators and, (B) required the payment of no less than 100% of a utility's avoided costs to on-site generators for excess power purchased from them.

At the same time that Con Edison was arguing against PURPA before the Supreme Court (1980), it was also working to block the effective implementation of PURPA by the NYPSC. For the most part Con Edison's arguments before the PSC were rejected because of their adverse impact on the public interest as defined by PURPA. What follows is a synopsis of the company's arguments before the PSC and the Commission's responses.

As just mentioned, PURPA requires Con Edison to purchase

electricity from small-power producers, and to pay them for the generating and transmission costs the company avoids by purchasing such electricity. Con Edison argued that in determining the avoided costs it must pay, the PSC should not require the company to include avoided transmission costs. The PSC rejected this by pointing out that

> "it would be inconsistent to charge back-up and supplementary customers, in particular, for transmission costs when they take service--as Con Edison proposes--but not credit those costs to them when they supply power."[78]

In fact, Con Edison argued against the entire concept of paying full avoided costs, as it did before the Supreme Court, to which the PSC responded

> "that setting purchase rates equal to full avoided costs... will... serve the end of optimal resource utilization without creating any short-run or long-run detriments to the interests of consumers or the general public..."[79]

Con Edison argued that if back-up or supplementary service must be provided to small-scale producers, peak rates should be regularly applied. The PSC rejected this stating

> "FERC's regulations [specifying how PURPA must be implemented] require generally that utilities serve on-site generators on a non-discriminatory basis; in addition, they require utilities to provide back-up, supplementary and interruptable service upon request... Staff doubts the validity of Con Edison's argument... If those customers were required to pay contract demand charges that reflected... only peak period service... they would be significantly overcharged."[80]

Con Edison sought the right to charge cogenerators for "reactive power." Reactive power is "the power in a circuit that does not serve load," usually being lost to friction and distribution. "Real power" for which we are usually charged, is measured in kilowatts. The PSC

rejected the company's claim to charge for reactive power by stating:

> "We have not been provided any convincing evidence demonstrating that on-site generators will be any more responsible for Con Edison's kilovar deficiency than will firm customers, and the company does not currently charge firm customers for reactive power. Without a greater showing on the company's part, therefore, we must conclude that its proposal would treat on-site generators in a discriminatory manner without justification, in contravention of PURPA."[81]

Con Edison argued that a small power producer who receives supplementary service[82] be charged a "demand deficiency" rate if it "fails to maintain the same ratio of average demand to maximum demand that the average firm service customer achieves." The PSC rejected this by stating:

> "Con Edison has provided no basis... in favor of its proposed rate structure, which relies more heavily on contractural charges. The arguments the company makes here are the same as those it raised in opposition to the transmission and distribution capacity charges recommended... They have no greater force here; the company's exceptions, accordingly, will be denied."[83]

Con Edison argued that the provision of back-up or supplementary service to hospitals that intend to cogenerate "without a full environmental analysis of the potential impact of such facilities would be a violation" of the State Environmental Quality Review Act. The PSC rejected this by stating:

> "We conclude... that it is far from clear--especially from the company's bald assertion--that any sort of environmental analysis is required. Making new rates available to customers with their own generators does not relieve them of their obligation to comply with other federal, state and local laws... [T]here are other laws than this one, that relate to and are concerned with the environmental regulation of all industrial plants, including on-site generation facilities. No evidentiary basis has been provided

> to support a presumption... that customers benefitted by the rates adopted in this proceeding will intentionally or negligently fail to comply with all applicable laws... [We recommend] termination of the company's existing back-up service classification (SC-3) [as applied to hospitals] which is widely viewed as an obstacle to the development of on-site generation.[84]

Con Edison argued that the NYPSC does not have authority to impose specific rates the company must pay small power producers when purchasing power from them. The company went on to claim that F.E.R.C.'s regulations on this are "unconstitutional" and "a confiscation of... property."

The PSC rejected this by stating:

> "Con Edison has simply misread both PURPA and FERC's regulations implementing it... [I]t is difficult to understand Con Edison's argument that the AEP decision* has suddenly left us without any authority to determine fair and reasonable purchase rates, especially since that decision left intact our statutory obligation to set them. We conclude, therefore, that we are required--and thus authorized--to continue to set rates for purchases from on-site generators... Having examined the matter fully... we have determined that the full avoided cost standard best comports with our ratemaking policies... Con Edison next argues that the minimum purchase price provision 'violates fundamental constitutional principles'... [and] is 'a confiscation of... property' But this assumes that shareholders, not ratepayers, ultimately bear those costs... [S]uch an assumption is wrong. [The] statutory scheme... permits us, on our own motion or that of another party, to investigate the rates and charges of utilities over which we have jurisdiction."[85]

The PSC has adopted a "minimum rate of 6¢/kwh... for all qualifying facilities, except new oil-fired cogenerators, with capacities of up to

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* American Electric Power Service Corporation, Con Edison, et al v. FERC, No. 80-1789 (D.C. Cir., January 22, 1982)

80 MW."[86] (Con Edison is now litigating in the State's Court of Appeals to have the decision rescinded. No test case has yet emerged, though Manhattan's Penn South Housing Project might soon be the first. Although the company has the highest rates in the nation, its avoided costs as calculated by the PSC are not. For example, New Hampshire's PSC has instituted a 7.7¢ avoided costs rate on that state's utilities. One reason for this is the NYPSC decision to include in avoided costs calculations only those facilities under construction and designed to meet future demand. Since Con Edison has little construction taking place for new generating capacity, its avoided costs as calculated by the PSC are lower.)

Con Edison argued that any small power producer "receiving capacity payments be required to give five years notice before discontinuing service. To insure compliance with this condition, the company would pay the first five years' worth of capacity credits into an escrow account, and it would be entitled to recoup those monies in the event of default."[87] The proposal would have placed in an escrow account and withheld from small power producers for five years the avoided costs payments they are entitled to under PURPA. It made the remarkable request that small power producers indicate five years in advance that they intend to discontinue using back-up or supplementary service from the company. If they didn't, Con Edison would be free to keep the accumulated avoided costs payments. Planning five years (or 20 years) in advance may be a norm (or neccessity) at Con Edison, but smaller firms have less control over their market. For a small firm, being locked into a five year plan --especially one which anticipates altering

energy supply-- may limit its ability to respond to the market. The PSC rejected Con Edison by stating:

> "This argument... forgets that system-peak-related costs are determined by aggregate demands that are contributed to in precisely the same fashion as the credits would be paid. We shall not, therefore, adopt the company's proposal."[88]

The company claimed that for technical and safety reasons it was unable to interconnect with diversified electricity generators. It stated that:

> "The introduction of on-site generation capable of exporting power to the [Con Edison] network entails a loss of control, to the extent that such power production cannot be coordinated with both the company's production and changes in load levels. Such coordination is not practically achievable at this time. The export of on-site power production thus creates the risk that power will exceed load and that, as a consequence, backfeed will occur, tripping open network protections... There is some concern that the company's crews may not be able to disconnect the on-site generator's feeders and thus may be exposed to electric currents while servicing the network."[89]

Although the PSC rejected the premise of Con Edison's argument on this issue, it nevertheless allowed the company enough discretion in determining the technological conditions --and thus the costs-- under which interconnection can take place, that it effectively gave the company the procedural tool it sought to prevent interconnection. Thus, PSC rejected this argument as a reason to limit the development of cogeneration in the following qualified terms:

> "We conclude that any customer willing to agree to (1) install a protector in a manner and location specified by the company; (2) set it at a sensitivity level specified by the company; (3) maintain it according to a schedule and standard specified by the company (even if they reasonably exceed the company's); and (4) forgo its right to interconnection if it fails to

> comply with any of the foregoing terms, should be permitted to interconnect with the company regardless of its mix of production and load.
> The company should, therefore, assume the obligation to interconnect with on-site generators at its distribution network. We see no need to have each interconnection agreement brought before us for approval as Con Edison requested, but shall mediate any disagreements between the company and its customers concerning either the costs of or the adequacy of the safeguards incorporated into a proposed interconnection."[90]

Con Edison interprets this rule unfavorably against cogeneration and has effectively prevented the emergence of any cogeneration in NY which sells power back to the company.[91] Without interconnection and back-up service from Con Edison, most owners of industrial or commercial properties cannot securely and profitably install a co-generator.

Con Edison also argued against PURPA by claiming that the company will lose "395 customers, representing nearly 1,000 MW of demand to on-site generators." (This was revised during PSC cross-examination to "159 customers representing 562 MW of demand and $300 million in annual revenue.") The company elaborated on this problem by contradicting public statements made by company V.P. Bertram Schwartz and stating "that on-site generation is an undesirable technology that is likely... to be spurred by inequitable public policies and, in turn, to be the source of a number of social problems, including increased usage of oil and gas, air quality problems and increased retail rates."[92] Furthermore, in a fascinating statement, the company argued that those who reduce demand and cogenerate their own electricity still be obligated to pay for the service they would have taken had they not left the system. The company proposed this be carried out via a "lost business adjustment clause (LBAC)... designed to prevent the development

of on-site generation from having an adverse effect on... revenues. Stated simply, the LBAC would allocate the company's estimate of the firm service it has lost to on-site generators... primarily, to on-site generators."[93]

The F.E.R.C. does not require utility commissions to consider PURPA's effect on a utility's electricity sales. Although the PSC did consider this issue, it rejected Con Edison's request that it be allowed a lost business adjustment clause in the following way:

> "The most limited, and probably the only certain conclusion we can reach on the basis of this record is that Con Edison's inaccurate assumptions about capital costs and oil costs have led it... to predict a higher level of exposure and a much faster rate of departure from its system than appears likely. [The lost business adjustment clause] would both impermissibly discriminate against on-site generators (and in favor of large customers who could economically develop self-generation but who continued to take firm service for their full requirements) and, as a consequence, encourage on-site generators to install enough capacity to meet their entire requirements and leave the company's system entirely, ultimately forcing smaller firm customers to assume the total burden of lost revenues... [Furthermore] the long lead-time required by prospective on-site generators to obtain capital financing, fuel supplies and construction and operating permits (including environmental permits) insures that there will be adequate time to develop adjustments for lost business during the course of ordinary rate proceedings, thus obviating an automatic adjustment clause... Accordingly, Con Edison's exceptions seeking adoption of the LBAC will be denied."[94]

Finally, Con Edison argued that the PSC "deny the benefits of PURPA to any prospective on-site generator in NYC that would use oil or gas unless that applicant can demonstrate that the oil and gas it will consume <u>over its lifetime</u> is less than the oil and gas that would otherwise be consumed in the absence of the facility."[95] The PSC also rejected this and stated:

> "the evidence sufficiently demonstrates that on-site generation will produce a net savings in oil consumption until the middle of the next decade (after which time the outlook is less clear) and, in turn, that the encouragement of on-site generation would not be inconsistent with state and federal energy policies... [T]he efficiency standards set forth in FERC's regulations that are specifically applicable to such qualifying facilities require them to use oil more efficiently than does Con Edison itself."[96]

(Revere Sugar Refinery in Brooklyn achieved an 82% efficiency fuel use rate and produces 1 kwh of electricity at 1.5¢. According to the plant's manager, the company would go out of business if it had to pay Con Edison's electricity rates. Big Six Towers, an apartment complex in Queens which Con Edison fought when the complex decided to cogenerate, operates its cogenerator at 75% fuel efficiency and produces in kwh at 7.5¢. Con Edison's fuel efficiency rate is 28% at its best plants and its kwh's cost 15.6¢.)

Regardless of our State and Federal government's efforts to diversify electricity production to increase reliability and efficiency, Con Edison promotes a similar perspective on electricity production in the 1980s as it did in the 1960s. Despite the company's public statements that it is not against cogeneration, the record indicates that it favors cogeneration only if it maintains monopoly control over the facilities. Otherwise it views the technology as "undesirable." The company's current outlook regarding alternative production apparently conforms with its 1965 statement that

> "A return to the operation of numerous relatively small... systems would certainly be a step backward that would result in more, rather than less trouble."[98]

After the PSC handed down its decision implementing PURPA as federal law requires, Con Edison's Senior Executive V.P. Bertram Schwartz said he was "dismayed" at the support for PURPA shown by the PSC and the company immediately initiated litigation in NYS's Court of Appeals to have the decision overruled. The case is still being heard. In effect, Con Edison has significantly stymied the development of cogenerators in NYC. Of those few that do exist some initiated cogeneration before Con Edison consolidated in 1936 (such as Amstar and Revere Sugar Refineries), and others had to wage costly and drawn out struggles to separate from the company (such as Big Six Towers).

Because of Con Edison's pivotal position in determining what is and what is not technologically possible concerning the supply of energy to NYC, the company's resistence to PURPA has particular significance in limiting increases in generating efficiencies. As the company pointed out in 1971,

> "Technologically, the production of these forms of energy have been at a productivity plateau for the past five or more years."[99]

Given the increases in fuel costs, interest rates, and environmental struggles which have emerged since 1971, the "productivity plateau" for central station powerplants has, if anything, declined. Conversely, a report recently issued by the Worldwatch Institute indicates that "The cost of new power sources [such as cogeneration, biomass, small hydropower, and wind power] is falling steadily. Some are already less expensive than recent coal and nuclear plants, and others soon will be."[100]

V. CON EDISON'S ENERGY STRATEGY FOR THE FUTURE: MORE OF THE SAME?

> "Perhaps the most dramatic affirmation of the Company's commitment to energy conservation was our decision to construct an energy conservation center on the ground floor of the Chrysler building in Manhattan."
>
> Con Edison
> Annual Report, 1978

Con Edison does not believe that PURPA and all it represents is appropriate to help New York confront its new energy era. Nevertheless, the company does believe that our energy situation has changed and requires a redefinition. In place of PURPA the company has offered its own energy strategy titled the Establishment and Implementation of an Energy Strategy for the Consolidated Edison Company of New York for the 1980s and 1990s. (Hereafter referred to as the Energy Strategy.) Moreover, the company has been ordered by the NYPSC to "examine the extent to which... [it] should consider conservation on an equal footing with other supply options..." (case 28223, Opinion No. 84-15)

The NYPSC order requiring demonstration conservation plans (case 28223) was fought by all of NYS's private utilities including Con Edison. The PSC asserted the potential benefits of conservation and affirmed its right to issue an order on this issue, however much it did so in only an introductory fashion. According to PSC Opinion 84-15

> "we have determined that the effects of conservation can be significant and that New York utilities need to consider conservation as an alternative means of equalizing supply and demand... [I]t is imperative that utilities develop now the familiarity and expertise with conservation programs so that it may be known if those programs

> can serve as a realistic alternative... [T]he institution of large scale conservation programs at this time would not be economically justified. It does appear, however, that utility investments in energy conservation will become more economically attractive in the future--as the need for more transmission and generation capacity develops. In these circumstances, we... direct each major electric utility to undertake a demonstration conservation plan... The companies should commit up to .25% of annual revenues for these energy conservation plans... We want the resources for these electricity conservation programs to be used creatively. Our general goal is to assure that a wide range of potentially cost-effective opportunities for end-use and electric system conservation are explored. (pp.9,74,75)

During the hearings on conservation case 28223, Con Edison and the other private utilities in the state revealed their lack of enthusiasm for meaningful conservation efforts. In a Reply Brief submitted by the utilities they stated:

> "Over the long run, both the utilities and their customers will benefit from the unimpeded workshop of... market forces. Incentive programs, however, inject a potential for market distortions." (Opinion 84-14, p.29)

This is an interesting position for a local monopoly to take, especially one engaged in using lower rate incentives to promote relocation (and electricity use) in underutilized areas. It also contrasts with the long history of Con Edison's widespread and "award-winning" promotional activities, discussed earlier in the chapter. It begins to suggest Con Edison's reluctance to engage in conservation. Indeed, a review of Con Edison's compliance filing for conservation case 28223 for 1985 indicates that of the twenty-one programs, at least twelve--which together account for about 85% of the $4.3 million program--involve no demonstrative aspects and are primarily exhibits or advertising.

As presented by Con Edison, the purpose of its Energy Strategy is to respond to "basic changes which have occurred in national energy policy... since the 1960s."[101] Despite the host of changes which have altered our energy economy -- high interest rates, environmental concerns, the faded promise of nuclear energy, high fuel costs, lower electricity demand, PURPA, small-scale efficiency increases, etc. -- Con Edison "formulated an energy strategy with the [sole] objective of significantly reducing oil usage in the 1980s."[102] In focusing only on reducing oil use, the company has chosen to ignore some of the most fundamental and costly developments in our energy economy. It has ignored the increased cost, siting, construction and operating environment associated with nuclear power since the historic accident at Three Mile Island; opinion polls which indicate a heightened concern for environmental protection; new technological developments which make small-scale power generation cost effective; and ignored as well the enormous problems associated with siting any powerplant in communities around the country, in particular around NYC. Con Edison's Energy Strategy anticipates 20 years into the future. Given the advances in cost effectiveness, efficiency and output of conservation, small-scale generating systems and other alternative energy technologies, it is notable that Con Edison has committed itself to a 20 year hard path energy plan. With a marginal reserve generating capacity of 50%, (well above the Northeast average of 35-40% and possibly the highest in the nation), it might be argued that Con Edison is in a particularly good position to wait out any additional "shakedown" period associated with

alternative technologies to determine their reliability and effectiveness. ("Shakedown" is a term referring to the initial operational period during which engineering weaknesses or managerial problems manifest themselves in a new system. For a large powerplant this period ranges from one year to as much as three years. For smaller systems the shakedown is much shorter, which indicates another advantage for smaller systems.)

Over the past five years the efficiency of certain alternative energy technologies has greatly developed and their costs have dropped. According to a recent Business Week interview with Amory Lovins,

> "Technologies to wring more work out of electricity have been emerging with dizzying speed. Full use of the best devices now on the market--most of which did not exist last year [1983]--would roughly quadruple the long-run efficiency of using electricity in this country at a cost under 2¢ a Kwh, in today's dollars. That is less than the operating cost of coal or nuclear plants.
>
> In other words, something like 80%-90% of the electricity now sold is uncompetitive with electricity-saving technologies...
>
> Five years ago, the best analyses showed that you could double electricity end-use efficiency at 5¢ a Kwh in 1979 dollars. But technical progress has been such that we are now seeing twice the potential savings we did then, at about one-third the real cost. And we see no sign that the flood of new electricity-saving devices is slackening..."[103]

Technologies for controlling, sizing and coupling motors have increased in efficiency enormously. New Norelco light bulbs can replace 75 watt bulbs while consuming only 30 watts. In NYC, NYS and, indeed, around the world, commercial real estate owners have been installing Strainercyle systems to eliminate unproductive energy consumption in heating/ventilation and air-conditioning systems. In a one-million

square foot building, Strainercycle has consistently reduced energy consumption by 3 million kwh per year, thus freeing those kwhs for use by others. This technology, which did not exist ten years ago, is constructed, installed and on-line in less than one year. The payback for those who install this system--which has a total cost ranging from $140,000-$250,000 for large commercial buildings, including labor and installation--ranges between 12-30 months. Installation and use requires no state or federal oversight, no regulation, and it does not pollute.[104] The very cogenerators which Con Edison has been so aggressively fighting against produce a kwh at 1.5¢-7¢, depending on size, demand and fuel, and the price is still falling.[105] The largest of these systems takes no more than two years to install. All these new, efficient technologies fit unobtrusively, quickly and cheaply into the N.Y.C. energy economy. On the other hand, to the great extent that Con Edison's Energy Strategy emphasizes large-scale technologies with very long lead times, requiring almost a dozen local, state, and federal hearings and permits, the company must have a 20 year strategy, if only to build one plant.

It might be argued that planning 20 years ahead for large powerplants to compete with rapidly emerging smaller technologies commits Con Edison to enormous capital investments which might lose during their long lead times the cost effectiveness they originally had. This could be especially salient in an economy like ours where, since 1978 (the year before Con Edison's Energy Strategy was written), energy use nationally has fallen 10 percent because of a 23 percent increase in the efficiency of the U.S. economy.[106] By commiting itself to

technologies which payback only if consumption increases and which require long lead times and huge capital investments, it is logical to assume that Con Edison will in the future have strong incentives, (as it did in the past), to see to it that NYC's energy patterns fit the company's needs, rather than the other way around.

What is notable about Con Edison's Energy Strategy for the 1980s, 1990s "and beyond" is its resemblance to the direction the company's policies were moving in 20 years ago during our earlier energy era. As mentioned at the beginning of this chapter, in the 1960s Con Edison was building coal fired plants in and around NYC. These were later converted to oil burning due to the pollution problems associated with coal. The company was also building nuclear powerplants, and had plans to build many more in the future. These same technologies dominate Con Edison's Energy Strategy for the Future:

> "The Strategy calls for major modifications in present local energy policies. It proposes that:
> - Coal and nuclear-generated electricity should be encouraged as substitutes for oil-generated electricity. Consistent with this policy, Con Edison should be allowed to burn coal at certain generating plants that were designed to burn coal.
> - Taxes on electric energy and steam should be reduced.
> - Energy conservation should continue to be encouraged."[107]

In A Call For Action, a 1981 update of Con Edison's 1979 Energy Strategy, the company added some issues to its 20 year plan:

> "-Increase purchases of non-oil power from outside Con Edison's service territory and from Canada.
> -Support the construction of two non-oil power plants planned by the Power Authority of the State of New York (PASNY)
> -Use refuse as a fuel to generate steam and electricity...
> -Options for the 1990s. Pave the way for the 1990s through vigorous research and development programs,

> especially those that will permit further use of coal and advance the day when synthetic fuels will be available in substantial quantities to supplant imported oil."[108]

Since the publication of Con Edison's energy strategies the company has also developed plans to construct a new power plant, to use either coal or nuclear power, in Red Hook, N.Y. Quietly and with little publicity Con Edison has been purchasing land and transmission rights of way for a "large" facility it plans to bring on-line approximately 2010, (set back from 2005). (The company's low profile on the project is ostensibly designed so as not to raise land values, although it is useful as well for not giving potential opponents of the plant too much to oppose too soon, just as it did when purchasing the land for its ill-fated Cornwall pumped Storage Project). The Red Hook plant is already meeting with well organized local opposition. It remains to be seen whether even 20 years is sufficient to plan, construct and bring on-line a large central station powerplant.

The significant difference between Con Edison's energy strategies for the future and the hard energy path it has been pursuing for most of its corporate existence is the company's brief discussion concerning the need for conservation.

> "Conservation has the potential to reduce oil dependency in less time and at less cost than any other action that could be taken by the Company or its customers. For these reasons and because it is environmentally benign, conservation is Con Edison's number one planning priority."[109]

One key point in this debate centers on the effect conservation will have on utility revenues: if it reduces revenues, is it questionable whether any utility will aggressively pursue a conservation

program? The Environmental Defense Fund, in conjunction with some other conservationists, has designed a plan whereby utilities can profit from investments into conservation. The plan is simple and basically involves having utilities purchase the insulation, efficient appliances, low watt light bulbs, etc., that individual consumers would ordinarily purchase on their own. This plan was the basis for the NYPSC initiating case 28223.[110] The utility would distribute these items to its ratepayers and include the cost of the purchases, (invariably less than purchasing a central station powerplant), into the company's rate base. Conservation and small-scale investments in general cost less, have shorter lead times, offer profit to the company and satisfy demand without the construction of costly and disruptive powerplants. All of California's utilities plan on meeting future demand this way for quite some time.[111] Brad Mielke, Chairman of Pacific Gas and Electric, the nation's largest private electric utility stated that the "regulatory, political and financial constraints" of large projects are "just too great." Consequently, PG&E will meet future demand with solid waste, cogeneration, wind and solar.

Although the EDF plan has not ended the debate as to whether utilities should or should not be in conservation, one thing has been made clear in the course of this debate: conservation efforts which reduce demand and revenues for a utility without offering it profitable incentive will likely inspire a weak utility effort. (opponents of the EDF plan argue that conservation is not socially desirable or point to the possibility of monopolization of the conservation industry by utilities as one of its potential drawbacks. In

fact, the private utilities in N.Y.S.--including Con Edison--themselves argue against the EDF plan by claiming that their involvement in conservation programs could expose them to antitrust liability." See P.S.C. case 28223, Opinion 84-15, p.23). Industry groups and environmentalists alike recognize this. It is for this reason that Con Edison's conservation activities are as tentative and limited as they are. Con Edison does not view conservation as profitable. According to Con Edison's Vice-Chairman of the Board John Thornton:

> "We're in conservation. We lose on conservation. Its a peanut business. It can't move our earnings."[112]

Given this attitude of Con Edison's top management regarding the unattractiveness of conservation, it is understandable that the company's efforts to reduce electricity demand are limited and tentative, conforming with what utility managers label "spending a lot to do a little" so as to satisfy the demands of the PSC and public relations. Con Edison's efforts to promote conservation pale in comparison with the company's historic and current efforts to promote electricity use, coal conversion, nuclear power or industrial expansion into blighted NYC neighborhoods to supplement weak demand. Con Edison has adapted its rhetoric to accomodate social pressures while in deeds it tends more to pursue the traditional emphasis on encouraging electricity use and expanding sales. Under the guise of seeking to "create new jobs, particularly in economically depressed portions of the company's service area" Con Edison "has launched an innovative program called "Project Appleseed." Less an innovative program than a direct throwback to its promotional efforts of 20 years ago, "Project Appleseed

offers electricity rate reductions throughout our service area for five years to commercial and industrial customers who locate in new buildings or vacate premises, and who also qualify for real estate tax abatements..."[113] (See Chapter One, Part IV for discussion on rate discrimination and promotion) In New York real estate tax abatements do not necessarily go to "create new jobs... in economically depressed" areas of N.Y.C. Recent recipients of such tax abatements include AT&T, Trump Tower and other luxury buildings, Shearson/American Express, and Smith Barney, Upham and Harris. This program is disguised promotion and belies the company's public relations about promoting conservation. In addition, "Project Appleseed... also expanded a special program started four years ago in eight specific areas of Brooklyn and the South Bronx where our electric distribution facilities are underutilized. This program of reduced electric rates is now available in a total of 18 areas in all five boroughs of New York City."

The remaining ingredients making up Con Edison's Energy Strategy ignore many possibilities actually available. To market conservation the company has undertaken none of its past alliances with appliance retailers, has suggested no legislative initiatives to further conservation (as it did in the past when seeking to further such things as Storm King or coal conversion), and has brought out no clever or award winning ads. It is a low key, passive effort, legislatively mandated, which ignores many of the conservation and alternative energy efforts which can make a difference: NYC's dominant supplier of energy talks of encouraging conservation and nowhere mentions or seeks out to promote wind energy conversion, reduction of excessive voltage in the

line, photovoltaics, hydroelectric conversion, solar thermal energy conversion, cogeneration or numerous other technological possibilities for N.Y.C. which could accumulate enough kwhs or avoided use in NYC or throughout NYS so as to make the need for any new coal, nuclear, pumped-storage or synfuel powerplant in NY indefensible.

Con Edison's Energy Strategy for the future relies on hard technologies and such fuels as coal, nuclear, pumped-storage and synfuels. With the exception of synfuels, each one of these processes has in the past led the company into extraordinary and costly political and economic conflicts. At the national level, the development of nuclear powerplants and synfuels has virtually bankrupted numerous large corporations even with billions of dollars in financial support from the federal government. Yet Con Edison continues to view such technological options as most appropriate for NY, and it leads the opposition in fighting alternatives. Essentially, Con Edison has ruled out meeting specific demand-uses with the appropriate scale technologies and it continues to emphasize large projects. This tends to limit the company's options. To quote from the company's Energy Strategy again:

> "Con Edison's options for a 1980s energy strategy are in reality quite limited... [A]dvanced technologies will influence Con Edison's planning, but the effect will be small, since new large-scale technologies generally develop slowly."[116]

A brief glance at Con Edison's historic struggles associated with using coal, nuclear and pumped-storage projects suggests that the company's current preoccupation with these technologies ignores lessons from the past and derives less from the particular needs of its service territory than from financial imperatives and an imbedded corporate

dynamic predisposed to traditional technologies, however inappropriate.

In 1965 Con Edison was ordered by NYC to switch from burning coal to burning low-sulfur oil because of coal's adverse impact on ambient air quality. The company seemed to recognize the benefits of doing so and published statements in its Annual Reports affirming this. To quote two examples:

> "In 1968, we further reduced our contribution to air pollution. Since 1965 we have cut in half our emissions of sulfur dioxide and particulate matter by switching to premium fuels..."
>
> "Our programs to protect the environment were intensified, most notably by switching from low sulfur to very-low sulfur oil and by converting all but one of our remaining coal-burning units to oil."[117]

In 1976 Con Edison reversed itself and began to promote "coal conversion," (actually re-conversion). Ecologically, nothing changed in NYC so as to eliminate the need to protect ambient air quality. What did change was the price of oil. With the price of oil rising, Con Edison's rates also increased and the company became concerned about the adverse impact on demand stemming from sharp electricity price increases. From 1973 to 1974 total sales to Con Edison customers dropped by 2.2 million kwh. By 1978 --the year the energy strategy was first published-- sales dropped by an <u>additional</u> 6 million kilowatts.[118] Given the nature of the technology used by the company, its options to control cost increases were limited. Given the nature of its financing, it had to stop reductions in sales. It sought to switch back to burning lower-cost higher-sulfur coal, without the use of sulfur dioxide control technologies. Sulfur Dioxide is a key ingredient in the

formation of acid rain and is toxic to humans. Con Edison's effort to convert back to coal caused "several years of bitter controversy."[119] According to N.Y. Department of Environmental Conservation Commissioner Henry Williams, "The company's proposal to burn... coal at each plant without scrubbers would allow annual air emissions of sulfur dioxide of 76,000 tons per year, an unwarranted increase" from 10,000 tons per year.[120] Con Edison's plan would have increased SO_2 emissions from three of its boilers --two at Arthur Kill on Staten Island and one at Ravenswood in Queens-- by 66,000 tons annually, an amount greater than "the... combined discharges from smokestacks on top of every office building, apartment and house in all five boroughs."[121] The company indicated that its plan, opposed by the City, would be scrapped if the D.E.C. insisted that coal conversion proceed only with the installation of flue gas desulfurization devices, (scrubbers), which capture 95% of the SO_2. Though the DEC plan to convert to coal with scrubbers would allow the company to have reduced rates, the company determined that the rate reduction would not have been significant enough to stop declining electrical demand. The company's desire to wean NYC from foreign oil by converting to coal is being balanced against the effect on revenues, with the scales weighted towards protecting the latter. When an approved plan emerged which allowed the company to convert to coal with only marginal reductions in rates, (though probably not enough to stop electrical demand reductions), the national priority of reducing consumption of foreign oil fell by the wayside. Con Edison is litigating in NYS's Court of Appeals to reverse the D.E.C. decision on the necessity for scrubbers.

Our nation's experience with nuclear power has been so economically costly, (and politically divisive), that Forbes magazine has labeled those who continue to support this technology as "biased." Despite the enormous subsidies offered to nuclear power, virtually every single utility still involved in the construction of these facilities is suffering significant financial pressures. The stocks of "nuclear utilities," (utilities currently constructing nuclear power plants), invariably sell well below book value. Enormous capital is involved in the construction of nuclear projects; the cost of a nuclear powerplant now seems to be approximately $5-$6 billion for an 850 MW powerplant. And the capital is tied-up for a long time, not receiving a return until the plant is used and useful; construction of a nuclear powerplant, though no new orders have been placed since 1978, is now estimated to take between 10-15 years. Thus, much of the revenue reported by nuclear utilities is the Allowance for Funds Used During Construction, (AFUDC). AFUDC is an accounting device allowing a utility to report to stock-holders as income the funds actually invested, but not yet receiving a return. Because of AFUDC most of the income reported by many nuclear utilities is income on paper only. For this reason, the earnings and stock dividends of nuclear utilities are often reduced and in some cases have been eliminated entirely. Bonds associated with nuclear utilities carry an interest rate premium to help attract investors to projects whose ultimate completion is in doubt. According to a 1984 report on nuclear power published under the auspices of Salomon Bros., nuclear power has generated a financial debacle:

> "The list of electric utilities that have been financially battered by their nuclear construction projects has grown from a handful to roughly two

> dozen. This financial debacle has been compounded by a general lack of regulatory and political support and has left the framework of traditional ratemaking as something of a relic... The utility industry in the late 1960s and early 1970s wrongfully embraced the concept that large nuclear power plants would bring with them economies of scale that could not be achieved in smaller units and that the power produced from these huge plants would be 'too cheap to meter.' This is clearly not the case."[122]

Given the poor financial situation of those utilities involved in nuclear projects, and the inevitable conflicts that would emerge should any plant be ordered, it is notable that Con Edison promotes such a technology. There are other reasons why the company's promotion of nuclear power seems inappropriate for supplying electricity to NYC. Today, the company could never hope to site a nuclear facility in Lower N.Y. Bay, as it did fifteen years ago. In fact, the company's Westchester facility at Indian Point has been subject to local (if not national) concern and divisive political debate requiring the mediation of the Federal government. In July 1983 the Nuclear Regulatory Commission, at the request of a number of local groups, initiated an investigation into the possibility of an accident occurring at Indian Point and the evacuation procedures designed to protect the population living within a ten mile radius of the plant. The Rockland County Legislature, which was a party to the suit, took the position, along with the Union of Concerned Scientists, (led on this issue by Robert Pollard, a former high ranking engineer at Indian Point who left the company because of his belief that the plant was unsafe), NYPIRG and other citizen and environmental groups, that evacuation of the great population concentrations surrounding the plant was impossible. Con

Edison's top management expressed mild disdain for those involved in trying to close the plant out of safety concerns, (Vice-Chairman of the Board John Thornton called the UCS "neither a union, nor concerned, nor scientists"[126]) and publicly argued that an accident at Indian Point was impossible. The company's second highest official believes that an accident at Indian Point is in fact possible. According to John Thornton:

> "Could a Three Mile Island happen at Indian Point? It could, I hope not, but it could."[123]

According to a Forbes cover story:

> "The utility industry has already invested $125 billion in nuclear power, with an additional $140 billion to come before the decade is out, and only the blind, or the biased, can now think that most of the money has been well spent... In the U.S.... nuclear power makes less and less economic sense... [nuclear power] can't compete with oil, much less with coal. That's why, for the U.S., nuclear power is dead--dead in the near term as a hedge against rising oil prices and dead in the long run as a source of future energy. Nobody really disputes that. Not the Nuclear Regulatory Commission or the Office of Technology Assessment. Not even the Atomic Industrial Forum, the trade organization that represents the nuclear power industry. And certainly not the 200 or so executives who head the U.S. investor-owned electric companies. Nuclear power is an option nobody in his right mind would now seriously consider."[124]

According to Vice-Chairman of the Board John Thornton, to solve some of our problems with air pollution, "We should be pushing nuclear like mad." And Con Edison seems to be doing so, just as it was 25 years ago. Nuclear power is promoted at Con Edison's conservation center.

In 1962 Con Edison revealed its plans for the construction of a 2,000 MW hydro-electric pumped-storage powerplant at Cornwall, N.Y. on

Storm King Mountain in the Hudson Highlands. Hydro-electric pumped-storage is a net energy consumer, producing two kwh for every three kwh's consumed.[125] The ensuing struggle over this project developed into one of the most notable environmental cases in the post-W.W.II period and has been labeled "the birthplace of environmentalism."[127] The struggle over this facility cost Con Edison approximately $40 million, (which is currently being recouped by the company in its rates), and involved it in 18 years of acrimonious litigation. Bearing this in mind, it is notable that one year after the company signed an agreement not to build at Cornwall, it announced as part of its Energy Strategy its support for the PASNY-financed Prattsville hydro-electric pumped-storage project, a 1 million kilowatt (1,000 MW) facility to be located 100 miles north of NYC. The struggle over this facility has lasted seven years and just recently ended. In September 1984 the State Court of Appeals decided against allowing the construction of the project because it would irreparably damage the Esopus Creek, one of America's great trout streams. A similar concern with the effect on the Hudson River fish aborted Con Edison's Cornwall project. Con Edison views pumped storage with favor.

What this assessment of Con Edison's Energy Strategy for the future suggests is that the company is currently planning ahead, as much as twenty years ahead, with virtually the same orientation it held towards energy production twenty years ago. There is an obvious tension between new possibilities in the energy market and Con Edison. The company is favorably disposed toward coal projects, nuclear projects, synthetic fuels, pumped-storage, and top management believes "we lose on conservation."

Notes

1. Quoted in Carl D. Thompson, Confessions of the Power Trust, (New York: E. P. Dutton & Co., Inc. 1932) p.269-270.
2. Con Edison, Annual Report to Stockholders, 1962. p.15.
3. Ibid, p.8.
4. Con Edison, Annual Report to Stockholders, 1964 and 1965.
5. Con Edison, Annual Report to Stockholders, 1969.
6. Con Edison, Annual Report to Stockholders, 1963, p.9.
7. Thompson, op.cit. p.269.
8. Con Edison, Annual Report to Stockholders, 1964, p.18
9. Con Edison, Annual Report to Stockholders, 1962. p.5.
10. Ibid, p.10 & 12.
11. Con Edison, Annual Report to Stockholders, 1970, p.3.
12. Con Edison, Annual Report to Stockholders, 1967, p.14.
13. Con Edison, Annual Report to Stockholders, 1965, p.15.
14. Ibid
15. Con Edison, Annual Report to Stockholders, 1966, p.7-8.
16. Con Edison, Annual Report to Stockholders, 1967, p.14.
17. Con Edison, Annual Report, 1965. op.cit. p.6.
18. Ibid, p.6, 8, 9.
19. Con Edison, Annual Report to Stockholders, 1976, p.9.
20. Con Edison, Annual Report to Stockholders, 1983, p.6 & 8.
21. Con Edison, Annual Report, 1964, op.cit. p.4.
22. Howard Brown and Tom Strumolo, eds. Decentralizing Electricity Production (New Haven: Yale University Press, 1983). p.22.
23. Amory Lovins, "Technology is the Answer! (But What Was the Question?)" in Brown, op.cit. p.20-21.
24. Brown, op.cit. p.8

25. Electrical World, Oct. 1, 1978, p.3. The 1.4% increase in demand cited at the beginning of this quote was later adjusted to 2.3%.

26. Business Week, Editorial, May 21, 1984.

27. Lovins, "Technology is the Answer" op.cit. p.22.

28. Forbes, February 11, 1985.

29. Lovins. op.cit, p.22-27. What follows is Lovin's detailed explanation of large scale diseconomies.

> Unreliability. Big plants (notably power stations) tend to be less reliable than smaller ones, for excellent technical reasons that are not likely to go away. (For example, a 500-MW boiler has about ten times as many miles of tubing as a 50-MW boiler, so it will fail more often unless quality control improves ten-fold; physically larger turbines have larger blade-root stress and hence require more exotic alloys more likely to have unexpected properties.)
>
> Larger reserve-margin requirements. Failure of a 1,000-MW power station... requires a second elephant standing by to haul the carcass away (1,000 MW of backup capacity). This is expensive. More numerous smaller stations would be unlikely to fail all at the same time and hence would need less reserve margin: in practice, changing unit size from 1,000 MW to a few hundred MW would provide the same level of reliability of service with about a third less new capacity, and 10-MW units at the substation could save over 60 percent at the margin...
>
> Higher indirect costs... [T]he small station is so much faster to build that it greatly reduces exposure to interest payments, cost escalation, changes in regulatory requirements during construction...
>
> Loss of diversity. Big units make it possible to make truly large mistakes at high social and economic risks. Long lead times (tempting one to compress development... schedules) and technical adventurousness compound the risk of large-scale technical failure... Adaptation is further constrained by the accretion of a costly and inflexible infrastructure.
>
> Inability to distinguish among users. People who use electricity for heating water and would not even know if it went off for a few hours must pay the high premium for the reliability required by elevators, subways, and hospital operating theaters. For the former group this is a large diseconomy.

Vulnerability. Big units increase the tendency of central electric systems... to be vulnerable to disruption, whether by accident or malice. In a centralized grid a few people can turn off most or all of a country, whereas dispersed sources... would not be dragged down if one or two sources failed...

Increased local, social and environmental stress. This makes licensing more difficult, so utilities seek to maximize installed capacity per site, so the plant is a worse neighbor than it would otherwise have been, so the political reaction raises transaction costs for the next site, and so on exponentially. We are well into this loop...

Higher complexity. Hence longer downtime, more difficult repairs, higher training and equipment costs for maintenance... etc. Management also may become more complex, with high fixed charges encouraging haste and corner cutting.

Centralization and autarchy. Allocating enormous amounts of scarce resources to such a demanding enterprise in the face of competing claims... requires a strong central authority--an Energy Security Corporation (to evade market forces) and an Energy Mobilization Board (to evade democratic forces). Big, complex energy systems require big, complex bureaucracies to run them and to say who can have how much energy at what price. The macro-economic side-effects of extraordinary capital intensity (for example, inflation, unemployment, high interest rates) elicit further central management, chiefly by distortion (for example, further subsidies), taking ever more bizarre forms in an effort to protect a sector too big to allow to crash.

Encouragement of oligopoly. Small business can't make big machines.

Engineering inefficiency. Owing largely to proposed electrification, more than half the projected primary energy growth in most industrial countries would be lost in conversion and distribution before it ever got to final users.

Incomprehensibility... users are compelled to depend on systems they cannot understand, modify, repair, or control. They are then told that it is desirable for them to stop worrying and leave it all to experts.

Elitist technocracy. 'We the experts' replaces 'we the people'--gratifying for the experts but likely to lead to a loss of legitimacy, a dangerous and

hard-to-reverse trend that rubs off elsewhere.

Inequitable access. Remote siting, which unloads social costs on politically weak agrarians (navajos, Wyoming ranchers, Montanans, Alaskans) to provide energy to politically strong slurbians [sic] is bad enough; worse are technologies so arcane, complex, large, or costly that only wealthy people or large corporations stand much chance of benefiting from them. (This is especially a problem in developing countries: if a new power station is built in India, for example, roughly 80 percent of its output tends to go to urban industry, 10 percent to rich urban households, and 10 percent to villages--and in the end 1 percent might end up helping

High inertia. A utility investing 2-6 billion dollars in a reactor wants to be certain it can get an operating license in 1990 and operate until 2030 without onerous changes in conditions--and wants that certainty in a society where we keep changing our minds and changing our values, and we even throw the rascals out every couple of years. We cannot give such certainty, and investors who want low-risk should seek low-impact, short-lead-time... low inertia technologies that can adapt to rapid changes in values (and in technical conditions).

Homogenization. The high costs of manufacturing billion-dollar units are a strong incentive for standardization... High capital intensity is an incentive to adapt people's energy needs and patterns of use to the convenience of the technology, not the reverse. The high fixed costs and inflexibility of electrical infrastructure... tend to lock us into particular settlement patterns, end-use technologies, and habits--or risk incurring high costs for modification.

Paramilitarization. Not only the inherent vulnerability of centralized systems... but also their explicit links with military applications can encourage social controls that threaten to abridge traditional civil liberties. While nuclear power is so far the best example, the same may be true of, say, liquefied natural gas terminals, electric load dispatching centers, major fossil-fuel facilities, and other potential leverage points attractive for saboteurs."[29]

30. Chris Flavin, Renewable Energy at the Crossroads (Washington, DC: Center for Renewable Resources, 1985)

31. Lovins. op.cit. p.27.

32. Interview with John Thornton at Con Edison Headquarters, Oct. 20, 1983.

33. Ibid.

34. Ibid.

35. Con Edison, Annual Report, 1962. op.cit.

36. This footnote left intentionally blank.

37. Con Edison, Annual Report to Stockholders, 1971, p.16.

38. Con Edison, Annual Report, 1966, op.cit. p.9.

39. This footnote left intentionally blank.

40. This footnote left intentionally blank.

41. Interview with Robert Boyle, 1983.

42. Con Edison, Annual Report to Stockholders, 1982, p.9.

43. Con Edison, Annual Report, 1971, op.cit. p.2.

44. Ibid. p.3.

45. See, for example, The Hudson Valley Green Times, Vol.4, No.4, Summer, 1984.

46. Ibid. p.1.

47. Con Edison, Annual Report, 1965. op.cit. p.13.

48. Quoted in Con Edison's Annual Report to Stockholders, 1972, p.9.

49. Con Edison, Annual Report, 1969, op.cit. p.21.

50. Con Edison, Annual Report, 1972, op.cit. p.25.

51. Con Edison, Annual Report, 1966, op.cit. p.20.

52. Public Law 95-617, Nov. 9, 1978. Hereafter referred to as PURPA.

53. For a discussion of this 1935 Law, see Chapter one.

54. Telephone interview with Mr. Ross Ain, February, 1985.

55. Ibid.

56. PURPA, Sec. 2.

57. PURPA, Sec. 202.

58. PURPA, Sec. 101.

59. PURPA, Sec. 205.

60. PURPA, Sec. 111.

61. Ibid.

62. PURPA, Sec. 113.

63. PURPA, Sec. 210.

64. New York Times, May 24, 1982.

65. Ibid.

66. Ibid.

67. Ain interview, op.cit.

68. New York Times, Nov. 2, 1980, p.1, Sec. 8.

69. Ibid.

70. Back-up Service is provided by a utility to replace energy and capacity that an on-site generator ordinarily supplies to itself.

71. P.S.C. opinion 82-10 "On-Site Generation Within the Con Edison Service Territory." p.30.

72. Ibid. p.2.

73. Ibid. p.23.

74. New York Times, Nov. 2, 1980.

75. New York Times, May 17, 1983.

76. Promoting Small Power Production, Center for Renewable Resources, Environmental Action Foundation, Institute for Local Self-Reliance, Natural Resources Defense Council, Solar Lobby, Feb. 1981, p.5.

77. New York Times, May 17, 1983.

78. P.S.C., opinion 82-10. op.cit. p.16-17.

79. Ibid. p.26.

80. Ibid. p.30, 38.

81. Ibid. p.47, 48.

82. Supplementary service is energy and capacity that is used by an on-site generator in addition to the energy and capacity the on-site generator supplies on its own.

83. P.S.C., opinion, 82-10, op.cit. p.52.

84. Ibid. p.57, 58.

85. Ibid. p.84, 85, 86.

86. Ibid. p.66.

87. Ibid. p.61, 62.

88. Ibid. p.62.

89. Ibid. p.76, 77.

90. Ibid. p.79.

91. Interview with N.Y.S. Assemblyman Jim Brennan and Dick Stone, Vice President, Cogeneration Technologies, Inc. Mr. Stone also manages the Big Six Towers cogeneration facility, a major project Con Edison fought fiercely to stop.

92. P.S.C., opinion 82-10. p.98, 99.

93. Ibid. p.123.

94. Ibid. p.101, 124, 125, 126.

95. Ibid. p.104, Emphasis in original.

96. Ibid. p.104, 105.

97. Discussion at Revere Sugar Refinery with the plant manager, Brooklyn, NY, December 28, 1984. For information about Big Six Towers, see footnote 93.

98. Con Edison, Annual Report, 1965. op.cit. p.15.

99. Con Edison, Annual Report, 1971, op.cit. p.2.

100. Christopher Flaven, Electricity's Future: The Shift to Efficiency and Small-Scale Power. Worldwatch Paper #61, November 1984, p.7.

101. Con Edison, Establishment and Implementation of an Energy Strategy for the Consolidated Edison Company of New York for the 1980s and 1990s. (Con Edison: 1979) p.1. In 1981 this was revised as A Call For Action.

102. Con Edison, Energy Strategy (1981) P.V.

103. Business Week, July 23, 1984, p.96.

104. Conversation with Meg Carey, energy conservationist. Ms. Carey has extensively researched Strainercycle and has overseen the installation of this technology in numerous commercial buildings around N.Y.S.

105. Flavin, op.cit. p.33. Also see footnote 91.

106. Flavin, Renewable Energy at the Crossroads, op.cit. p.2.

107. Energy Strategy, 1979. p.3.

108. A Call For Action, op.cit. p.2.

109. Ibid. p.5.

110. See, for example, N.Y.P.S.C. Case 28223, opinion No. 84-15. Opinion and Order Requiring the Development of Conservation Programs. October 21, 1984.

111. On this see David Roe, Dynamos and Virgins (New York: Random House, 1984).

112. Thornton interview, op.cit. October 20, 1983.

113. Con Edison, Annual Report, 1984. p.3.

114. This footnote left intentionally blank.

115. This footnote left intentionally blank.

116. A Call For Action, op.cit. p.2.

117. Con Edison, Annual Report, 1968, op.cit. p.7. and Annual Report, 1971, op.cit. p.3.

118. Con Edison, Ten Year Financial and Operating Statistics, 1971-1981. p.18.

119. New York Times, September 15, 1983.

120. Ibid.

121. Joanna Underwood and James Cannon, "Keep Air Clean Here." New York Times, Op.Ed. May 21, 1983.

122. Scott Sartorious, Neal Kurzner, Nuclear Power in the United States. Salomon Bros., July, 1984. p.1.

123. Thornton interview, op.cit.

124. Forbes, February 11, 1985.

125. Ibid.

126. For one discussion on the net energy losses associated with hydro pumped-storage; see Alexander Lunkis, The Power Brink (New York: ICARE Press, 1980).

127. Alan Talbot Power Along the Hudson: Storm King and the Birth of Environmentalism. (New York: E.P. Dutton & Co., Inc., 1972)

Chapter Four

Restoring the Market: Deconsolidating Edison?

I. Con Edison: Still A Natural Monopoly?

> "We live in [an] age of costly electricity and cheap efficiency. Utilities which learn how to sell more efficiency and less electricity will prosper. Utilities which try to keep selling more electricity and less efficiency will disappear."
>
> Amory Lovins, speech before 96th annual convention of the National Association of Regulatory Utility Commissioners, 1985.

Electric utilities are regulated on the basis of their being classified as 'natural monopolies.' In economic terms, a natural monopoly emerges if the technological processes associated with an industry logically tend to consolidate. Consolidation has been considered desirable when greater efficiencies occur as scale increases, within a marketplace where normal competition is so duplicative as to be socially disruptive and diseconomic. In 1940 James Bonbright explained that:

> "public utilities are, to some extent at least, 'natural monopolies.' By that term is meant not only that the utilities occupy in fact a monopolistic status but also that this status is desirable, if not indeed inevitable... In the early days of the local...electric light companies, cities often made strenuous efforts to enforce competition by issuing franchises to two or more companies with the expectation that they would vie with each other in selling service when in the same area. Almost without exception these efforts came to grief because of the technological nature of the business. The duplication of mains or wires in the same streets proved terribly wasteful; and the heavy overhead expenses of a public utility plant led to that suicidal type of rivalry called "cut-throat competition." In consequence, most of these competing enterprises were merged, with or without public approval, and the customer lost his chance to pit one electric company or one gas company against the other as a means of bargaining for the lowest possible rates.

> As a result of these experiences public opinion became reconciled to the idea that the grant of a public utility franchise means, in effect... the grant of a monopoly..."[1]

Utility economist Emory Troxel affirmed this statement in 1947 and observed that "the notion of a natural monopoly was invented to justify exclusive markets for utility companies after their ineffectual and sometimes wasteful rivalry proved unsatisfactory to both the investor and the consumer interests."[2]

Lucien Smartt, Editor-in-Chief of Public Utilities Fortnightly, a utility trade journal, recently analyzed the insulation from actual market competition historically provided to electric utilities by regulation and approved:

> "We have never heard anyone argue seriously that regulation should be credited for the remarkable technical and business strides made by either the electric or telephone utility industry--other, that is, than through the important enough factor of protection from 'ruinous competition' provided through limitations on entry into the business and the setting of nonvarient rates and prices for the service. This was the very role envisioned by Samuel Insull himself, early giant of the electric utility industry, in embracing the institution of regulation, and it was indeed of considerable importance because with assured markets and freedom from cut-throat competition, financing for the industry's growth on reasonable terms was more readily available."[3]

The assumption that electric utilities still qualify to be insulated from actual market competition by regulatory commissions is still reflected in N.Y.S. Public Service Law. As quoted at the beginning of Chapter One, the NYPSC justifies its existence on the premise that

> "Since utility service is recognized as a 'natural monopoly' our regulation provides the economic

> protection that the marketplace ordinarily would provide."[4]

Specifically, what are the economic conditions which justify an electric utility to be considered a 'natural monopoly'? According to utility economist Charles Phillips Jr., the status of natural monopoly, offering a business regulatory oversight in lieu of actual market competition, "is predicated on the idea that an enterprise can achieve lower costs if placed in the position of a monopolist in a market... The inherently noncompetitive market situation... is determined by economies of scale... When economies of scale permit only one optimum-size producer in a market, it is highly desirable for public policy to allow a monopolistic supplier to operate." To assure that the consumer benefits from this, "the presence of a monopolist calls for some degree of public regulation."[5]

Former Chairman of the NYPSC, Alfred Kahn, affirms this justification of a natural monopoly in his views on "The essential prerequisite of natural monopoly."

> "The critical and--if properly defined--all-embracing characteristic of natural monopoly is an inherent tendency to decreasing unit costs over the entire extent of the market... The principal source of this tendency is the necessity of making a large investment merely in order to be in a position to serve customers on demand."[6]

Irwin Stelzer, another utility economist, has written what might be viewed as an elaboration on Kahn's "essential prerequisite of natural monopoly," by noting three specific aspects associated with decreasing unit costs:

> "The first is short-run decreasing cost. This reflects the fact that once an investment in facilities is made, output can be increased with unit costs declining until the physical capacity

> of the facilities is reached.
>
> The second aspect of decreasing cost relates to the long-run. This phenomenon arises from the fact that, at any point in time, the unit cost of adding capacity declines as the size of the additional facility increases. Note that whereas the short-run decreasing cost situation relates to fuller utilization of existing capacity, the long-run decreasing cost situation applies to the economies associated with larger rather than smaller additions to capacity.
>
> The third aspect of decreasing cost reflects the fact of technological progress. Note that the second aspect is basically a static concept; at any point in time, with given technology, larger capacity increments tend to be associated with lower unit costs. But his third aspect of decreasing cost is dynamic: as technology changes, the real unit costs of adding capacity decline."[7]

Con Edison no longer realizes declining cost economies of scale. (See Chapter Three) The company itself long ago recognized this and commented back in 1971 that "Technologically, the production and transportation of these forms of energy have been on a productivity plateau for the past five or more years."[8] This recognition by the company that its technology confronted thermodynamic limitations as far back as 1966 indicates Con Edison's incompatibility with Stelzer's "third aspect of decreasing cost..., [of] technological progress," belying this essential aspect of a natural monopoly. As mentioned in Chapter Two, Section VI, Con Edison's heat rate --the measure of how efficiently fuel is concerted into electricity-- corresponds to a national average achieved in 1956, thirty years ago.

Conversely, the technological progress in energy and electricity use today is taking place in those areas which cogenerate or which tend to reduce electricity demand. As mentioned in Chapter Three, these electricity saving technologies are emerging at "dizzying speeds."

Furthermore, to the extent that technological progress is taking place in generating technologies, such progress is now associated with smaller-scale technologies closer to the load site and able to avoid distribution and fuel conversion losses. Con Edison's technological limitations have earned it the dubious distinction of being classified for years among the most inefficient utilities in the nation (See Chapter Two, Section VI).

Nor does Con Edison seem to qualify for Stelzer's two other aspects of decreasing unit cost, which Alfred Kahn considers the "essential prerequisite for natural monopoly." Regarding Stelzer's discussion of natural monopolies realizing decreasing unit costs, the per unit cost of adding capacity to the Con Edison system no longer declines as the size of the additional facility increases. This is a limitation confronting the entire utility industry and threatens to make obsolete existing facilities worth many billions of dollars. As discussed in Chapter Three, a confluence of political, economic and ecological developments have emerged over the past 20 years to broadly reinforce the thermodynamic limitations which undermine Con Edison's ability to realize decreasing unit costs.

Larger facilities with longer construction lead times tie up capital without a return for as much as 10-15 years. This raises the cost of a large-scale investment for the utility, and, ultimately, all consumers of electricity, who will be called upon to compensate for this diseconomy when the facility comes on line. Given the enormity of some of these diseconomies many communities around the U.S. face "rate shock," a concept used to describe the effect on local economies when

the cost of a giant facility is added to a utility's rate base. Reinforcing a diseconomic cycle for the utility, rate shock tends to increase efficiency efforts and conservation by consumers, lowers electrical demand, and slows revenue growth. This diseconomy also undermines the ability of a utility to realize decreasing unit costs. In addition, larger, more environmentally obtrusive facilities are much more difficult and costly to site. In the past, local opposition to Con Edison's large scale plans has prevented the siting and construction of some facilities. Any large facility is now prone to incur challenges from powerful conservationist groups, as well as additional bureaucratic challenges inherent in the lengthy and labyrinthian permitting process which large combustion facilities are subject to. Indeed, in the case of nuclear powerplants --one of Con Edison's preferred technologies-- each licensing and siting process virtually receives national attention and includes the construction of civil defense plans, required to evacuate populations within ten mile radii of the facility, a very costly --if not impossible-- task. Economic and technological efficiences no longer increase as the size of utility generating technology gets larger. Utility analyst John Ferguson affirmed on this in a recent issue of Public Utilities Fortnightly:

> "Even casual observers recognize that the costs of producing electricity have greatly increased in recent years. Cost increases encourage the development of alternative sources of energy, and some of the alternatives currently under development lend thenselves to moving the generation location back to load centers. In addition, some alternative sources have short lead times and minimal environmental impact...
>
> Alternative sources of energy have the potential for beginning to affect the usefulness of electricity generating plants and their high-

> voltage transmission networks before the end of this century. If this comes about, the electric utility industry may find its position similar to that of the telephone industry--with obsolete facilities not fully depreciated."[9]

He went on to label large utility technology "White Elephants."

The last aspect of decreasing unit costs inherent to natural monopolies as described above by Stelzer is a condition where "output can be increased with unit costs declining until the physical capacity of the facilities is reached." In Con Edison's service territory cost-effective conservation and a recomposition of the N.Y.C. economy from manufacturing to service, has brought level or declining electricity demand growth. As a consequence, Con Edison has an enormous, 50% overcapacity --possibly the greatest amount of overcapacity of any utility in the nation. With a 50% overcapacity in generating technologies, (and transmission line capability) Con Edison even today engages in promotional campaigns and encourages electricity use to realize maximum facility output, (See Chapter Three, Section V). Of course, promotion increases the consumption of fuel --especially in an inefficient system like Con Edison where fuel is converted to useful energy at about 28% efficiency-- and has historically led to the justification for constructing new powerplants, however environmentally obtrusive and diseconomic. Describing the continuous desire of utilities like Con Edison to increase revenues through promotion, David Roe, the Environmental Defense Funds's West Coast regional counsel, has written that "Overinvesting in the central station dynamo was what had put the industry into a sickbed in the first place. Cure us with a huge dose of extra money... and we promise to go right out and do it

again."[10] N.Y.S. has cured Con Edison with a huge dose of money, (See Chapter Two) Now the company wants to go right out and do it again.

In our new energy era promotion by Con Edison faces many structural obstacles, however much management believes "we lose on conservation" (See Chapter Three, Section V). The company's NYC service territory has undergone a compositional change over the past 25 years from an economy dependent on manufacturing to one dependent on supplying services. And this trend is increasing. However, service sector workers use one-quarter the amount of electricity as an average manufacturing worker.[11] Along with increasing costs (especially for fuel) this has led to a slowing or leveling of electricity demand in N.Y.C. and further interferes with the company's ability to realize declining unit costs by increasing output. Perhaps most importantly, new energy-saving or high efficiency technologies are emerging at "dizzying speeds" and even if Con Edison does increase the amount of power generated from its plants, it would be more economical and efficient to increase the efficiency of existing consumers of electricity, or supply the power with any one of a variety of new high efficiency, lower cost technologies. Speaking at the 96th annual convention of the National Association of Regulatory Utility Commissioners, Amory Lovins summed-up these issues and stated that the

> "long-run supply curve for electricity is so flat and slopes so gently that the market-clearing price will never be high enough to justify building more central thermal power stations. The era of big plants is over... Given the increasing availability of cheap ways to save electricity, dramatic efficiency improvements will happen with or without the utilities' blessing and comprehension. Their choice is between participation and obsolescence."[12]

Thus, for basic thermodynamic and economic reasons, Con Edison no longer satisfies the criteria for being classified as a natural monopoly. It no longer achieves economies of scale or marketwide decreasing unit costs, the "essential prerequisites of natural monopoly." Nor is there reason to believe it can ever regain these historic technological and economic possibilities in its current form. We are in a new energy era and Con Edison can only postpone its political and economic impact.

II. The NYPSC: Still Providing the Economic Protection of a Marketplace?

Because Con Edison is a monopoly franchise it is not subject to normal market competition, the process ordinarily viewed in the U.S. as the most efficient mechanism for allocating goods and services. Instead of actual market competition for electrical utilities, government regulation claims to act as a substitute enforcer of the "economic protection the marketplace ordinarily would provide."[13]

In order to assess whether the regulatory structure overseeing Con Edison effectively substitutes for actual market competition, let us begin by determining what markets are supposed to do. On a more abstract level, markets are fluid, ever-changing systems for commodity exchange, dependent mostly on the pursuant of self-interest. According to Charles Lindblom

> "A market is like a tool: designed to do certain jobs but unsuited for others... Like authority systems that can organize millions of people in great tasks of social cooperation despite the characteristic flaws of such systems, market

> systems accomplish great tasks despite their misallocations and inefficiences. Market systems encourage thousands and millions of initiatives. They are turbulent, open-ended systems that can change or grow at any of innumerable points. They allow great room for invention and improvisation, individual and local resourcefulness, a multitude of challenges and potential responses..."[14]

In more specific economic terms a market is supposed to satisfy consumer preference --however uninformed, manipulated and inequitably satisfied-- in the most efficient manner practicable. The spur to efficiency, of course, is competition: a firm unable to maximize efficiency will be unable to meet the price of more efficient competitors and will lose out. According to economist Paul Samuelson's basic explanation:

> "A competitive system is an elaborate mechanism for unconscious coordination through a system of prices and markets, a communication device for pooling the knowledge and actions of millions of diverse individuals... Actually... ours is a mixed system of government and private enterprise... a vast system of trial and error, of successive approximation to an equilibrium system of prices and production... What things will be produced is determined by the dollar votes of consumers... How things are produced is determined by the competition of different producers. The method that is cheapest at any one time, because of both physical efficiency and cost efficiency, will displace a more costly method.
>
> The only way for producers to meet price competition and maximize profits is to keep costs at a minimum by adopting the most efficient methods."[15]

Thus, the three essential aspects of a market situation can be simply stated as follows:

A. A market tends to be sloppy, flexible, ever-changing and rewards innovations which increase efficiency.

B. Within a macro context of duplication of services, firm specific, (micro) efficiencies are rewarded with greater sales and inefficiency is penalized with lower sales.

C. Supply responds to consumer demand.

Con Edison is currently among the most financially healthy electric utilities in the U.S. As discussed in Chapter Two, over the past ten years Con Edison's cash holdings went from zero to $589 million, its assets increased 68%, its rates tripled and net income rose 177% (over 50% above the Consumer and Producer Price Indexes) During the past 10 years the market value of its stock soared from $3.75 to $50, where it split. Were rational market pressures in force, we would assume that demand for Con Edison's product increased during this period, while the company maintained or increased its production efficiency. In fact, just the opposite occurred: the company's thermodynamic efficiency has been on a "productivity plateau" since at least 1966 and the heat rate efficiency of its best fossil-fueled plants corresponds with a national average achieved by the industry in 1956, (See Chapter Two, Section VI and Chapter Three, Section VI). In addition, while the company's assets and profitability soared, its market contracted by over 100,000 ratepayers, operating costs rose 230% and sales to remaining customers dropped overall by at least 5%. During the past few years, as Con Edison emerged among Americans most profitable electric utilities, it was cited by Wall St. analysts as among the most inefficient --sometimes the most inefficient-- investor owned electric utilities in the U.S.

During this same decade, while Con Edison's technological productivity was stagnant --or declining-- the increases in technological efficiencies occurring in the realm of alternative energy technologies was advancing at an astounding rate. New cogenerators can use fuel at efficiency ratios of up to 80-85%, producing both steam and

electricity (at prices as low as 1.5¢ per kwhr) with virtually no distribution losses, (while Con Edison struggled with fuel efficiency ratios moving downward from 28%). And light bulbs exist which produce 75 watts worth of illumination for 18 watts worth of consumption, producing the equivalent of a 57% watt powerplant for each bulb installed (while Con Edison's management lamented "we lose on conservation" and the company has 50% excess generating capacity).

That the NYPSC has not enforced "the economic protection the marketplace ordinarily would provide" in N.Y.C. seems clear. (That it has not done so for other regions of the state is suggested by a number of other utility issues plaguing N.Y. What effective marketplace would allow the emergence of the Nine Mile Point II and Shoreham nuclear powerplants, two of the greatest boondoggles --10-15 years behind schedule, fifteen times over budget-- in U.S. corporate history, occurring in one decade, in one state, costing a total of $10 billion.) Thus, in general and specific terms, this dissertation has argued that Con Edison no longer satisfies the criteria of 'natural monopoly' and the NYPSC no longer effectively substitutes for market competition in an economically rational way.

III. Alternatives

A fundamental assumption underlying America's free enterprise market system is that as businesses pursue their goals the interests of the public are most efficiently served. Implicit in this assumption is that business can and will respond to changing social and economic realities. This dissertation has argued that Con Edison has not

responded efficiently to new market and social realities and that although the NYPSC was designed to enforce rational market pressures, it does not do so. Con Edison has prospered and its rates have tripled even as demand for electricity in NYC has declined. Despite a virtually complete redefination over the past two decades of the economics, social and technological efficiencies associated with supplying electricity, Con Edison has not responded effectively to new market realities and holds virtually the same operating outlook and promotes virtually the same technologies as it did 25 years ago.

Within a different though analogous regulatory context a former Commissioner of the Securities and Exchange Commission recently stated that "Clinging to regulatory sacred cows that are approaching their 50th birthday risks deadening innovations and reducing social benefits from regulation."[16] The NYPSC is approaching its 80th birthday and as it does, ideas about reforming it --so as to increase the "consumer vote" in its hypothetical marketplace-- are circulating.

Legislative oversight of the NYPSC is performed by the State Assembly Committee on Corporations, Authorities and Commissions. For the past 5 years that important committee has been chaired by Assemblymember G. Oliver Koppell (80th A.D.) Responding to June 1983 a N.Y. Times editorial about the NYPSC, Koppell stated:

> "You dismiss the argument that the New York Public Service Commission is in some sense a 'captive' regulatory body. However, the very nature of the present regulatory arrangement, which places the P.S.C. Commissioner in the position of having to protect consumer interests while balancing the legitimate financial needs of utilities, creates an unmanageable conflict of purpose in the agency.
>
> And the utility companies are in a much better position than are consumers, in terms of resources and expertise, to communicate with, and persuade,

> regulators of the merits of their case. They are best able to persuade--or capture, if you will--the hearts and minds of those whose opinions are to be arrived at by arms-length analysis."[17]

Koppell views the problem with the NYPSC as one where rates are not controlled as much as they might be because utilities have disproportionately greater resources and access to the commissioners and their staff than do consumers. To quote Koppell again:

> "Only aggressive regulation, in the form of equal and opposing parties bringing competing interpretations to the facts and hypotheses presented in a rate case can hope to discover the optimal level of allowable expenses... This interplay of countervailing arguments is intended to simulate the competitive marketplace, which in the absence of a monopoly franchise would force utilities to perform efficiently and economically."[18]

Koppell has designed a restructuring plan for the NYPSC (which has received the support of over 100 Assemblymembers, the Attorney General and two commissioners, though regularly blocked in the State Senate) which he feels will increase the voice and influence of the consumer. According to this plan the NYPSC would be divided into three distinct agencies: an Office of Consumer Advocacy; an Office of Compliance and Enforcement, and the Public Service Commission. According to Koppell the Office of Consumer Advocacy would act as an attorney for the consumer. Its staff would examine the utilities rate requests and argue in behalf of the consumer. Utilities would argue their own cases, as they do now. The Office of Compliance and Enforcement would enforce Public Service law and monitor utilities' accounts. The Public Service Commission would adjudicate rate cases. Koppell's plan would also give the commissioner's of the NYPSC more staff support.[19] Currently, only the Chair of the NYPSC has staff support; Commissioners have only a

secretary. As a consequence, most of the power of the NYPSC is now in the hands of the Chair and the Commissioner's General Counsel, who is appointed by the Chair. Koppell's plan seeks to "diversify... reasonable viewpoints" which, he hopes, will benefit the consumer.

Another, though more simplistic proposal to reform the regulatory process so as to increase the voice of of the consumer is the effort to establish a Citizen's Utility Board (CUB). The concept of CUB was developed by consumer activist Ralph Nader in 1974. According to a description of CUB published in the N.Y. Times

> "A citizen utility board costs government nothing and makes legislators appear to be doing something to ease economic problems. All lawmakers have to do is force the utilities to insert voluntary membership soliciations in monthly bills. Then it is up to the independent board to hire lawyers, rate analysts and lobbyists to speak for consumers, who are polled regularly."[20]

The main purpose of a CUB would be to represent all classes of consumers --including businesses-- before the P.S.C. during rate increase requests. It would also provide public information and assist with consumer complaints. The organization would be set up by an interim board of directors, to be replaced by an elected board once consumers have joined, and would be not-for-profit. A CUB exists in Wisconsin, Illinois and the service territory of the San Diego Gas and Electric Company in California,[21] and variations of the idea are circulating in at least 25 state capitals.[22]

According to Ralph Nader, CUB is "perhaps the most creative consumer idea of the last generation." Commenting on its potential efficacy he stated "If we pass a law, there's illusion. What's the illusion? That government will enforce the law. This [CUB] is no

illusion. This not only gives people the tool for justice, it puts the tool kits on their backs."[23] Nader points out that CUB offers consumers a non-governmental mechanism to "redress the imbalance of power between utilities and consumers" without imposing additional costs on those who do not care to participate.[24] CUB legislation has in recent years been regularly passing the N.Y.S. Assembly, with the active support of Governor Cuomo, though it has just as regularly been dying in the Republican controlled State Senate. As a consequence, Governor Cuomo, in 1983, ordered the NYPSC to consider an in-agency administrative action to facilitate the development of this citizen intervention organization. In May 1984 the NYPSC "concluded that providing ratepayer access to the bill envelope to facilitate increased utility consumer representation is in the public interest. Further, we find that the commission has the legal authority to require utilities to open their billing envelopes for this purpose. Thus, we will direct the appropriate utilities to open their billing envelopes to enable a qualifying organization to communicate with consumers and solicit membership and funds."[25]

(Two NYPSC Commissioners, Anne Mead and Rosemary Pooler, though agreeing with the desirability of establishing a C.U.B. disagreed with the NYPSC's specific implementation plan for three reasons. First, they argued against the NYPSC plan for not having "external limitations on who is eligible to serve" as in CUB director. According to their dissent, "We believe that there should be external limitations which would exclude employees, directors and consultants of a pulic utility doing business in New York State, employees of the Department of Public

Service and Power Authority of New York, and elected officials or persons seeking elected office. We believe that such limitations are essential to avoid serious conflict of interest problems and to assure the creation of a citizen controlled Board of Directors." They also argued in behalf of a statewide CUB instead of the regionally based plan approved by the NYPSC on the grounds that a statewide CUB would be more able to accumulate resources and be more effective. Finally, they argued that the NYPSC decision to judge against "misleading [CUB] information" as opposed to "false information" opened the oversight of CUB to "subjective opinions as to what is or is not misleading."[26])

At the time Governor Cuomo requested that the NYPSC consider the establishment of a CUB to increase the consumer's voice in the commission's hypothetical marketplace, Con Edison announced it would "resist stiffly." The company claimed that despite its state granted monopoly franchise the contents of its billing envelopes were "constitutionally protected under the right to freedom of speech" and that any NYPSC regulations requiring CUB insertions would be improper "governmental interference."[27] Thus, after the NYPSC decision to establish a regionally based CUB was announced, Con Edison litigated against this new attack on its operating perogatives. In March 1985 a N.Y.S. court ruled in behalf of the company, stating that the NYPSC cannot require the company to include CUB inserts in utility billing envelopes. This case has now gone to the U.S. Supreme Court, which has agreed to decide the issue.[28]

Another institutional reform designed to increase the consumer vote in the regulated marketplace is electing regulatory commissioners.

Currently, ten state commissions have commissioners elected-at-large including two (Virginia and South Carolina) with commissioners elected by the state legislature.[29] Given the differences in the nature of utility investments (e.g. nuclear vs non-nuclear) among utilities around the nation, it is difficult to indicate conclusively what elected commissions mean for electricity rates. However, if the allowed and earned returns on utility equity can be used --however awkwardly-- to compare the willingness of elected and non-elected commissions to hold rates down, it should be noted that elected commissions offer, as a group, the lowest returns, and rates, to utilities. For this reason they tend to be ranked lowest by Wall St. utility analysts.[30] In New York there seems to be little political momentum for reforming the NYPSC to include elected commissioners.

The three regulatory reforms just outlined --NYPSC restructuring, CUB and elected commissions-- are all intended to increase the voice of the 'consumers vote' in New York's regulated utility market. And there seems to be good reasons for doing so. As pointed out in Chapter One, commissions are not legally, financially or structurally able to oversee utility expenditures in a highly detailed way, and in this way keep rates at their efficient market level. To restate a quote from Alfred Kahn:

> "Effective regulation of operating expenses and capital outlays would require a detailed day-by-day, transaction-by-transaction and decision-by-decision review of every aspect of the company's operation. Commissions could do so only if they were prepared completely to duplicate the role of management itself. This society has never been willing to have commissions fill the role of management and doubtless with good reason: it is difficult to see how any company could function under two separate coequal managements, each with an equally

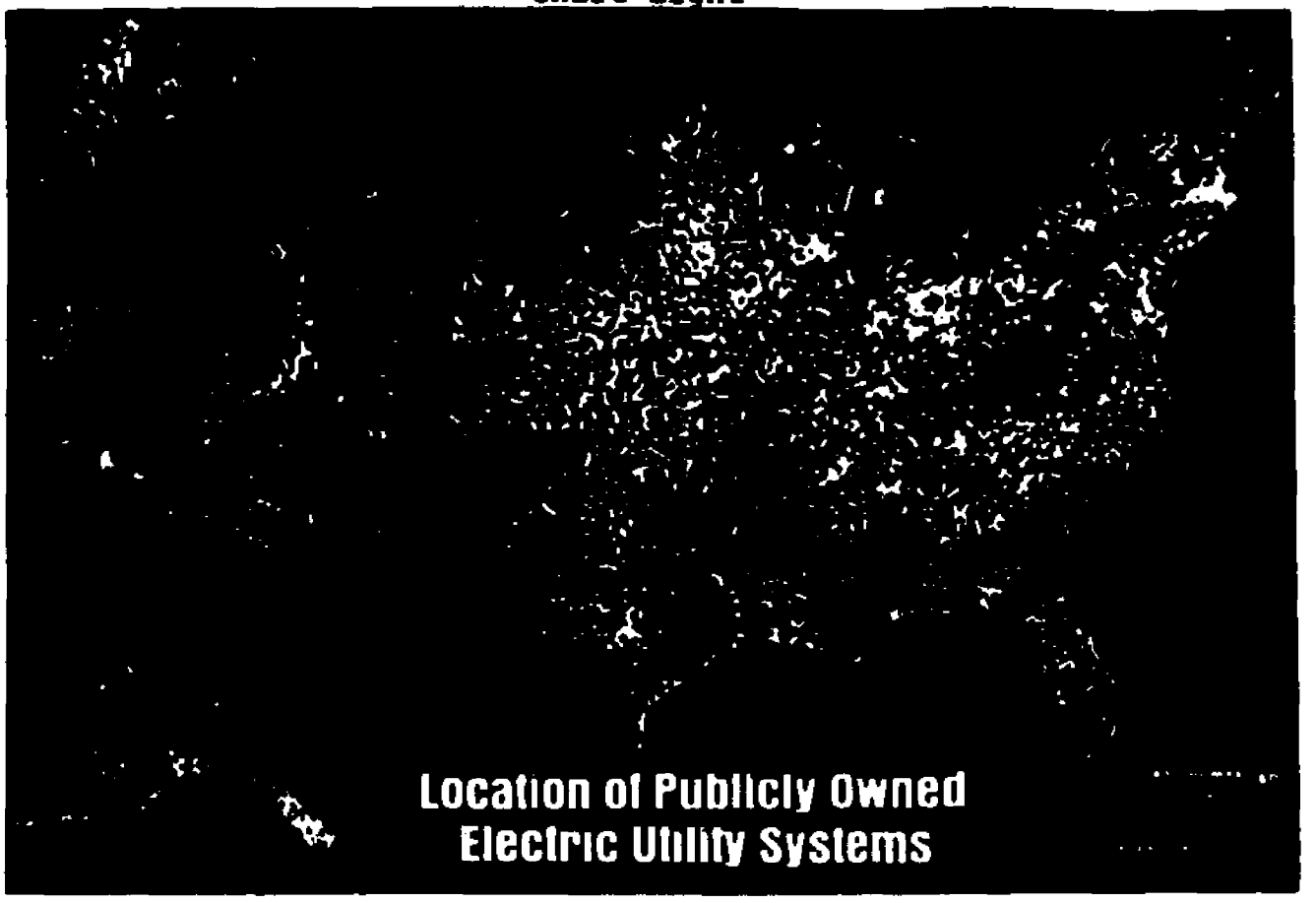
> pervasive role in its operations. Therefore, when the controlling decisions are made; they are made in the first instance by private management itself. Regulation can do little more than review the major decisions after the fact permitting here and disallowing there."[31]

Kahn's insights on the inherent limitation of a regulatory commission to substitute for market competition are especially true for the NYPSC, where a total staff of approximately 625 must oversee the complicated accounts, operations and customer complaints of over 450 utility companies --electric, gas, telecommunications, and water-- located in N.Y.S.

Another popular reform of the regulated utility marketplace involves substituting a form of "public" or "municipal" ownership for investor ownership. There are approximately 2,200 municipally owned electric utilities throughout the U.S. including those in major utilities such as Los Angeles, and Sacremento and the entire state of Nebraska. Nearly 14% or 30 million Americans receive electricity from publicly owned utilities.[32] (See Chart Eight) In New York there are 47 municipally owned systems, (and four rural co-ops, seven investor owned utilities --including Con Edison-- and a state Power Authority).

The major attraction of public systems is their tendency to maintain lower rates while offering greater possibiliities for local control over this vital resource. Capital for public systems is supplied through the auspices of a government agency rather than from private stockholders. According to a survey published in 1981, the average revenue per residential customer of the investor owned utilities was 44.1 percent higher per kwh than the public systems' average, (4.64

Chart Eight



Ten Largest Publicly Owned Electric Utilities

Customers Served 1977

Department of Water & Power,
Los Angeles, Calif. 1,192,700

Puerto Rico Water Resources Authority,
San Juan, Puerto Rico 690,952

Sacramento Municipal Utility District,
Sacramento, Calif. 291,485

Light, Gas and Water Division,
Memphis, Tenn. 284,988

Public Service Board,
San Antonio, Tex. 272,884

Department of Lighting,
Seattle, Wash. 268,477

Salt River Project,
Phoenix, Ariz. 260,812

Jacksonville Electric Authority,
Jacksonville, Fla. 213,529

Omaha Public Power District,
Omaha, Neb. 199,257

Nashville Electric Service,
Nashville, Tenn. 193,969

Local Publicly Owned Electric Utilities

State	number	State	number
ALABAMA	36	NEW HAMPSHIRE	5
ALASKA	10	NEW JERSEY	9
ARIZONA	19	NEW MEXICO	9
ARKANSAS	15	NEW YORK	47
CALIFORNIA	32	NORTH CAROLINA	71
COLORADO	32	NORTH DAKOTA	11
CONNECTICUT	8	OHIO	83
DELAWARE	9	OKLAHOMA	70
FLORIDA	33	OREGON	17
GEORGIA	53	PENNSYLVANIA	34
HAWAII	0	RHODE ISLAND	1
IDAHO	13	SOUTH CAROLINA	22
ILLINOIS	41	SOUTH DAKOTA	34
INDIANA	74	TENNESSEE	63
IOWA	143	TEXAS	78
KANSAS	124	UTAH	38
KENTUCKY	27	VERMONT	19
LOUISIANA	31	VIRGINIA	17
MAINE	7	WASHINGTON	45
MARYLAND	7	WEST VIRGINIA	2
MASSACHUSETTS	41	WISCONSIN	84
MICHIGAN	43	WYOMING	13
MINNESOTA	129	AMERICAN SAMOA	1
MISSISSIPPI	28	GUAM	1
MISSOURI	68	PUERTO RICO	1
MONTANA	0	VIRGIN ISLANDS	1
NEBRASKA	393		
NEVADA	10	TOTAL	2,228

Source: The American Public Power Association

Chart Nine

Average Revenue and Customer Consumption
For Public and Private Power Systems

	SALES TO RESIDENTIAL CONSUMERS[1]						SALES TO COMMERCIAL AND INDUSTRIAL CONSUMERS[1]					
	Average Annual kwh Consumption		Average Revenue Per kwh (cents)		Average Annual Bill (dollars)		Average Annual kwh Consumption		Average Revenue Per kwh (cents)		Average Annual Bill (dollars)	
	Private	Public	Private	Public	Private	Public	Private	Public	Private	Public	Private	Public
1946	1,298	1,739	3.29	2.32	42.67	40.32	28,110	22,475	1.50	1.29	421.55	289.24
1950	1,767	2,518	2.95	1.99	52.14	50.06	33,653	25,124	1.54	1.33	518.55	334.40
1955	2,573	3,824	2.76	1.69	70.97	64.63	49,038	38,329	1.45	1.19	711.04	457.55
1960	3,454	5,208	2.62	1.58	90.51	82.46	61,944	49,421	1.49	1.22	922.71	604.69
1965	4,618	6,634	2.39	1.53	110.53	101.26	79,201	66,396	1.40	1.18	1,109.26	783.93
1966	4,931	7,007	2.34	1.50	115.37	105.13	85,265	70,557	1.37	1.16	1,168.58	818.81
1967	5,220	7,317	2.31	1.49	120.38	108.90	89,347	74,373	1.37	1.16	1,224.13	865.43
1968	5,706	7,880	2.28	1.47	128.43	115.93	96,332	79,687	1.36	1.15	1,307.14	916.71
1969	6,246	8,546	2.21	1.45	137.99	123.90	102,965	85,683	1.36	1.15	1,395.61	983.24
1970	6,700	9,015	2.22	1.47	148.92	132.89	107,041	89,653	1.40	1.17	1,502.43	1,052.87
1971	7,039	9,378	2.32	1.56	163.08	146.47	110,973	92,778	1.50	1.26	1,671.12	1,170.33
1972	7,391	9,630	2.42	1.63	178.96	156.95	117,793	98,384	1.58	1.31	1,863.05	1,294.31
1973	7,742	10,080	2.54	1.70	196.54	170.80	124,082	103,785	1.68	1.40	2,083.46	1,449.28
1974	7,550	9,797	3.10	1.94	233.85	190.54	121,112	102,974	2.19	1.64	2,655.04	1,693.43
1975	7,830	10,125	3.51	2.33	275.17	236.19	119,381	110,076	2.62	1.97	3,127.77	2,178.01
1976	7,840	9,539	3.78	2.79	295.94	265.76	125,296	111,414	2.82	2.38	3,531.09	2,654.90
1977	8,256	10,791	4.06	2.79	334.92	300.91	130,602	124,331	3.12	2.38	4,076.98	2,954.33
1978	8,453	11,383	4.31	3.00	364.35	341.23	132,610	129,874	3.39	2.65	4,497.61	3,444.14
1979	8,319	10,940	4.64	3.22	385.70	352.43	133,355	129,342	3.66	2.88	4,877.69	3,722.15

[1] *Care should be taken in the use of this data due to year-to-year variations in sample size.*

Source: Public Power, May-June, 1981

Chart Ten

Managerial and Operational Expense Items for Public and Private Power Systems

MANAGERIAL

	Accounting and Collections Per Customer (in dollars)		*Customer Service Information and Sales Per $100 Revenue (in dollars)*		*Administrative and General Per $100 Revenue (in dollars)*	
	Private	*Public*	*Private*	*Public*	*Private*	*Public*
1946	3.73	2.82	1.77	1.03	7.22	6.11
1950	4.44	3.35	1.79	1.11	7.09	6.85
1955	5.33	4.00	1.73	.95	6.73	6.59
1960	6.38	4.94	1.70	1.04	6.29	6.31
1965	7.06	6.15	1.79	1.14	6.23	5.80
1966	7.18	6.13	1.83	1.09	6.00	5.84
1967	7.34	6.48	1.79	1.10	5.87	6.23
1968	7.68	6.78	1.75	1.10	5.70	6.10
1969	8.11	7.36	1.69	1.08	5.74	6.08
1970	8.86	7.98	1.54	1.01	5.87	6.25
1971	9.61	8.77	1.30	.89	5.84	6.06
1972	10.31	9.18	1.00	.80	5.88	5.96
1973	11.33	9.55	.74	.67	5.78	5.79
1974	13.26	10.61	.42	.50	5.19	5.65
1975	15.25	12.33	.30	.35	4.98	5.14
1976	16.34	14.50	.27*	.28	4.99	5.09
1977	17.17	12.75	.36	.22	4.94	4.68
1978	18.59	15.87	.36	.22	5.11	4.64
1979	20.25	16.41	.38	.29	5.21	4.24

(*)"Customer Service, Information and Sales" was formerly listed as "Promotion and Advertising." The 1976 and subsequent year figures reflect a federal reporting change which combined sales expenses with customer service and information expenses.

OPERATIONS

	Production		**Transmission**		**Distribution**	
	Per kwh Sold (in mills)		*Per kwh Sold (in mills)*		*Per Customer (in dollars)*	
	Private	*Public*	*Private*	*Public*	*Private*	*Public*
1946	4.35	4.30	.27	.14	9.37	9.19
1950	4.96	4.68	.26	.13	12.04	11.77
1955	4.42	4.68	.26	.13	14.18	13.79
1960	4.20	4.70	.25	.15	16.19	10.24
1965	3.98	4.34	.21	.15	17.48	17.93
1966	4.01	4.36	.21	.16	17.84	18.54
1967	4.03	4.31	.21	.15	18.67	19.37
1968	4.09	4.16	.21	.15	19.31	20.43
1969	4.21	4.23	.22	.13	20.56	22.88
1970	4.76	4.61	.23	.15	22.14	24.15
1971	5.49	5.25	.24	.16	22.82	25.41
1972	5.97	5.71	.25	.16	24.13	26.02
1973	6.70	6.47	.26	.17	25.52	27.53
1974	10.72	8.01	.29	.18	26.46	29.98
1975	12.70	9.35	.31	.21	27.63	31.78
1976	13.73	12.04	.34	.29	29.51	34.18
1977	15.87	13.28	.35	.54	31.76	33.78
1978	17.27	14.37	.37	.64	34.81	35.94
1979	19.69	16.32	.40	.67	37.68	38.17

Source: Public Power, May-June, 1981

cents for the private systems compared with 3.22 cents for the public systems). While the average residential customer in the public system used 31.5 percent more electricity, that consumer nevertheless had a total average annual electric bill 8.6% less than the average ratepayer of the private system. Similarly, the per kwh cost to commercial and industrial customers of public systems averaged 27.1 percent less than power supplied by privately owned systems.[33] (See Chart Nine. Public power date does not include rural elective co-ops or federal power systems).

There are a number of reasons which seem to explain why publicly owned systems supply electricity at a lower cost. First, public systems manage to maintain lower administrative and general operating expenses than do private systems. Accounting and collections costs per customer, as well as customer service and administrative and general costs all tend to be lower for publicly owned utilities than for the private systems. (See Chart Ten) In addition, production and distribution expenses also tend to be lower for publicly owned systems, though less so for transmission costs.

It is not fully clear why public systems seem better able to keep production management and operating costs below those incurred by private utilities. Certainly one reason is the access historically provided to them to relatively cheap hydroelectric power. Beginning in the 1930s, federal and state legislation often encouraged the move toward municipal ownership by offering publicly-owned utilities and rural-electric cooperatives preferential treatment for federally-sponsored hydropower. In most cases they are offered either lower rates

or guaranteed access to the cheapest available sources. In N.Y.S. the 47 municipal systems and four rural-electric cooperatives pay .5¢/kwh for electricity generated on the Niagara and St. Lawrence Rivers. This power is supplied to them by the Power Authority of the State of New York which is obligated to do so by its federal charter.

A second reason involves the tax exempt financing available to municipal or state run systems. By being able to offer bonds for their financing which provide tax-free dividends, publicly owned systems can keep their dividend payout requirements down. In addition, municipal systems do not have to earn a profit. They have no stockholder class of investors --since they are public systems-- and thus avoid the high cost equity and dividend payments which account for a substantial amount of a private utility's revenue requirements. (Although critics of publicly owned systems occassionally cite the fact that municipal systems are not assessed local taxes as a reason for their lower rates. federal government data has historically shown that municipally owned systems pay a greater percentage of their revenues in payments in-lieu of taxes than private utilities pay in actual taxes.[34])

Another possible reason why publicly owned systems have lower costs might have to do with the fact that public systems are not subject to regul. tion. As a publicly owned system they are considered accountable in the normal governmental --if not directly electoral-- process. Consequently, the regulatory costs assessed on private utilities to help fund a commission or cover rate case costs, are not incurred by a publicly owned system. (Between 1973 and 1983 Con Edison reported approximately $74 million in regulatory commission expenses.[35]) In

addition, as mentioned in Chapter One, Section I, the presence of a commission substituting for market competition might have less of a depressing effect on managerial costs than encouraging extravagance. To quote again from Alfed Kahn, regulatory oversight

> "creates strong incentives on the part of companies to pad their expenses--with management voting itself bigger salaries and other emoluments at no cost to stockholders, and stockholders as well benefitting to the extent that the company can succeed in buying its services, raw materials, and other input at inflated prices from financially affiliated suppliers."[36]

The movement to establish a municipally owned electric utility in N.Y.C. roots back to the administration of Mayor Fiorello La Guardia, who proposed that the city buy the local electric utilities brought close to bankruptcy during the Depression. To do so, Mayor La Guardia had a referendum placed in the 1935 ballot to establish a municipal electric option, but a court voided the referendum two weeks before the election.[37] Over the next year Consolidated Edison was formed through the ultimate merger of approximately 140 electric, gas and steam companies.

More recently, proposals to replace Con Edison with a municipally operated system were put forth in the late 1970s in both Westchester County and N.Y.C. In the case of Westchester, the motivation to use Section 360 of the General Municipal Law --passed in 1934, it authorizes localities to take over their private utilities if they so desire-- was primarily the desire of keeping electric rates down, as well as "allow [for] a phasing-in of alternative power supply sources..."[38]

Westchester planned to initially acquire Con Edison's distribution system and then intergrate alternative energy sources into the grid and

in this way free itself from having to rely on Con Edison's generators. According to an analysis prepared in behalf of Westchester

> "The major items which allow the proposed county distribution system to require a lower revenue requirement, and therefore, charge lower rates is: (1) The ability to obtain [low cost] PASNY [Power Authority of the State of N.Y.] power as a preference customer, (2) to have 100% debt financing using tax exempt municipal bonds which have a lower interest rate than corporate bonds, (3) no requirement to issue stocks which require a high rate of return to attract investors, and (4) be a non-profit tax exempt agency with no requirement to include State or Federal income taxes in the cost of service to electric customers."[39]

According to this analysis, a Westchester county run electric utility would save ratepayers from $18.6 million in 1982 (5.4%) to $116 million in 1987 (22.2%).[40] Nevertheless, the Westchester referendum was narrowly defeated. Con Edison spent $1.3 million to establish and fund an anti-referendum committee called Westchester Citizens Against Government Takeover,[41] spending ten times the amount used by proponents in behalf of the referendum.

In November 1978, the New York City Council, by resolution, established the Public Utility Review Board (PURB) to "study system improvements and/or alternatives which might provide electricity and steam at lower prices to consumers including industrial and commercial users, within the city."[42] The Review Board considered two public utility scenarios for N.Y.C.: First, a city purchase of Con Edison's generation, transmission and distribution facilities and second, a PASNY purchase of Con Edison's generation and transmission facilities. In addition, two methods were used to analyze the costs and benefits associated with each type of public takeover. A "one-year method"

estimated costs and benefits for one year (1979) and focused on the average cost per kilowatt hour to the ratepayer for that year. A second, "15-year method," related costs and benefits over a longer period of time to the 1979 value of funds needed to take over the system. For both methods three categories of costs were used. The results of the analysis for the one-year method for a municipal takeover indicated "moderate savings only in the most optimistic case, increased rates in the reasonable midpoints, and significantly higher rates in the pessimistic case... Even in the most optimistic case, more than $600 million in savings must be generated to offset the costs of financing the takeover."[43] The PASNY takeover alternative was somewhat less costly in the "one-year method" because only Con Edison's generation and transmission assets would have to be purchased.[44] For the "15-year method" of analysis, PURB concluded that "the magnitude of the losses in the more pessimistic scenarios are substantially higher than the benefits possible even in the most optimistic. Although the most optimistic case with tax relief offers a 9 percent reduction in total consumer outlays, the opposite scenario could result in a net increase of 27 percent. Thus, under these assumptions, public takeover poses much greater risks than probable benefits."[45] Thus, because the public takeover scenario would finance the replacement of Con Edison's embedded costs with inflated higher-interest cost obligations, the PURB takeover analyses anticipated marginal or no financial benefits.

A more recent variation of the public takeover scenario has been circulating in the N.Y.S. legislature for the past few years. This plan involves the purchase of the common stock of all of N.Y.S's investor-

owned utilities by the Power Authority. Proponents argue that PASNY can issue tax-exempt, lower-cost revenue bonds to purchase the private utilities common stock. Management would be contracted under PASNY auspices and all other employees would remain. According to Assemblyman Richard Brodsky, sponsor of the initiative (which was co-sponsored by 61 Assemblyman during the 1985 legislative session), a PASNY common stock takeover

> "would reduce rates [statewide] by ending the need for profit, currently 8% to 13% of rates, and federal income tax, currently 5% of rates. All state and local property taxes would still be paid and no tax revenue would be involved. The acquisitions would be financed by revenue bonds repaid through rates. So the savings would be offset by the cost of the bonds, about 5% of rates (10.5% 30-year bonds) for a net saving of 8% to 13% of rates, or over $1 billion a year by 1995."[46]

For Con Edison specifically, Assemblyman Brodsky estimates savings ranging from $492 million in 1985 (8.4%) to $1.1 billion in 1995 (10%) and $1.8 billion in 2000 (12.5%).[47] According to utility critics of this plan, such a statewide takeover scheme would require $10-50 billion in financing costs and would ultimately raise rates. They also argue that publicly owned systems are actually less responsive to the consumer because they are not subject to regulation.[48]

IV. De-consolidating Edison

The fundamental issue raised in this dissertation involves Con Edison's limitation as a regulated utility to respond in an economically rational and technologically efficient way to new political economic

market signals. Primarily because the utility operates in a regulatory environment governed by assumptions formulated in an earlier energy era, the company's recent financing has defied economic rationality (increasing assets and net income while its market contracted). And because of its monopolist power the company has precluded the integration of energy technologies which are thermodynamically more efficient, less costly and more socially acceptable.

The first set of reforms of the hypothetical marketplace in which Con Edison operates, (as pointed out above) would serve to increase the voice of the consumer. The fact that Con Edison's rates have outpaced by 75% corresponding increases in the Consumer and Producer Price Indices suggests that perhaps the consumer "vote" is underrated in the NYPSC's hypothetical marketplace. (See Chapter Two, Section 3) However, as the company points out, a substantial amount of its rates goes to pay for fuel and purchased power (37% of rates in 1983), and the company's enormous consumption of fuel (more than any single industry in N.Y.C. and Westchester "by far") is fundamentally dependent on the inefficiency of its generating technologies. As mentioned earlier, Con Edison uses fuel very inefficiently: the company's heat rate --how well it converts fuel into usable Btus-- corresponds with a 1956 national average, and almost a full three-fourths of the energy in the fuel is lost during conversion and distribution. In addition, many other "embedded" costs --materials, supplies, depreciation, bureaucracy, etc. which together account for over 15% of rates-- are tied directly to servicing the debt and physical plant of the company's effete technology. While an increase in the consumer voice at the P.S.C. would

likely serve to keep rates lower, it could not in and of itself alter the nature of Con Edison's embedded costs --which must be financed-- or improve the company's utilization of natural resources and primary fuels.

On the other hand, although publicly owned systems tend to have lower rates, it has not been empirically shown that these public systems are inherently more responsive to changing market conditions or new social values than their private counterparts. Nor can it be shown that publicly owned systems are inherently more likely to utilize least cost efficient "appropriate" technology. This is particularly true for large centralized public systems such as the N.Y.S. Power Authority. Public systems such as the Power Authority are not subject to regulatory oversight and --especially in the case of PASNY-- often operate with minimal legislative oversight or consumer input. In addition, because the financing structures of most public power systems parallel those of the investor-owned utilities --though tax-exempt and minus stock-holders-- these systems have shown themselves almost equally attracted to encouraging utility growth and consolidation and seem equally attracted to giant scale, complex and less efficient technologies. For example, note the following excerpts from a two-volume analysis of PASNY undertaken in the N.Y.S. legislature:

> "The Power Authority of the State of New York is a billion-dollar corporation, the largest state-owned utility in the nation... it is a rich, powerful and independent state agency...
>
> Considering its origins, the Power Authority might be presupposed, at a minimum, to be neutral in its attitudes toward struggles between the investor-owned utilities, the municipally owned utilities, and municipalization movements. However, beginning with Robert Moses, the Authority has allied itself with the investor-owned utilities to

> conspire against public power and the hopes and dreams of its very own creators...
>
> ...During the past ten years the Power Authority has attempted to site and build a number of new power plants and transmission lines. The new facilities sought to be constructed have included the Greene County nuclear power plant, the Marcy-Massena 765-kilovolt transmission line, the Staten Island coal and refuse-fired plant, the Prattsville pumped-storage hydroelectric project in the Catskills, and the Marcy-South double circuit 345-kilovolt transmission line across the Catskills.
>
> Each of these proposed facilities initiated intense controversy and, to date, two have been abandoned--the Greene County nuclear plant and the Staten Island coal plant. The Authority has finished construction of only one, the Marcy-Massena 765-kilovolt transmission line that brings Canadian hydroelectric power into New York. Prattsville remains under litigation and the 345-kilovolt line is under consideration by the New York Public Service Commission.
>
> It would be difficult to conclude that PASNY had any motive in proposing these projects other than to save money for New York State's electric ratepayers; however, the Authority's zealous and aggressive pursuit of the licensing of these facilities has left a host of regulators, elected officials, regulatory staff and citizens stunned by the Authority's tactics and behavior...
>
> Prattsville, Marcy-Massena, Marcy-South, Staten Island--in each of these cases, whether the project was built or not, those who came to know the Authority wondered how this vision of a public yardstick by which to measure the performance of the investor-owned utilities, created by Franklin Roosevelt, had become the unaccountable entity it is today. The tainted offers of payment, the behind the scenes maneuvering, the refusal to disclose information to test assumptions, have made many wonder whether the Authority can be guaranteed to conduct its affairs in an open and honest manner.[49]

Many publicly owned systems smaller than PASNY have also resisted new political and economic market and environmental pressures. Some of the nation's worst corporate debacles are associated with the collective efforts of municipal utility systems to promote electricity use and

investments into nuclear power. To name just a few notable examples: The four-billion dollar bond default on investments into two nuclear powerplants owned by the Washington Public Power Supply System --the largest municipal default in U.S. history-- was overwhelmingly a municipal power project; Wabash Valley's 17% ownership of the ill-fated Marble Hill nuclear powerplant caused that municipal utility to go bankrupt in 1985; the troubled and costly Seabrook nuclear powerplant is 26% owned by Massachusetts public power systems; the Vogle nuclear powerplant in Georgia, Catawba in South Carolina and Clinton in Illinois are other examples of major investments into diseconomic, socially divisive and environmentally problematic technologies made by publicly owned utilities. Apparently, it is difficult to argue that public ownership is necessarily more responsive to social and market pressures than investor-owned utilities.

Marketplaces which are less insulated from economic and social pressures should be less likely to generate many of the problems experienced by Con Edison and many other utilities around the U.S. However, the nature of electrical technology and its crucial role as a basic necessity in our society require it be subject to public oversight. Though the nature of the electrical energy economy has changed, the social importance of electricity as a 'public utility' has not.

Therefore, the new direction to be considered for reforming the diseconomies now associated with Con Edison must allow a freer expression of social priorities and rational market pressures to have force, while assuring flexible and locally based government coordination

of the energy grid. As Con Edison stated in P.S.C. case 28223 "over the long run, both the utilities and their customers will benefit from the... workings of... market fories."[50] A phase-in to a mixed economy of government/private incentives and technologies seems called for. New York City --utilizing Section 360 of the State's General Municipal Law-- can broker the transition from Con Edison's inefficient, overcapitalized, socially divisive and environmentally ruinous technologies, to the soft-path of solar electricity, small on-site cogeneration plants for commercial, industrial and public buildings and district heating for neighborhood redevelopment. To further this alternate energy strategy, N.Y.C.'s first step would be to acquire control of Con Edison's transmission system which until now has been closed to the integration of soft-path technologies. The city can issue low cost revenue bonds and condemn only the company's transmission grid. This would not require a total, costly takeover of all of Con Edison's assets. Con Edison could continue to own its current assortment of generating plants while a carefully coordinated assimilation of low-scale technologies into the grid would increase the system's efficiency, keep costs down, serve to better protect the environment and phase out --due to their uncompetitiveness- Con Edison's effete technologies.

Such a city-wide coordinated introduction of low-scale technologies operating in a freer market environment, might further community development by providing technical energy training to neighborhood institutions. Each community planning board throughout the city could participate in developing locally appropriate energy supplies. Instead of remote utility bureaucrats designing costly, inefficient and inherent

outsized powerplants, city-Energy Office engineers, planners, economists and lawyers could deliberate with local leadership, putting solar panels on a row of brownstones, blueprinting an on-site cogenerator for a hospital or school, or designing an energy conservationist recycling cooperative for every congressional district. Such a least-cost scheme will not only be more capital and resource efficient, but tend to reduce the diseconomic social divisions now associated with large technologies and powerplant sites. In 1967 the company itself stated that costs could be reduced and services better supplied by "decentralizing certain functions and thereby bringing day-to-day operations of the company closer to the customers"[51] In 1970 the company stated that "Divisionalization... will give us greater control across the board."[52] At the same time that fuel conversion and distribution losses will be eliminated, jobs for the skilled and unskilled might be generated into a range of consumer and financial markets, including everything from insulation and caulking to carpentry and securities issuances.

Notes

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22. New York Times, June 6, 1982.

23. Quoted in Village Voice, September 20, 1983.

24. N.Y.P.S.C., Case 28655, p.20.

25. Ibid. p.42.

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28. Wall St. Journal, March 26, 1985. p.12.

29. Salomon Brothers, Inc., Electric Utility Regulation--Semi-annual Review. February 26, 1985. pp.10-19.

30. See Ibid, for example, where, on a grading scale of A to E, the elected commissions received grades of D+, C-, D+, E, D, E, C-, C, D, C-, well below those for commissions with non-elected commissioners.

31. Kahn, op.cit. Vol. I, p.29,31. See Chapter One, Section 1.

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33. Public Power, May-June, 1981. p.14,15.

34. See, for example, "The People's Right to Choose" op.cit. p.11.

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36. Kahn, op.cit. Vol. II, p.48.

37. Assembly Joint Subcommittee on Public Power The Future of the Power Authority of the State of N.Y. May 1984. Vol. I, p.2.

38. R.W. Beck and Associates "Proposed Acquisition and Operation of Electric Distribution Properties of Consolidated Edison Company by Westchester County, New York." July 31, 1978, p.3. (Hereafter referred to as Beck Report.)

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47. Data provided by the Office of Assemblyman Richard Brodsky.

48. See, for example, Statement of the Energy Association of N.Y.S., "Public Power in N.Y.S." before Assembly Committee on Corporations, Authorities and Commissions, N.Y.C., March 14, 1985.

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Conclusion

I

"The Company's services, operations and policies have a direct and often personal impact on the daily life of the public in the communities it serves."

Con Edison

I have argued in this dissertation that despite less costly alternatives, Con Edison has not fundamentally re-oriented its "grow and build" operating logic for at least 25 years. The company has probably not done so since its consolidation in 1936. Con Edison's inefficient generating technologies require more fuel --some of it imported-- than the more efficient alternatives now effectively precluded from making a meaningful contribution to New York's energy grid. Con Edison's deferral and accumulation of federal taxes collected from consumers, its avoidance of meaningful conservation efforts, its maintenance of an exorbitant equity ratio in its capital structure, among other things, all contribute to the high cost of living and doing business in New York City. And if one considers only the efforts undertaken by the company, N.Y.C. is as vulnerable today to an oil price rise or supply cut-off as it was in 1973. Despite the rise in fuel costs over the past decade, despite the tumultous and widespread redefinition of social values regarding environmentalism and resource conservation over the past 25 years, and despite the emergence of alternative high-efficiency technologies able to accomodate these political and economic developments, Con Edison continues to follow an operating logic virtually unchanged from that promoted by the industry a quarter century ago.

Using standard utility economics, I have argued that Con Edison no longer qualifies to be classified as a natural monopoly: the company no longer realizes declining marginal costs over the entire extent of its market. (See Chapter Four) And N.Y.S.'s regulatory apparatus overseeing Con Edison plays a crucial role insulating the company from the competitive market pressures it was originally designed to substitute for and enforce.

Examples of major utilities having re-oriented their operating logic in response to new political economic realities exist. In California, the Southern California Edison Company and the Pacific Gas and Electric Company will meet all their increased load demands with conservation, solar, wind, geothermal and other alternative energy technologies. These two members of the utility industry together serve one tenth of the United States population, and more than a tenth of its anticipated growth.[1] Closer to home, the New England Electric System (NEES) also has plans to rely on alternative technologies and conservation to meet load growth. According to the vice-president at NEES with direct responsibility for overseeing the new program, such an alternative scheme "could never have happened except from the top...[O]ur chairman of the board, pushed it all the way."[2] However, with Mr. John Thornton, Vice-Chairman of the Board of Con Edison, stating "We lose on conservation. Its a peanut business. It can't move our earnings"[3] the hope for such an alternative plan emerging from Con Edison in the near future seems remote.

If this analysis is correct, if my reading of P.S.C. testimony, data and economics is accurate, then an obvious and simple question must

be addressed: with all the major political economic actors in N.Y.C. concerned about the highest electric rates in the nation, and with consumer opposition to the company churning out reform proposals almost annually, why can Con Edison still operate as it always has been? Why have Con Edison and the NYPSC not been reformed, much less 'de-constructed' and replaced by tne regulated, more competitive market system I propose in the preceding chapter? Indeed, according to a July 1978 article in Forbes there is "more popular support for a socialist revolution... than for giving bad old Con Edison a break." Yet, the company remains the same and operates with seemingly impenetrable insulation from any sort of reform.

II

These obvious questions are in fact profound and have no simple answer. One component of an answer is Con Edison's effectiveness as a lobbyist. Con Edison has its own political action committee labeled CEPAC and doles out election year contributions to supportive legislators. During a takeover referendum campaign in 1978, Con Edison outspent opponents ten to one. The company contributes approximately $100,000 annually to the Energy Association of New York, which is the trade association and collective lobbying arm for N.Y.S.'s seven major investor owned utilities. Howard Shapiro, President of the Association, has built up widespread and familiar relationships with virtually all of the influential legislators in Albany who have any oversight powers regarding New York's energy economy. He is a fixture in the State

Capitol, perennially testifying in public --and one must assume arguing in private-- for greater tax relief for utilities, coal conversion, the passing along to consumers of the costs of Shoreham and Nine Mile Point and against any consumer oriented reform of the current regulatory and utility system in N.Y.S. Many influential legislators and staff members listen to him carefully and ask him to prepare policy papers for them on matters ranging from tax reform to public power and conservation.

During their day-to-day business activities Con Edison's top management regularly mingle with regulators, P.S.C. staff, influential N.Y.C. real estate owners, financiers and legislators. They supply perspectives, data, and sometimes lunch. If former Chairman of the Board Charles Luce can be used as an example, we can assume that the current Chairman of the Board Arthur Hausperg gets around. According to Vice-Chairman of the Board John Thornton, former Chairman Luce "spent more time out of the office than in it. He spent a lot of time cultivating The New York Times editorial board, which is quite a powerful group of people, somewhat like a university faculty. He [Luce] was also very good in dealing with politicians... [including] the Governor and the legislature."[4]

Besides Con Edison's Chairman, other members of the company's board also lobby in its behalf. Con Edison's board of directors is made up of prominent financiers and marketing and advertising specialists who can get the ear, vote or financial backing of many legislators, New Yorkers and capital interests. Luce appointed Marian Heiskel to the Board of Con Edison. She is the sister of Arthur Sulzberger, who is publisher of The New York Times. She is also director of special activities with

that organization and co-chairman (with the mayor) of the N.Y.C. Council on the Environment. Naturally enough, Con Edison's other directors are similarly well networked.

Further facilitating Con Edison's lobbying efforts is an influential network of government officials who have either been employed by some of N.Y.S.'s investor owned utilities or who have left government to go to a utility, taking their understanding of regulatory nuances and government connections with them. Dating back to the turn of the century regulatory officials and elected members and staff of the NYS legislature have often sought and obtained high paying employment in the state's utility establishment. Former PSC Chair Joseph Swidler --who claims to have designed the state's 1974 bailout of Con Edison -- went to the Commission from Con Edison's legal department and has been retained by the company for legal services since leaving the Commission. Other examples abound. A N.Y. State Senator (D) left her position in the Energy Committee to become a vice-president at one of New York's major investor owned utilities, (not Con Edison). The former staff director of that same committee came from a N.Y.S. investor owned utility and is now back working at the utility. And the former General Counsel of that committee also worked for a utility and is now General Counsel at the P.S.C. A senior staff member in the Assembly's Committee on Corporations, Commissions and Authorities --which oversees the P.S.C.-- sought and obtained a high paying position in one of the state's investor owned utilities.

Similarly, state legislators and staff responsible for developing and enforcing environmental protection have also come from companies

they are now supposed to regulate. Some have sought and obtained high paying positions in companies they formerly regulated. The influential position of Executive Director of the State's Legislative Commission on Hazardous Wastes is filled by a former lobbyist with the Business Advisory Council. Three former General Counsels for the N.Y.S. Department of Environmental Conservation --the state agency responsible for overseeing the environmental impact of utilities, toxic discharges and state clean-up efforts-- now represent the Hooker Chemical Company (which contributed to the toxic destruction of the Love Canal community), General Electric (found guilty of illegally dumping PCB's into the Hudson River and fined $4 million) and Kodak (a major polluter of the Hudson River). The former NYS Lt. Governor who played a crucial role in siting a controversial garbage burning powerplant in Peekskill when he was Westchester County Executive, is now President of the company which built the facility. And the Westchester County Health Commissioner who certified the facility is now vice-president of that same company.

Commenting on his own academic consulting relationship with AT&T prior to his appointment as Chair of the PSC, Alfred Kahn (who has also done consulting work for utilities since leaving the Commission) disagreed with critics who argued that his opinions whould be biased in favor of his former consulting client. He stated that it is "virtually impossible to get informed regulators who haven't had some contact with the industry." Nor does Dr. Kahn believe that his prior relationship with AT&T in any way interferred with his ability to serve consumers without bias.[5] Although there is little reason to doubt the sincerity

of Dr. Kahn's remarks --under his leadership the P.S.C. initiated measures to increase the efficiency and accountability of the state's utilities-- it is not unreasonable to suggest that the pattern of "revolving door" relationships in N.Y.S.'s energy economy, only superficially described here, works against fundamental reform of the system and encourages the maintenance of business as usual, however, anachronistic that might be. Indeed, according to Jerold Oppenheim, former N.Y.S. Assistant Attorney General for Energy and Utilities, New York "politicians have always been more concerned with keeping the electricity flowing than with reform or lowering rates. If the system is inefficient and rates are high, a few consumers complain. But if Con Edison threatens that changing the system will make New York's lights go out, nobody moves."[6]

Con Edison's lobbying is also supported by its corporate philanthropy. Over the past decade Con Edison has increased over five-fold its donations to local community groups. (See Chart Eleven) These donations, which connect Con Edison with many influential N.Y.C. groups are listed as an operating expense and included in a consumers' bill for electricity service. They are a variation of utility political advertising (which cannot be reimbursed by consumers) and have been supplemented in the past with other "consumer affairs programs" including such items as "sewing classes" and the free distribution of hundreds of thousands of tickets per season to N.Y. Yankee baseball games. These donations reflect the company's public relations effort to "reach audiences with... specialized interests," a policy outlined by the company in the early 1960s.

CHART ELEVEN

Con Edison's Expenditures on Charitable Donations

1984	$ 2,796,931
1983	3,199,738
1982	2,796,931
1981	2,322,087
1980	1,981,185
1979	1,563,914
1978	1,187,311
1977	938,871
1976	*3,514,088
1975	598,215
1974	521,430
1973	593,408
1972	581,018

Source: Con Edison, Annual Report to the P.S.C., for years indicated.
*Includes donation of Davids Island to the City of New Rochelle amounting to $2,782,561. Otherwise, 1976 donations amounted to $731,527. Davids Island is located in L.I. Sound and was purchased by Con Edison when it planned to build a complex of four nuclear powerplants there. When originally purchased by the company it was paid for by consumers as part of the company's building plans. In 1976 it was again paid for by consumers as corporate philanthropy. (See Chapter One on accounting for the same expense twice.)

In 1980, Con Edison received the first Manhattan Cultural Award for Corporate Involvement from Borough President Andrew Stein. However, a few months earlier, when asked by Jerold Oppenheim why the company did not offer reduced rates for welfare recipients or recipients of social security pensions who spent at least 5% of their gross revenues on electricity (which was a policy Con Edison was offering to industries employing 10 to 500 workers) a Con Edison spokeman rejected the idea by stating that "income redistribution and social programs must... be handled through governmental programs, not through modification of utility rates."[7] That same year Con Edison redistributed over $1.5

million of customer receipts to hundreds of social causes and influential NY groups.

From the point of view of institutional self-preservation, reduced electric rate subsidies and charitable contributions are more useful than reduced rates for the needy. Reduced rates for industries spending more than 5% of gross revenues on electricity encourages these firms to stay in N.Y.C. and not leave the Con Edison grid. It might also encourage an increase in electricity demand. And doling out millions in charitable contributions scores points for the company with influential groups or local leaders and could work to lessen the opposition of groups otherwise at odds with the company. By giving grants to a few influential groups working with minorities, for example, the company could expect to reduce some of the opposition to its high rates in the community most burdened by them. And by giving grants to environmental and conservation groups such as the Environmental Action Coalition, the N.Y. Energy Conservation Fund, the Prospect Park Environmental Center and the World Wildlife Fund (whose President Russell Train mediated Con Edison's 1980 labor dispute with striking workers to the benefit of the company) the company could expect to ameliorate some opposition to its environmental policy. It is a form of political advertising. In combination with one of Con Edison's directors serving as co-chairperson of the N.Y.C. Council on the Environment, the company has influence in many of N.Y.C.'s environmental organizations. All these factors, its lobbying and networking, its donations and consumer affairs programs, help keep Consolidated Edison insulated from meaningful reform.

III

Beginning in the 1960s, as environmental challenges to the company's traditional mode of operating intensified, Con Edison began to modify its language and other public symbols. This also contributes to the company's effective response to reformist opposition. Con Edison has developed rhetorical and symbolic adaptations as part of its "continuing effort to maintain and improve public acceptance"[8] of its policies (and rate increase requests). In 1965, the year "Air Pollution Control" was mentioned for the first time in the company's Annual Report to Stockholders, Con Edison presented itself as having been in the vanguard of environmental protection with actions that preceeded by decades the birth of modern environmentalism:

> "The control of air pollution resulting from the burning of fossil fuel in electricity and steam generating plants has been a matter of prime concern to the company for several decades. Since the mid-1930s some $118 million has been expended in this effort."[9]

And perhaps the company <u>was</u> in the vanguard of environmental protection in our earlier energy era. Indeed, the company reputed in its 1966 Annual Report that it "was installing dust collectors in its electrical generating stations some 50 years ago." However, the demands of modern environmentalism are now much more costly and create much greater pressures for the company. Dust collectors will not do.

In 1966 the term "construction activities" disappeared from company reports, and one year later Con Edison changed its motto from "Dig We Must" to "Clean Energy." Its colors became sky blue, grey and white.

Its "world's largest" industrial projects were now announced as projects for land reclaimation and scenic beautification. Here is how the company described the impact of its Storm King plant:

> "The Cornwall plant will be located in an area of natural beauty, and the company is taking this fully into account in its planning. Development of the area in connection with the project will improve the overall scenic values in the vicinity, which over the years have become badly deteriorated."[10]

And although the Cornwall facility was to be a net-energy loser, consuming three kilowatts for every two it generated, Con Edison publicized it as "in fact an example of good conservation."[11] More symbolically, the company began

> "paying renewed attention to the appearance of our facilities. In 1969 we contracted with an architectural firm to improve the appearance of our Astoria, Ravenswood and Arthur Kill stations. We retained a consulting landscape architect to supervise the right-of-way clearing for our high voltage interconnection with the PJM system. At year's end we were in preliminary discussions with another firm of landscape architects for a Master Site Plan for Indian Point, and with an industrial design firm for an electric yard color study. Finally, and very importantly, we added to our staff an experienced architect to serve as Design Coordinator, a sort of in-house critic of company design policy... He will add a design dimension to our engineering economics that reflects concern for the total environment."[12]

Two years later the company began printing its Annual Report on recycled paper, (which it no longer does). And although that same year the N.Y.C. Commissioner of Air Resources told Newsweek, "I could balance the City's budget just by driving up and down the East River Drive past the Con Edison plants and noting every violation,"[13] the company continued operation as usual and soon applied for a permit to convert its plants

back to coal burning. Alas, Con Edison's "very important... Design Coordinator" chose nicely coordinated hues.

IV

Another factor contributing to an understanding of Con Edison's insulation from reform, a public takeover or de-construction has to do with what Thomas S. Kuhn wrote about in The Structure of Scientific Revolutions.[14] In that study Kuhn analyzed the difficulties involved in altering "normal science" and the resistence generated by individuals and "scientific communities" in response to those who encourage a shift in widely accepted operational models or "paradigms."

We can learn about the difficulties of re-orienting Con Edison by reviewing Kuhn. According to Kuhn "normal science" means "research firmly based upon one or more past scientific achievements, achievements that some particular scientific community acknowledges for a time as supplying the foundation for its further practice." By "paradigm" he means "accepted... scientific practice... [that] provide models from which spring particular coherent traditions of scientific research."[15]

Knowledge of the paradigms which dominate a scientific community's "normal science" is what distinguishes one scientist from another and, indeed, from everyone else as well. The process of learning a scientific paradigm is virtually a process of self-actualization for an aspiring scientist. The assumptions and knowledge which unite a scientific community and which distinguish it from everyone else, (and

which provides its members with careers), are not easily changed. To quote at length from Kuhn:

> "The study of paradigms... is what mainly prepares the student for membership in the particular scientific community within which he will later practice. Because he there joins men who learned bases of their field from the same concrete models, his subsequent practice will seldom evoke overt disagreement over fundamentals. Men whose research is based on shared paradigms are committed to the same rules and standards for scientific practice. That commitment and the apparent consensus it produces are prerequisites for normal science, i.e. for the genesis and continuation of a particular research tradition... Acquisition of a paradigm and of the more esoteric type of research it permits is a sign of maturity in the development of any given scientific field...
>
> No part of the aim of normal science is to call forth new sorts of phenomena; indeed those that will not fit the box are often not seen at all. Nor do scientists normally aim to invent new theories, and they are often intolerant of those invented by others. Instead, normal-scientific research is directed to the articulation of those phenomena and theories that the paradigm already supplies. Work under the paradigm can be conducted in no other way, and to desert the paradigm is to cease practising the science it defines... Perhaps the most striking feature of... normal research problems... is how little they aim to produce major novelties, conceptual or phenomenal... [T]he range of anticipated, and thus of assimilable, results is always small compared with the range that imagination can conceive. And the project whose outcome does not fall in that narrower range is usually [viewed as] just a research failure, one which reflects not on nature but on the scientist."[16]

Kuhn claims that nothing short of a "revolution" in the assumptions bracketing a scientific community can change its "normal science" and the paradigmatic scheme within which it operates. But such revolutions are infrequent and do not come simply. Complicating the emergence of paradigmatic revolutions is the fact that scientific communities do not

easily suffer the outside influences which help bring one about. To quote again:

> "One of the strongest, if still unwritten, rules of scientific life is the prohibition of appeals to heads of state or the populace at large in matters scientific. Recognition of the existence of a uniquely competent professional group and acceptance of its role as the exclusive arbiter of professional achievement has... implications. The group's members, as individuals and by virtue of their shared training and experience [are] seen as the sole possessors of the rules of the game or of some equivalent basis for unequivocal judgements."[17]

It is not farfetched or difficult to apply Kuhn's discussion to Con Edison and the utility industry more generally. The accountants and engineers who comprise Con Edison's top management, like those in most of the utility industry, have shared assumptions based on similar training and experience. They have studied similar textbooks and hold similar degrees, sometimes from the same schools. They share a paradigm, a paradigm which has been handed down and refined over the decades, but not challenged. They constitute their own "scientific community."

That policy planners in Con Edison or other electric utilities would rather not have to deal with "the populace at large in matters scientific" (or in matters financial) is obvious and can be read in statements about "regulatory lag," the disruptive influence of intervenors and the company's aggressive efforts to preclude the emergence of a Citizen's Utility Board. To quote a good example of resistance to external influence which might have come right out of Kuhn's work, I turn to a Con Edison policy paper titled "Nuclear Power for an Urban Center."[18] In it the author states that a nuclear

"reactor is a technologically sophisticated device, the detailed workings of which may be fully comprehended only after an arduous learning process usually undertaken by experts, or rather by teams of experts, since many scientific and engineering disciplines are involved in its design and operation."[19] What the paper basically argues is that only those who have similar training, share assumptions and subscribe to the same paradigm are qualified to discuss nuclear power. It attempts to limit the debate about this technology.

But those who do not fit into Con Edison's paradigmatic box might raise questions about the effort to exclude "laymen" from the nuclear powerplant debate. One could begin by pointing to the obligations a democracy imposes on its citizens. In a democracy, all those to be affected by a policy have the right --indeed, they have the obligation-- to help determine that policy. According to John Dewey, "a good citizen finds his conduct as a member of a political group enriching and enriched by his participation in family life, industry, scientific and artistic associations."[20] More simply stated by Robert Engler, "citizens have the right to be involved in decisions affecting their lives."[21] Because of this, no "arduous learning process" is necessary to discuss nuclear power. No one is a layman when deciding whether or not he or she wants to live next to or with an eyesore and generator of toxic wastes. Politics cannot be left to technicians, and too much expertise obscures the most important issues associated with technology, which are fundamentally social. Indeed, one wonders what the "arduous learning process" involving "many scientific and engineering disciplines" teaches about the dire economic implications and poor

capital/labor ratio associated with nuclear power. Or the effect on our society of the new breed of private investigating firms --hired by some utilities-- which have and are gathering information about Americans (national security risks?) because they oppose nuclear power?[22] It is indeed a tribute to the strength of the assumptions underlaying the pro-nuclear paradigm guiding Con Edison, that a policy so thoroughly political, economic, psychlogical and social in nature can be reduced to a discussion about technological feasibility.

The relevance of applying Kuhn to Con Edison's unwavering commitment to outdated technological assumptions can be supported by briefly noting the observations of John Kenneth Galbraith. Galbraith's discussion of a corporation's "technostructure" can mediate the application of Kuhn's work for an understanding of Con Edison's resistance to change.

According to Galbraith, a corporation's technostructure is "a complex of scientists, engineers and technicians; of sales, advertising and marketing men; of public relations experts, lobbyists, lawyers and... coordinators, managers and executives... [They are] the guiding intelligence of the business firm. This is the technostructure."[23] Echoing Kuhn about resistance of scientific communities to change or outside influence, Galbraith points out that the technostructure looks to "secure its existence; it must prevent anyone... from throwing it out. And, short of this, it must minimize the danger of external interference with its decisions... The technostructure of the mature corporation resists all external intervention."[24]

V

This Conclusion has explored Con Edison's successful insulation from and opposition to basic reform. It is an issue that derives logically from the chapters of this dissertation, which argue that Con Edison unnecessarily burdens its service territory with high rates and outdated technological assumptions. One single cause would be insufficient to explain how and why Con Edison avoids basic reform. I have suggested five. First, the company is an effective lobbyist and manages to get its positions heard more regularly and, perhaps, more persuasively than the handful of New Yorkers actively working for utility reform. Second, the company has a wideranging "consumer affairs program" and donates millions of dollars each year to influential local groups. This has the effect of co-opting some groups and reducing the opposition of others. Third, if Con Edison has not altered the substance of its policies in response to the political and economic changes which have emerged over the past 25 years, it has modified its public persona. It has altered its public rhetoric to include "conservation," "Clean Energy" and "environmental protection." It has changed its colors.

These three activities contribute to understanding <u>how</u> Con Edison insulates itself from reform. Two other ideas have been suggested to help us understand <u>why</u> these activities tend to be successful. The first relates to the difficulties involved in altering the standard operating procedures (paradigmatic assumptions) of a professional community. Con Edison's engineers and accountants will not easily

abandon the assumption and processes which have made them successful, however, much their success depends on state aid and manipulation of public opinions and perceptions. So long as Con Edison's management can continue to fend-off reform, it need not subject itself to any paradigmatic re-evaluation. Moreover, the bureaucratic motives of Con Edison's technostructure also depend on business as usual. The complex of technocrats in the company depend on Con Edison's present structure and growth for their livelihood and professional advancement, if not their sense of self-respect as well.

For all these reasons Con Edison has managed to keep itself keeping on. And although the company's current structure and mode of operation might be unncessarily costly, environmentally wasteful and uncompetitive, a range of financial and technocratic interests support the company. And yet, the costs associated with this system, financial, ecological and political costs, cannot be avoided. Certainly they will be managed by the company and the city, sometimes more successfully and sometimes less successfully. Reform measures will emerge as usual and then disappear. The cost will be managed, risks will be shifted and re-shifted, and in all likelihood Con Edison will be preserved in its current status for quite some time. But the costs of this system cannot be avoided, and New Yorkers pay the highest rates.

NOTES

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