BF 05.03

Environmental Policy Institute
317 Pennsylvania Ave. S.E. Washington, D.C. 20003
202/544-8200

file: Env. Power Plant Siting box

REPORT ON THE JURISDICTIONAL AUTHORITIES OF STATE AND LOCAL GOVERNMENT RELATED TO CENTRALIZED AND DECENTRALIZED ALTERNATIVE ENERGY SYSTEMS

Prepared for the National Academy of Public Administration Energy Center Panel, as part of the Environmental Policy Institute's Powerplant Siting Project.

Marc Messing, Project Director
Matthew O'Meara, Research Assistant
Richard M. Hall, Research Advisor

TEXAS COASTAL AND MARINE COUNCIL
POST OFFICE BOX 13407 / AUSTIN, TEXAS 78711

November 20, 1976

TABLE OF CONTENTS

INTRODUCTION

Between 1970 and 1975 approximately 23 states enacted comprehensive powerplant siting legislation. As of 1973 these 23 states accounted for about 40% of the nation's generating capacity (see Appendix A): in 21 of these states the legislation established a single-stop siting procedure, and in 17 of these states, the legislation required long-range utility planning information (see Appendix B).

These efforts on the part of independent state legislatures during the first half of the decade signalled an unusually concerted response to a common problem; namely, that complex federal and state regulatory procedures designed to protect the multiplicity of concerns affected by the siting and operation of electric generating facilities had become a regulatory morass, and projected growth in the utility industry threatened to worsen the situation in the immediate future. At the same time, however, the assertion of state authority in the planning and siting of powerplants belies a second problem: that although the states had historically regulated the business activities of electric utility companies, none had previously assumed the authority to plan, site, and coordinate electric utility growth. While many municipalities created

municipally owned power companies to serve their needs, and some states, as well as the federal government, created limited public authorities to serve specific state and federal purposes, the general assumption was that societal needs were best served by private corporations functioning as regulated monopolies. Moreover, at the time when the industry and the regulatory framework developed, it was implicit in the operation of the electric utilities that service areas were defined on the basis of political boundaries comprising subdivisions of the state. At its inception the electric utility simply did not have the technical capability to serve larger geographic areas. As the industry matured, however, it developed not only the technological capability, but the economic incentive, to supercede local political jurisdictions. Simultaneously, national concerns for the regulation of industry, the rights of minority concerns, and protection of the natural environment, generated a federal regulatory bureaucracy which often duplicated, and occasionally preempted state authorities, and further complicated the regulatory picture. Neither the states nor the federal government had assumed, or preempted, the authority to plan, site, or operate the generation, transmission, and distribution of electrical energy supplies; but both asserted regulatory prerogatives which complicated the job.

During the ten-year period from 1965 to 1975 when both the states and the federal government addressed these problems and attempted to redefine their respective statutory authorities, they did so based on the assumption that the electric utility industry would continue to grow according to the patterns which had characterized its history. In 1974, the Atomic Energy Commission expressed these assumptions in the following manner:

1) "that total energy demand will continue to grow in relation to GNP much the same way it has in the past twenty-five years...

2) "that electrical energy input requirements...(will)continue to grow in relation to GNP in much the same way that it has in the past...

3) "that electricity (will) continue to substitute for other forms of energy in areas of current energy use and that new cases (will) be found for it in the future...

4) "electric utilities (will) continue to add more efficient generation units and, therefore, that the average energy inputs needed to produce a kilowatt hour (will) gradually decline for the total U.S. system." 1/

As we have argued elsewhere 2/, by 1975 all of these assumptions were seriously open to question, and the questions themselves were beginning to be reformulated as policy alternatives.

Firstly, notwithstanding the accumulating data regarding projected energy demands, available fuel sources, net energy calculations, reliability-size correlations, and diseconomies of scale in large new generating units, there was a growing feeling that "certain elements of the forecasting problem are beyond the state-of-the-art in forecasting..." 3/, and, that "despite the trappings of complex equations and the language of regression analysis, a relatively crude methodology underlies most electric demand forecasts." 4/

Secondly, energy forecasts were neither certain, nor unalterable, but were in fact subject to policy decisions.

Thirdly, and at the very least, a policy alternative existed regarding the decentralization of electric generating facilities and the design of energy systems to recapture the waste heat, rather than to continue centralizing and segregating electric generating facilities from points of demand. The issue, as one analyst stated it, "is not the use of electricity for lighting or for mechanical power, but for applications requiring heat." 5/ As we have also noted elsewhere, 1975 projections of increased electric energy consumption through the year 2,000

project more than a four-fold increase in per capita electric energy consumption from a 1971 base year, and anticipate waste heat losses from electric powerplants in the year 2,000 of approximately the same order as the total U.S. energy budget (including heat losses) in 1971. (See Appendix C). For these reasons the decentralization of electric generating facilities offers a bona fide policy alternative worth considering as a policy alternative; and, of course, it is consistent with the development of other decentralized energy technologies (such as solar water and space heating, heat pumps, etc..), and it is inherently compatible with the administrative jurisdictions of local units of government.

THE NUCLEAR ENERGY CENTER SITE SURVEY (NECSS-75)

The Nuclear Regulatory Commission's Nuclear Energy Center Site Survey did not recognize the problems associated with the effects of energy center development on local political authorities in its Summary and Findings: but virtually all of the workshop panels considering the problem addressed it clearly in their preparatory reports. Conducted as part of the NRC study, the Nuclear Energy Center Workshop East concluded, in part, "There was agreement that a decision to go to NEC's would tend to result in an upward shift in the locus of decision-making authority with a tendency toward greater federal involvement than is the case with dispersed siting." 6/ The workshop disagreed as to the appropriate and likely extent of such federal involvement, but a sub-panel on jurisdictional interfaces concluded that "the question of the right of federal preemption is basic to the practicality of the center concept... (I)f as a matter of public policy a nuclear energy center should be established, no state should be in a position to block the implementation of that decision." 7/

Parallel workshops on the west coast arrived at similar conclusions. Noting that the role of the federal government was strongly debated and the extent

of government ownership was not agreed upon, the Workshop concluded, "In general, the probably increased role of the federal government in many aspects of power generation, with the attendant transfer of decisions away from more local, presumably more responsive government, was considered disadvantageous from the point of view of public perception as well as state and local government interests." 8/ The sub-panel on the socio-political impacts of NEC development observed that "The NEC being a multistate concept leads naturally to a perception of diminished state power,..(and) NEC sites might constitute among themselves a kind of network for political and economic purposes." 9/

None of these panels attempted to identify any more precisely the specific statutory authorities of state or local government which were most likely to be affected, or the manner in which this transfer of authority was likely to occur. However, it should be noted that the parameters of the NECSS-75 work defined energy centers as 10,000-40,000 MWe aggregations of generating units, and stressed the evaluation of the "delta" between NEC's and a dispersed siting scenario based on 4,000 MWe "quads". Presumably the consideration of 4,000 MWe plants as the dispersed siting scenario minimized some of the effects likely to be felt at the level of local government. 10/

STATUTORY AUTHORITIES

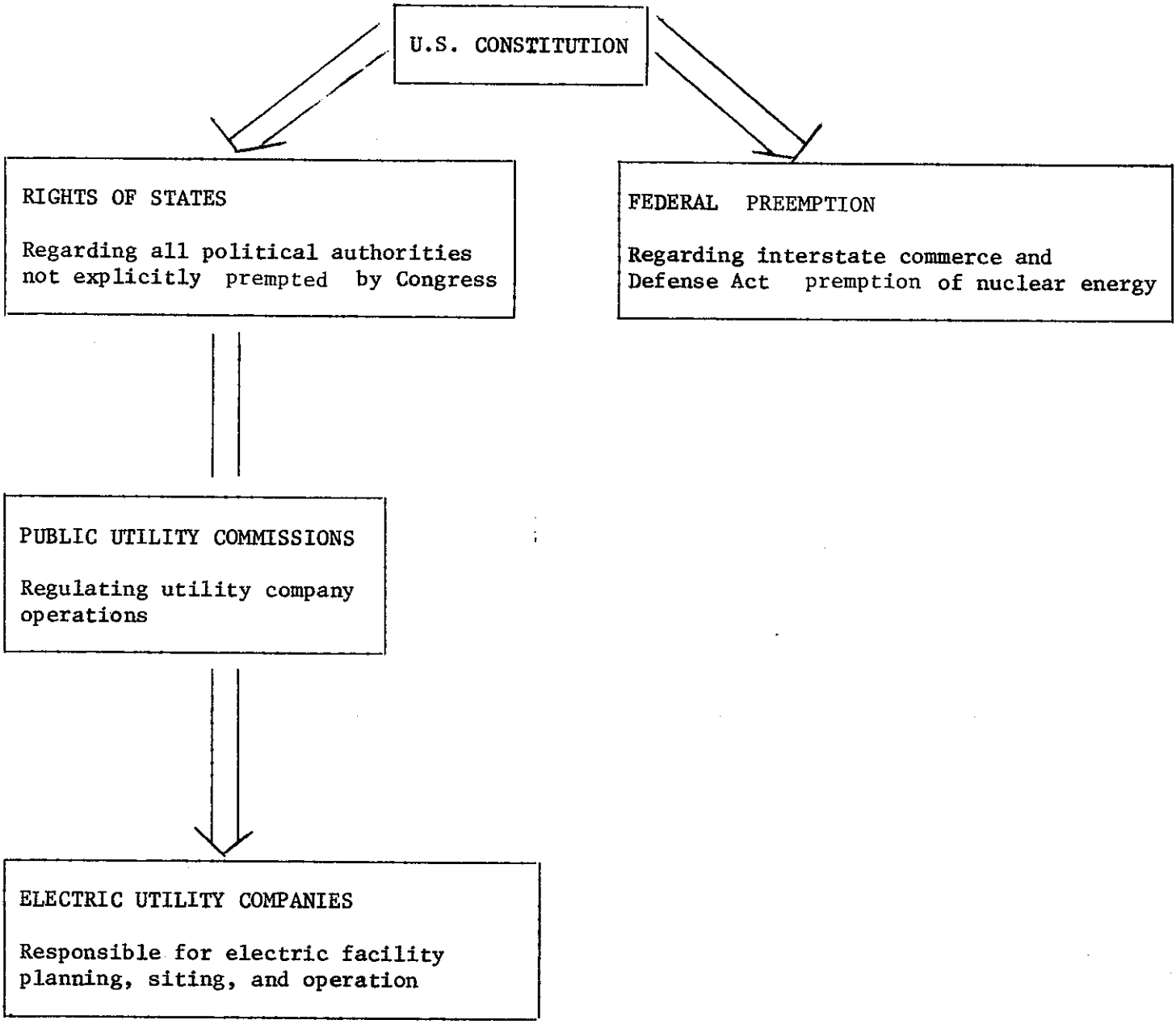
There are two principal lines of statutory authority affecting powerplant siting and both emanate from the federal Constitution; 1) insofar as the sale of electricity may cross state lines, the federal government exercises limited authorities under the Commerce clause, and 2) all political authorities not explicitly preempted by the Congress for federal jurisdiction reside with state government. Therefore the states assume principal authority for the siting of powerplants directly from the Constitution except to the extent that Congress has preempted specific areas of federal jurisdiction, and county, municipal, and local governments derive their authorities from the state only insofar as those authorities are delegated to them.

Historically, the states have sanctioned both the public and private ownership of electric utility companies, and have regulated the companies on the state level through Public Utility Commissions (PUC's) and Public Service Commissions (PSC's). The utility companies assumed the responsibility for planning, siting, constructing and operating the generating, transmission, and distribution facilities, and the PUC's, which were created around the turn of the century for regulating other utility industries such as gas, water, telephone, and the railroads, regulated rate-making, equipment acquisition, financing, services, and the integrity of the corporate operations. Electric utility regulation was incorporated in this framework.

Figure 1 illustrates these principal lines of statutory authority from the Constitution though state regulatory commissions.

FIGURE 1

PRINCIPAL LINES OF STATUTORY AUTHORITY IN POWERPLANT SITING DECISIONS



POWERPLANT SITING

In this context the decisions to site powerplants were governed by corporate interests and obligations of the utility companies. The obligations of the companies, as defined by public service regulations, generally included the provision of reliable, low-cost, and abundant electrical energy supplies. But the corporate interests, although subject to the same PUC regulation, included additional considerations: with guaranteed rates of return provided by PUC regulation on capital construction costs, it was generally in the financial interests of the utilities to expand the system operations and increase capital construction as much as possible. Providing that the electricity could be sold, the greater capital return (based on fixed percentage of investments) permitted higher stockholder dividends, and thus supported favorable bond negotiations for long-term low-interest bond rates. As long as the systems continued to expand, these arrangements provided a sound theoretical basis for the calculation of long run average costs most favorable to the utility consumers. However, the arrangement prejudiced utility planning towards increased capacity expansion rather than the most resource efficient management options, and by the 1970's land-use constraints, resource constraints, and the increasing lead times required for new facility design and construction created internal conflicts between the corporate interests, and the public obligations of the utility industry.

Externally, the utility planning and siting functions could be divided into two general categories: 1) the planning stage, including demand forecasting, the technical evaluation of state-of-the-art designs, candidate site selection, and site acquisition, and 2) the regulatory stage, involving permit approval on the local, state, and federal levels.

The New England Regional Commission has noted some of the limitations of these planning procedures vis-a-vis utility interests:

"The trade-offs and alternatives (in siting generating facilities) were introduced mainly as a result of engineering considerations, which were easily quantifiable and expressible in monetary terms." 12/ The principal planning considerations beyond the corporate interests of the company were: 1) proximity to load, 2) relation to existing transmission facilities, 3) access to fuel transportation, 4) availability of water, 5) ease of access for construction, and 6) geological and load bearing characteristics of the site. 13/

Following the selection of candidate sites on this basis, the process of actual site acquisition was similarly affected by external considerations: "Indeed, parcels are frequently assembled by a variety of different buyers, all associated with the utility though not directly identifiable with it, in order to avoid speculative price increases. Though land price is surely a factor, when one considers the full cost of land for a site in comparison with the full cost of the facility, it becomes clear that some speculative increases in the price of the land would not be a serious economic burden. More important reasons for the maintenance of secrecy in land acquisition are:

* The possibility of a key parcel being purchased by an individual or organization intent on blocking the site...

* The desire to develop the base of information on alternate sites needed to make a systematic selection without initiating unnecessary, costly, and distracting controversy over sites which may not be selected." 14/

Regarding the regulatory aspect of the siting process, the Commission noted that in some instances as many as 46 different permits might be required from numerous federal, state, and local agencies (see Appendix D), and, over the years not only the regulatory requirements have changed, but the attitudes of the regulatory commissions as well. As public awareness and concern for electric energy supplies and environmental impacts has shifted over the years, PUC's have

tended to move from their longstanding oversight of establishing equitable rates of return on capital for new facilities and compliance with local ordinances, to review of the safety of nuclear systems, compliance with federal environmental regulations, and most recently the demonstration of proof-of-need for the new facilities.

Figure 2 briefly sketches these regulatory relations.

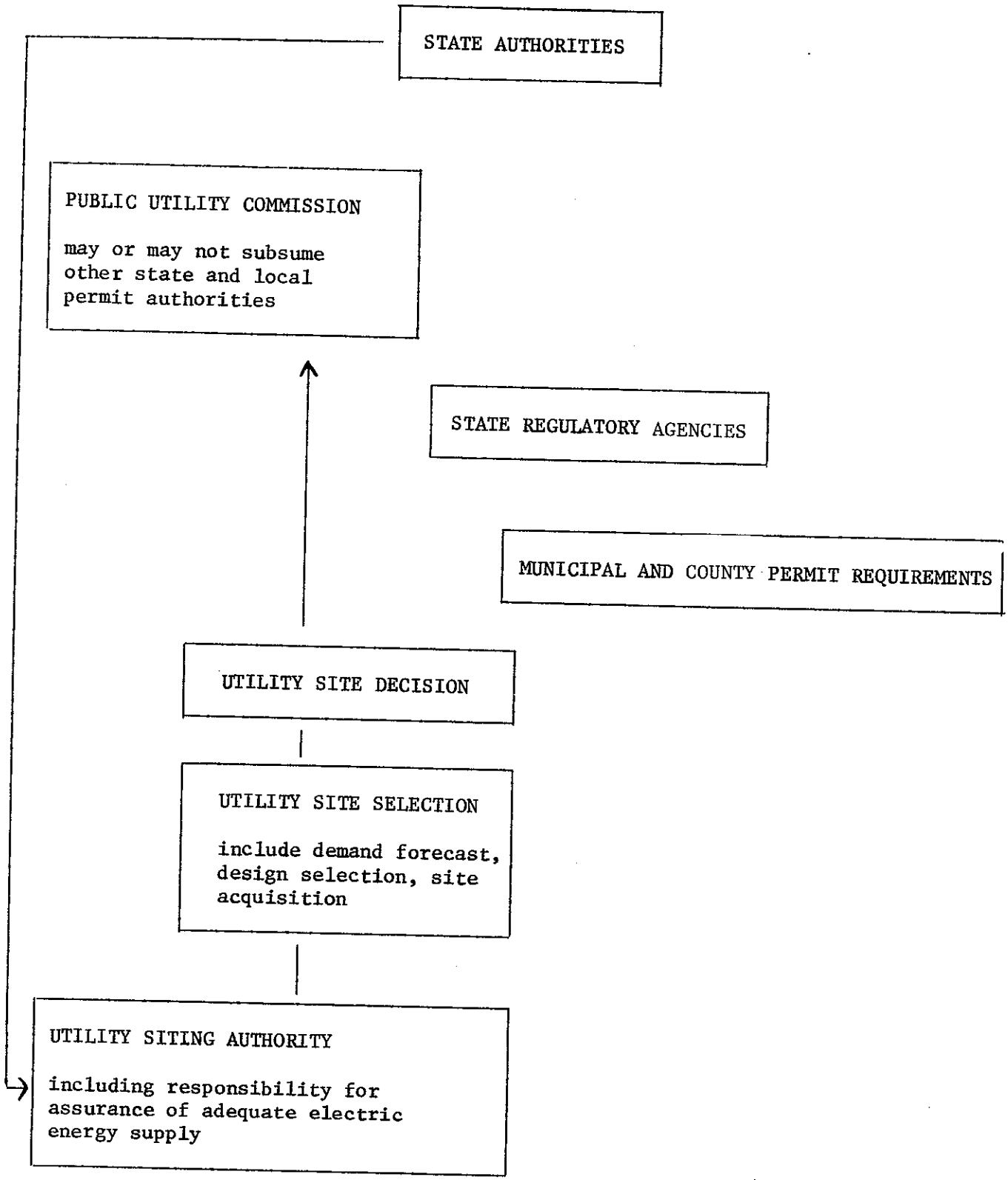
CO-ORDINATED UTILITY PLANNING

The continuous expansion of the electric utility industry into all energy markets, and coupled with the development of more sophisticated equipment, greater technical capabilities, and the integration of individual utilities into a complex network of generation, transmission, and distribution facilities across the nation, have led invariably to the extension of utility service areas beyond the jurisdictions of local, and state government. While these improvements have increased the generating capacity and capabilities of the industry, and presumably have resulted in increased reliability and decreasing costs, the evolving process has complicated utility regulation as the scope of planning has shifted from local and state to regional and federal levels. For the most part the industry has responded to the changing exigencies of its operations more rapidly than any units of government.

Subsequent to the northeast utility failure of 1965, the Federal Power Commission issued a report and recommendations regarding the need for improving the co-ordinated planning of the utility industry. But operating without the force of law[15], the recommendations resulted in the co-ordination of the utility industry planning without any corresponding co-ordination on the state or federal level. Pursuant to the FPC recommendations[16], nine regional Electric Reliability

FIGURE 2

STATE SITE SELECTION AND APPROVAL PROCESS



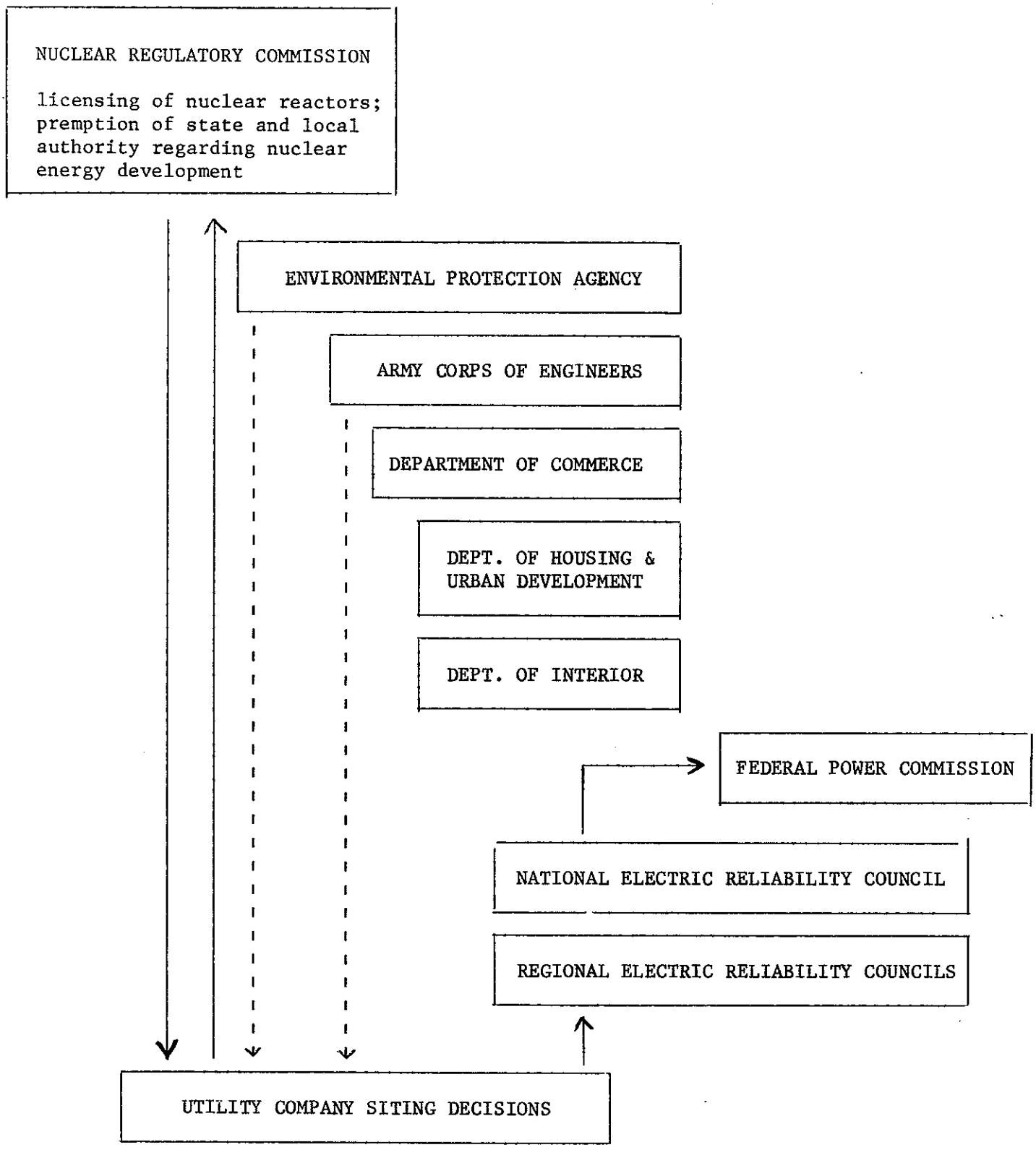
Councils (ERC's) were formed in conjunction with a National Electric Reliability Council (NERC) representing about 95% of the nation's load capacity. Under the aegis of the NERC, and in response to an FPC Order requesting annually updated data in twelve categories, the ERC's submit data regarding planned capacity additions, unit retirements, construction programs, etc.[17/] These data are then aggregated by the FPC and made available for planning purposes; but it should be stressed that the utility associations are voluntary in nature, that compliance with the FPC is necessarily descretionary, and that no comparable government planning structure exists. In fact, in recent years the Southern Governor's Conference has created a Southern Interstate Nuclear Board for the purpose of acting as an independent regional advisory body for energy development, and the Western Governor's Conference has followed with the creation of a similar Western Interstate Nuclear Board; but the New England Regional Commission (created under Title V of the Public Works and Economic Development Act of 1965) states more directly, that "At the present time there is no regional government counterpart to NEPOOL (New England Power Pool) with authority to provide for public review of the NEPLAN forecast."[18/]

FEDERAL REGULATION

In addition to the Federal Power Commission, there are a variety of other federal agencies with regulatory authorities and planning functions affecting powerplant siting decisions. These include the Nuclear Regulatory Commission (responsible for federally preempted matters regarding nuclear energy); the Environmental Protection Agency (administration of the Clean Air Act and Federal Water Quality Control Act, as well as others); the Department of Commerce (Coastal Zone Management Act); the Army Corps of Engineers (water discharge permits and

FIGURE 3

FEDERAL REGULATORY AUTHORITIES



wetlands protection); the Department of Housing and Urban Development (which furnishes federal matching funds for comprehensive plans including energy facility siting needs); the Department of Interior, and others. (See Appendix E).

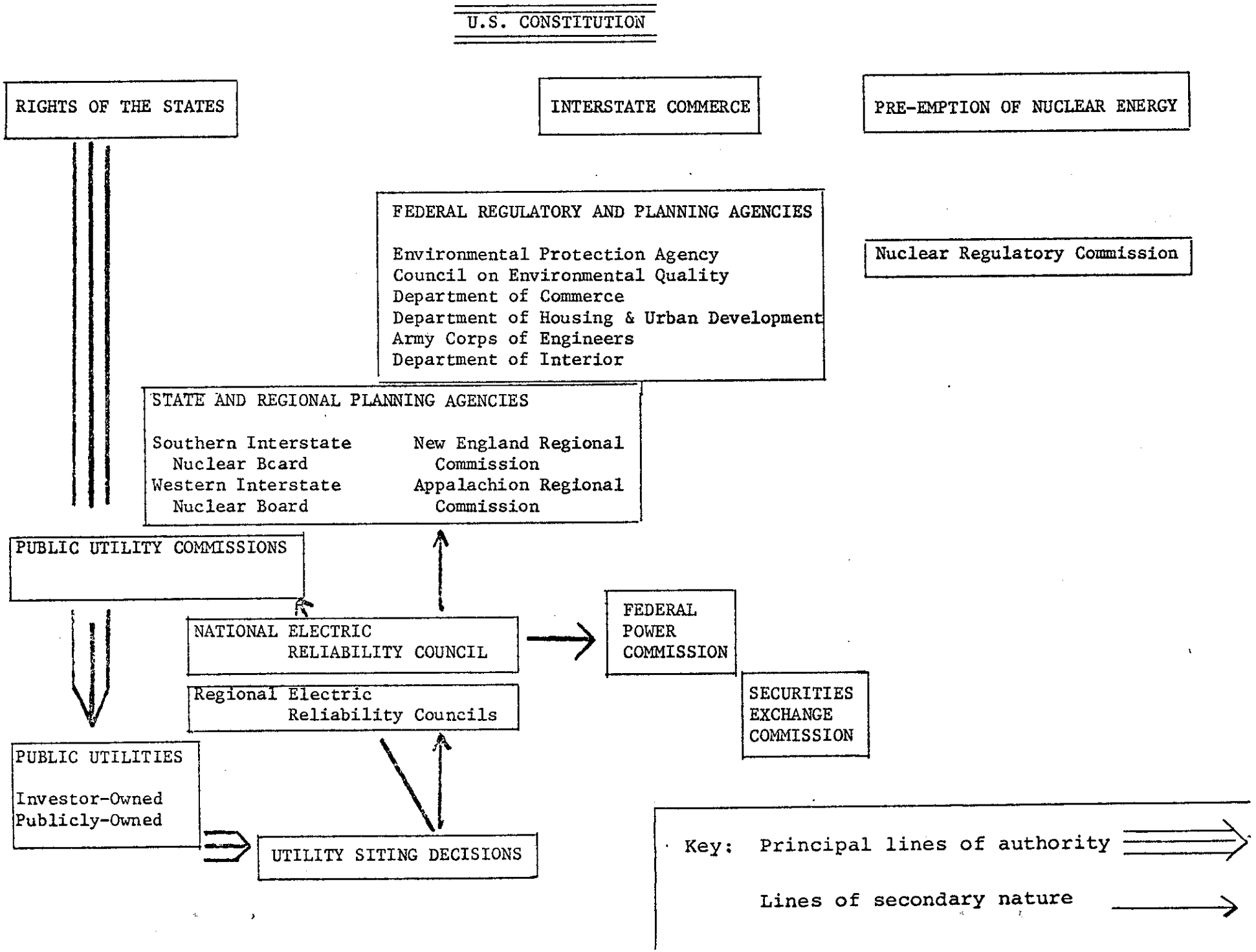
Figure 3 outlines the regulatory functions of these agencies, as well as the FPC/NERC functions mentioned above.

DECENTRALIZED ENERGY SYSTEMS

For the purposes of this discussion, decentralized energy systems refer to energy systems which are located within the smallest political jurisdiction they serve. This definition is intended to include virtually all energy systems ranging from residential solar water heaters to 1250 MWe LWR's, as long as they are located within the municipality, or county of their primary service area. Nor is the definition intended to preclude inter-jurisdictional interties of electric generating facilities: but it is intended to differentiate between interconnections which are designed to provide back-up reliability, and interties which remove the electric generating facilities from their primary service areas and centralize them in sites which serve multiple jursidictions. As such the principal available technologies for decentralization include convention generating powerplants (both fossil-fueled and nuclear); small-scale powerplants (again, including both fossil-fueled and nuclear); total energy systems, heat pumps, and solar systems for space and water heating.

The potential contribution of decentralized systems to total U.S. energy supplies over the next ten to twenty-five years is impossible to quantify meaningfully. On the one hand electric generating facilities could be decentralized rather than centralized with no effect whatsoever on total energy demand or resource consumption; or, on the other hand, maximization of decentralized solar systems

FIGURE 4


U.S. CONSTITUTION
RIGHTS OF THE STATES
INTERSTATE COMMERCE
PRE-EMPTION OF NUCLEAR ENERGY
FEDERAL REGULATORY AND PLANNING AGENCIES
Environmental Protection Agency
Council on Environmental Quality
Department of Commerce
Department of Housing & Urban Development
Army Corps of Engineers
Department of Interior
Nuclear Regulatory Commission
STATE AND REGIONAL PLANNING AGENCIES
Southern Interstate Nuclear Board
Western Interstate Nuclear Board
New England Regional Commission
Appalachion Regional Commission
PUBLIC UTILITY COMMISSIONS
NATIONAL ELECTRIC RELIABILITY COUNCIL
Regional Electric Reliability Councils
FEDERAL POWER COMMISSION
SECURITIES EXCHANGE COMMISSION
PUBLIC UTILITIES
Investor-Owned
Publicly-Owned
UTILITY SITING DECISIONS
Key: Principal lines of authority
Lines of secondary nature

(including heat pumps), total energy systems (including municipal waste recovery systems), for the purpose of energy resource conservation, could have appreciable effects within the next decade or two. The Federal Energy Administration (FEA) has estimated that solar energy could account for 5-10% of our total energy budget by 1990;[19] the Energy Research and Development Administration (ERDA) has estimated that solar will contribute something in the same range by the year 2,000[20]; the Department of Housing and Urban Development (HUD) has estimated that integrated utility systems packaging into one processing plant "all the utility services necessary for community development: electricity, space heating and air conditioning, solid waste processing, liquid waste processing, and residential water purification"[21] could recover better than half of the thermal energy wasted by powerplants, and has estimated than "an additional 5-10% fuel savings (is possible) by recycling solid waste for its energy content."[22] Perhaps the best available figures on any apsect of this subject are those developed in the Dow-Midland Energy Industrial Center Study, which concluded that the co-generation of electricity and industrial steam by industries with large demands for either of these power sources could yield an energy savings of 680,000 bbl/day (oil equivalent) by 1980, and could thus reduce the capital requirements for large central station powerplants by $2-5 billion annually without altering present rates of energy consumption.[23] The report also concluded very bluntly that this approach to decentralized siting is not only desirable, but imperative, as "It is simply a question of time before the inability of the electric utility industry to provide reliable power will become a serious industrial problem leading inevitably to declines in gross national product and increased unemployment."[24]

Currently there are approximately 600 total energy systems in operation throughout the U.S. (primarily the result of efforts by the gas industry to develop such systems twenty years ago)[25], heat pumps are being actively marketed for the

first time since the engineering refinement of the compressor/valve problems which characterized the commercial heat pumps of the 1950's[26], solar water and space heaters are similarly enjoying a renaissance, and experimental resource recovery systems are in progress in almost a dozen cities throughout the country.[27] Furthermore, many public utilities are involved in these areas, and at least one state (Florida) has enacted legislation strongly supportive of such decentralized energy concepts.[28]

EMERGING JURISDICTIONAL CONFLICTS IN POWERPLANT SITING

The development of decentralized energy systems, like the development of centralized electric energy centers, is currently constrained by institutional barriers. However, as we have defined decentralized systems, these barriers do not include the traditional jurisdictional interests of state and local governments. Rather, the barriers tend to involve the integration of these systems within the financial and regulatory framework of the predominant electrical energy networks[29], and accordingly the areas in which decentralized systems are being most actively developed tend to be municipalities with municipally owned power systems, and thus the greatest degree of jurisdictional flexibility and authority[30]. Seattle, Washington[31]; Ames, Iowa[32]; and Dade County, Florida, which is represented by a metro-government[33], are prime examples. However, these are examples in which local political jurisdictions have exercised their authorities to pursue alternative energy systems; the following instances represent cases in which jurisdictional conflicts have arisen over the inability of local units of government to exercise similar prerogatives.

CALIFORNIA/SAN JOACHIN: The decision of Southern California Edison to withdraw from the Kaiparowits power project in Utah following political pressure and adjustment of SCE's load projections has received considerable attention as an example of one of the fundamental issues of point-to-point interstate energy centers: concern for quality of life issues may override economic and technical considerations in political decision-making. Concurrently, however, a more complex and interesting problem is developing within California.

The proposal by the Department of Water and Power of the City of Los Angeles to construct 4,800 MWe of generating capacity in the San Joachin Valley represents a potential conflict between the industrial and agricultural uses of the water and the lands of the valley which adds to a continuing conflict between local and non-local interests in the valley. The issues are political and economic as well as social, and they have long historical antecedents within the state (particularly in the history of water resource allocations). On the one side, a 160 acre limit exists on the maximum size of farms eligible for federally regulated irrigation water, together with other administrative provisions designed to protect the agricultural interests of small farmers in one of the most productive agricultural areas of the world. On the other side, these administrative regulations have been inadequately applied by federally officials to prevent the increase in average size of farms in the valley beyond the 160 acre limit. More recently, diversified multinational corporations have moved into the valley with the financial resources to displace small farmers (though not necessarily more efficient from an agricultural standpoint). At the same time, the State's criteria for powerplant siting have tended to limit coastal development, and force utilities to look for sites in the agricultural valleys of the state. Because of the cooling water demands of the powerplants, and the fact that most of the available water has already been pledged to competing agricultural interests, a second round of absentee-local control contests has begun.

While it has yet to be determined whether the net effect of the powerplants, if constructed, would be detrimental to the agricultural interests of the valley, it is clear that the multinational corporations may find it more profitable to produce electricity in the valley than to produce produce. At stake is not only the agricultural value of the area, but also the social, political, economic, and jurisdictional integrity of the San Joachin Valley.

FLORIDA/SOUTH DADE: In many ways, Florida's energy profile may epitomize the choices between the development of nuclear energy centers and decentralized energy systems. Historically, Florida has experienced a high rate of electric energy growth (12% annually) as the result of a continuous population influx and a heavy demand for energy intensive home appliances (e.g., air conditioners, refrigerators, freezers, etc.) In response to projected demands, Florida Power & Light (FP&L) planned the development of eight 1250 MWe nuclear reactors at its South Dade site forty miles south of Miami, and regarded the NEC as the most carefully planned in the company's history. However, the demand projections failed to recognize the apparent saturation of the heavy appliance market which began in the late 1960's, and failed to anticipate the reduction in population growth which Florida has experienced more recently, and the projected has recently been shelved (though not discarded).

Concurrently, the State of Florida has given nominal support to the development of decentralized energy alternatives through the creation of the Solar Energy Center, and the passage of a resource recovery act. Accordingly, FP&L is currently participating in projects with the municipality of Lakeland, and the metro-government of Dade County for the construction and operation of resource recovery projects in which municipal wastes are burned, and the steam is sold to the utility for the generation of electricity.

Florida is also a state with recently enacted powerplant siting legislation, including a single-stop siting provision which allows preemption of existing land-use plans. Thus, while the state is actively encouraging the development of decentralized alternate energy systems which could play an integral role in land use planning and community zoning, the state has retained the authority to preempt local jurisdictions for the siting of central station powerplants.

MISSISSIPPI/MUNICIPAL TAX AUTHORITY: The State of Mississippi has no recently enacted powerplant siting law, and no substantial siting controversies. Nonetheless, the existing Public Utilities Act contains a special provision regarding municipal tax rates which is worth mentioning. Under the Public Utilities Act an electric utility (if not municipally owned) must obtain from the PSC a certificate of public necessity before construction of a new facility. Most counties in Mississippi have no land use plans or zoning ordinances and facility site selection has not been a problem to date; but the Act does distinguish between its treatment of electric facilities within the corporate limits of a municipality and those outside. If within the corporate limits of a municipality, the PSC requires the applicant utility to first obtain a permit of "franchise" from that municipality. When the new plant begins operation, the utility is then taxed 2% of its annual gross revenues from residential and commercial users within the municipality. If a utility which is currently operating within the municipality is "arbitrarily refused a franchise permit", the PSC can issue its own certificate without prior municipal approval, and the city will not receive the 2% tax allowance until the franchise has been granted.

MONTANA/WATER CONSERVANCY BOARD: The State of Montana enacted powerplant siting legislation (subsequently renamed the Major Facilities Siting Act in 1975) and a water use act in 1973. Under the Utility Siting Act (1973), the authority for facility certification was granted to the Board of Natural Resources and Conservation, and

fifty-seven review characteristics were specified along with a provision to override any local laws or regulations. The Act also made special provision for the consideration of air and water pollution control permits. Under the Water Use Act the authority for water use permits had been granted to the Department of Natural Resources. The Department received such a flood of industrial water-use permit applications by energy corporations interested in the coal deposits of the Yellowstone River Basin, that the legislature imposed a three year moratorium on the issuance of such permits. The legislature further decreed that when the moratorium lapsed, priority would be given to the state and its subdivisions (including agricultural water conservation district boards) for water reservations for future use, regardless of whether previous applications had been filed by industrial or commercial interests.

NEW YORK/VILLAGE OF BUCHANAN: New York State enacted comprehensive powerplant siting legislation in 1972, authorizing a single-stop procedure under a specially created five-member board (with a floating fifth member to represent the interests of the localities immediately affected by the proposed development). While none of the site applications submitted under the new law have yet come to the hearing stage, a new legal controversy has emerged involving the Village of Buchanan and the Nuclear Regulatory Commission.

In May, 1974, the Nuclear Regulatory Commission amended Con Edison's Indian Point 2 operating license to require (dependent on the outcome of further fishkill analysis) that a closed-cycle cooling system replace the present open-ended system which was withdrawing large quantitites of cooling water from the Hudson River. Con Ed was directed by the NRC to seek local zoning variances so that a cooling tower, 560 feet high and 300 feet in diameter could be constructed if necessary. In June, 1975, the zoning board denied the variances, and Con Edison reluctantly appealed the decision (joined by the Hudson River Fisherman's Association) under NRC licensing requirements. The Court ruled in November, 1975, that the local zoning ordinances

were without force and preemption by federal regulation. The Court further ruled that Con Edison could build the cooling tower without even attempting to obtain zoning permits, and ordered that the Village of Buchanan be enjoined from attempting to enforce its zoning authority against the nuclear facility.

WASHINGTON/NORTHERN TIER PIPELINE: In 1970 the State of Washington became the first state to adopt a comprehensive one-stop energy facility siting act, under which a Thermal Powerplant Siting Council was created for the purpose of reviewing powerplant siting applications. In 1976 the function of the Council was expanded to include the review of all energy related facilities, and the Council itself was renamed the Energy Facility Evaluation Council. It is apparently considered unclear whether the original statute contained provision for the state preemption of local authority, but in 1976 the legislature attempted to clarify the situation without successfully so doing. The amending legislation required the Council "to determine whether or not the proposed site is consistent and in compliance with county or regional land use plans or zoning ordinances. If it is determined that the proposed site does conform with existing land use plans or zoning ordinances in effect as of the date of the application, the county or regional planning authority shall not thereafter change such land use plans or zoning ordinances, so as to affect the proposed site." But the legislation did not stipulate whether the Council must accept an application at the time it is submitted and without regard to the adequacy of the application, or if the prerogatives of local governments to alter their land use plans would be affected by a decision of the Council to reject an application.

In July of this year these unresolved questions became the subject of controversy when the Northern Tier Pipeline Company sought permission to construct a supertanker port in Port Angeles, and a storage tank farm in Clallam County. Northern Tier submitted a proposal to the Council on July 6, 1976, but on July 26 the Council refused (by a vote of 8 to 5) to accept the proposal on the grounds of "gross

deficiencies" in nine of the eleven categories of information required by the Council. This was in fact the second time the Council had refused to review the application. At the time the Governor of the state happened to have been out of the state, and upon his return he was apparently angered at the Council's action. Consequently a closed meeting of the Council was convened immediately upon the Governor's return, and the Council reversed its earlier decision (by a vote of 10 to 1). In the meantime, in fact, the Council had appointed a special committee to review the application, and the Commissioners of Clallam County had met and voted to amend the County's comprehensive land use plan to exclude the possibility of the Northern Tier Project. The position of the Council, as of October 21, was that the tank farm was not in compliance with the local zoning of Clallam County as of July 6; but since then the City of Port Angeles has conducted a public referendum on the issue of the superport, and subsequently altered its zoning to exclude the port development.

The issue is currently in the midst of legal maneauvers by virtually all parties concerned, but it is clear that it has set a battleground for jurisdictional dispute between the state and its local governments.

SUMMARY:

For the better part of the past decade utility problems in scheduling, constructing, and operating large new nuclear and coal-fired generating units have focused attention on procedural difficulties, complexities, and delays in the siting and licensing process. In large part the consolidation of state regulatory and administrative processes in many states has provided some immediate improvements in the situation, and will provide more valuable insights as experience is gained with the variety of different approaches which have been created. In the meantime improvements in forecasting techniques are likely to reduce projected electric demands

for the next decade or two, and improvements in utility performances through greater equipment reliability and the increased utilization of load-management techniques, are similarly likely to reduce the need for projected capacity additions. Nonetheless, new problems are emerging regarding the centralization of authorities, and the changing role between state and federal governments.

In this context, the principal findings of this paper may be instructive:

Firstly; It is important to recognize that the statutory authority for powerplant siting can be traced to the federal Constitution, and except to the extent to which specific authorities have been reserved by the Congress for federal jurisdiction, or recently assumed by state regulatory agencies, the authority for powerplant siting is generally vested in the electric utility industry.

Secondly; The electric utility industry is generally subject to both state regulation which was developed in relation to the public needs and jurisdictional boundaries of state and local governments, and federal regulations which have frequently been inconsistent or in direct conflict with state regulatory interests.

Thirdly; Changes in the technology of electric generation, transmission, and distribution have resulted in the expansion of the electric utility industry to the point where the service areas determined by corporate interests may supercede the political jurisdictions and geographic boundaries of state and local governments.

Fourthly; Decentralized energy options provide planning alternatives to state and local governments which may affect zoning, land-use planning, economic growth, and taxation, in comparison with proposed electric energy centers.

Fifthly; While decentralized energy options may involve as many institutional problems as energy centers, unlike electric energy centers in general and nuclear energy centers in particular, they are inherently compatible with the jurisdictional authorities of state and local government.

Notes:

1 Proposed Final Environmental Statement on the Liquid Metal Fast Breeder Reactor, Wash 1535, U.S. Atomic Energy Commission, Vol. 4, pp. 11.2-53,55, December, 1974

2 M. Messing, The Need for Energy Facility Sites in the United States: 1975 - 1985 and 1985 - 2000, prepared under contract with the President's Council on Environmental Quality, June, 1975, pp. 9 - 20.

3 Federal Energy Administration, Project Independence Report, November, 1974, p. 418

4 Richard J. Barber, Associates, LDC Nuclear Power Prospects, 1975-1990: Commercial, Economic & Security Implications, Prepared under contract with the U.S. Energy Research and Development Administration, p. viii.

5 Wilson Clark, Energy for Survival, Anchor Books, 1975, p. 210.

6 U.S. Nuclear Regulatory Commission, Nuclear Energy Center Site Survey (NECSS-75), V. 4, p. A-A-10

7 ibid, V. 4, p. A-A-20

8 ibid, V. 4, p. A-B-4

9 ibid, V. 4, p. A-B-12,13

10 M. Messing, letter to Wm. Anders, Chairman, U.S.N.R.C, November 25, 1975

11 D.A. Huettner, " Shifts of Long Run Average Cost Curves: Theoretical and Managerial Implications", OMEGA, The International Journal of Management Science, Vol. 1, No. 4, 1973, p. 431

12 Power Facility Siting Guidelines in New England, Energy Program Technical Report 75-8, New England Regional Commission, p. 11-5

13 ibid, p. 11-23

14 ibid, p. 111-2

15 M. O'Meara, "A Report on the Political Authorities of Electric Power Generation", working paper, September, 1976

16 Prevention of Power Failures, Vol. 1-- Report of the Commission, A Report to the President by the Federal Power Commission, July, 1967

17 FPC Order 383-3, Docket R-362.

18 Power Facility Siting Guidelines, op. cit., p. 11-22

19 "Background Paper" prepared by Division of Solar Energy, Federal Energy Administration, Office of Synfuels, Solar, and Geothermal Energy, March, 1976

20 Definition Report, ERDA-49, Division of Solar Energy, Energy Research and Development Agency, June, 1975

21 Evaluating Integrated Utility Systems, Department of Housing and Urban Development/ National Academy of Sciences, 1974, p. 27

Notes (continued):

21 Evaluating Integrated Utility Systems, Department of Housing and Urban Development/National Academy of Sciences, 1974, p. 27

22 Ibid, p. 31

23 Energy Industrial Center Study, prepared for Office of Energy Policy R&D, National Science Foundation, by Dow Chemical Company, Environmental Research Institute of Michigan, Townsend-Greenspan and Company, and Cravath, Swaine, and Moore, June, 1975, p. 2

24 Ibid, p. 1

25 Clark, op. cit., p. 235

26 Ibid, p. 247

27 Ibid, pp. 207-251

28 Resource Recovery and Management Act, Florida Statutes, 1975, Vol. 2

29 Dow Chemical et al, op. cit. pp. 14-21

30 See Energy 1990, Seattle City Light, February, 1976

31 The Municipality of Ames, Iowa, with a municipally owned power company, opted to construct a municipal waste burning facility in response to the primary need for solid waste disposal. The solid waste stream supplies 100 tons/day with a fuel value of 5,500 Btu/lbs; There are three boilers in operation in conjunction with an 80 MWe coal burning generator. Operation began in November 1975.

32 The Dade County Metro-Government is comprised on individual municipalities within the area. Metro government collects the solid waste and sells steam to Florida Power and Light, which then generates the electricity.

33 Other municipalities with similar systems include Franklin, Ohio; New Orleans, Louisianna; Nashville, Tennessee; San Diego, California; Baltimore, Maryland (pyrolitic/low Btu gas); South Charleston, West Virginia; St. Louis, Missouri; Menlo Park, California.

APPENDIX A
STATE FACILITY SITING LAWS AND ANTICIPATED SITING PROBLEMS**

STATE	1973 Capacity* (Thousands KW)	SITING LAW Y or N		PROBLEMS[1] YN EFWC*	
Alabama	11,824		N	N	E
Alaska	586				
Arizona	4,819	Y		N	F
Arkansas	3,566	Y		N	EF
California	31,999	Y		N	E W
Colorado	3,384		N	N	E W
Connecticut	5,189	Y		N	
Delaware	1,455		N	Y	
Florida	19,073	Y		Y	C
Georgia	9,144		N	??	E WC
Hawaii	1,188				
Idaho	1,656		N	N	E
Illinois	23,989		N	N	F
Indiana	12,502		N	Y	EFW
Iowa	4,107		N	N	
Kansas	5,447		N	N	F
Kentucky	10,745	Y		N	EF
Louisiana	10,358		N		
Maine	1,707	Y		N	E
Maryland	6,731	Y		N	
Massachusetts	7,776	Y		N	E
Michigan	15,962		N	N	F C
Minnesota	5,917	Y		N	
Mississippi	3,272		N	N	
Missouri	10,461		N	N	E
Montana	1,881	Y		??	
Nebraska	3,033		N	N	E
Nevada	3,328	Y		N	EFW
New Hampshire	1,146	Y		N	
New Jersey	11,300		N		
New Mexico	3,943	Y		N	E W
New York	25,960	Y		N	E
North Carolina	11,960		N	N	E C
North Dakota	1,308	Y		Y	E W
Ohio	21,496	Y			
Oklahoma	5,795				F
Oregon	6,091	Y		N	F
Pennsylvania	23,725		N	N	E W
Rhode Island	360		N		
South Carolina	7,407	Y		??	
South Dakota	1,693		N		
Tennessee	12,826		N	N	
Texas	33,985		N	N	EFW
Utah	780		N	N	E *
Vermont	906	Y		Y	
Virginia	8,245		N	??	
Washington	15,356	Y		N	E
West Virginia	12,334		N	N	E
Wisconsin	7,664		N	N	EF
Wyoming	1,835	Y		N	

* Source: Edison Electric Institute, 1974

K E Y

E = Environmental Problems
F = Fuel Shortages - gas & oil
W = Water Availability
C = Capital Shortages
??= Uncertain

* = Siting large concentrations of power in remote areas would involve economic and regional planning problems.

** Reprinted from The Need for Energy Facility Sites: 1975-1985 and 1985-2000

APPENDIX B:*

PROVISIONS OF STATE POWER PLANT SITING LAWS

STATE	Power Siting Law	One Stop Provision	Site Cert. Authority	Size & Comp of Site Panel*	Method of Acquisition	Applic. Fee	Annual Utility Forecast
Alabama	No						
Alaska	No						
Arizona	Yes	Yes	Arizona Power Plant Siting Committee	11 State Officials 7 Others	Cert. of Environ. Compatibil-ity	New Site $10,000 Expansion $7,500	10 Yr. Plan
Arkansas	Yes	2 Stop	Public Service Commission	Size of PSC	Eminent Domain	$500	2 Yr. Plan
California	Yes	Yes	Energy Resources Conservation & Development Commission	5 Gov. Appts.	Applic. to Site Authority	$25,000 Maximum	5-1-20 Yr. Plan
Colorado	No						
Connecticut	Yes	Yes	Power Facility Evaluation Council	9 Gov. Appts.	Eminent Domain	$25,000 Maximum	10 Yr.
Delaware	No						
Florida	Yes	Yes	Governor and Cabinet	7 Gov. Appts. Environ. Reg. Com.	Cert. of Environ. Compatibil-ity	$25,000 Maximum	10 Yr. Plan
Georgia	No						
Hawaii	No						
Idaho	No						
Illinois	No		Illinois Commerce Commission	Size of ICC			
Indiana	No						
Iowa	Yes	Yes	Iowa Commerce Commission	Size of ICC	Cert. of Conv. & Necessity	None	None
Kansas	No						
Kentucky	Yes	Yes	Public Service Commission	Size of PSC	Cert. of Environ. Compatibil-ity	None	None
Louisiana	No						
Maine	No		Public Ser. Com. &Environ. Imprv. Comm.		Certificate of Public Convenience & Necessity		

* Gov. indicates Governor of State

** Southern Interstate Nuclear Board, Power Plant Siting in the United States, June, 1976

PROVISIONS OF STATE POWER PLANT SITING LAWS

STATE	Power Siting Law	One Stop Provision	Site Cert. Authority	Size & Comp. of Site Panel	Method of Acquisition	Applic. Fee	Annual Utility Forecast
Maryland	Yes	Yes	Public Service Commission	Size of PSC	Environ. Trust Fund	None	10 Yr. Plan updated Annually
Massachusetts	Yes	Yes	Energy Facilities Siting Council	4 State Officials 5 Gov. Appts.	Eminent Domain	$50,000 Maximum	10 Yr. Plan
Michigan	No						
Minnesota	Yes	Yes	Environ. Quality Council	Size of Council	Eminent Domain	$500 for each 1M of investment	15 Yr. Plan
Mississippi	No						
Missouri	No						
Montana	Yes	Yes	Bd. of Natural Resources & Conserv.	Size of Board	Applic. to Site Authority	Based on Facility Cost	10 Yr. Plan
Nebraska	No						
Nevada	Yes	Yes	Public Service Commission	Size of PSC	Permit	None	None
New Hampshire	Yes	Yes	Public Utilities Commission	Size of PUC	Eminent Domain	None	10-15 Yr. Plan
New Jersey	Coastal Facility Review Act	No	Commissioner of Environ. Protection	Coastal Area Review Board	Permit	None	None 4 Yr. State Plan
New Mexico	Yes	Yes	Public Utilities Commission	Size of PUC	Eminent Domain	None	None
New York	Yes	Yes	Bd. on Elec. Gen. Siting & the Environ.	4 State Officials 1 Gov. Appt.	Cert. of Environ. Compatibility	$25,000	10 Yr. Plan Updated Annually
North Carolina	No						
North Dakota	Yes	Yes	Public Service Commission	Size of PSC	Cert. of Compatibility	$150,000 Maximum	10 Yr. Plan
Ohio	Yes	Yes	Power Siting Commission	5 Gov. Appts.	Eminent Domain	None	10 Yr. Plan Updated Annually
Oklahoma	No						

PROVISIONS OF STATE POWER PLANT SITING LAWS

STATE	Power Siting Law	One Stop Provisions	Site Cert. Authority	Size & Comp. of Site Panel	Method of Acquisition	Applic. Fee	Annual Utility Forecast
Oregon	Yes	Yes	Governor	Energy Facility Siting Council 7 Gov. Appts.	Eminent Domain		10 Yr. Plan
Pennsylvania	No						
Rhode Island	No						
South Carolina	Yes	Yes	Public Service Commission	Size of PSC	Eminent Domain	None	10 Yr. Plan Updated Annually
South Dakota	No						
Tennessee	No						
Texas	No						
Utah	No						
Vermont	Yes	Yes	Public Service Board	Size of PSB	Cert. of Public Good	None	None
Virginia	No						
Washington	Yes	Yes	Governor	13 State Officials 1 Gov. Appt.	Eminent Domain	$25,000	
West Virginia	No						
Wisconsin	Yes	Two Stop	Public Service Commission	Size of PSC	Cert. of Approval		10 Yr. Plan Updated Biennially
Wyoming	Yes	Yes	Industrial Siting Council	7 Gov. Appts.	Permit	$100,000 Maximum	5 Yr. Plan Updated Annually
Puerto Rico	No						

Federal legislation in this area is expected, but as yet has not been enacted. Many approaches to the problem have been studied and one of the most viable would grant the responsibility for siting to the states, including their cooperation on a regional basis. This would ensure the maintenance of state policies for directing the state energy facility siting process, while including an interstate cooperative mechanism to provide proper perspective for state and regional effects.

APPENDIX C: *

Table II-4
Permits Required for Construction and Initial Operation of Boston Edison's Pilgrim Station-Unit #1*

I. TOWN OF PLYMOUTH

- Board of Appeals
  - A special permit to authorize use of the plant site.
- Commission of Public Safety
  - Permits to Build Structures
  - Permits for Alterations and Repairs (to existing structures at site)
  - Electrical Wiring Permits
  - Plumbing Permit
  - Elevator Inspection Certificates
- Board of Health
  - Disposal Works Construction Permits
- Fire Department
  - Fuel Oil Storage Permit
- Town - General
  - Construct and Repair Sewage Disposal System
  - Permission to work overtime at site
  - Transmission line tree trimming
  - Permission to cross public ways with overhead wires

II. COMMONWEALTH OF MASSACHUSETTS

- Massachusetts Department of Public Works
  - Access Road Connection to Route 3A
  - Placement of Oceanographic Instruments

*Application for a construction permit for Pilgrim #1 was filed in June 1967, and the plant became operational in July 1972.

* Reprinted from New England Regional Commission Power Facility Siting Guidelines

Table II-4
Continued

- Waterfront Construction and Dredging
- Transmission Crossings
- Tree Trimming

• Massachusetts Department of Public Utilities

- Transmission-Certificate of Convenience & Necessity
- Transmission-Right of Eminent Domain
- Transmission-Exemption From Zoning

• Massachusetts Department of Public Health, State Examiners of Plumbers

- Sanitary permits for station and recreational areas

• Massachusetts Department of Public Health, Board of Environmental Health

- Permit to operate heating boiler
- Permit to operate temporary startup boiler
- Approval of station operating procedures
- Approval of all inter-connections between city water line and plant water systems (i.e., fire protection, make-up demineralizer)

• Massachusetts Department of Public Safety, Division of Fire Prevention

- Fuel storage permits
- Use of explosives

• Massachusetts Department of Public Safety, Board of Boiler Rules

- Heating boiler operating permits
- Pressure vessel inspection certificates

Table II-4
Continued

- Massachusetts Water Resources Commission
  - Salt Water Use Permit
  - Permit to Conduct Marine Hydrology Studies
  - Water Quality Certificate
- Massachusetts Department of Natural Resources
  - Breakwater Construction and Dredging Permit
  - Transmission Line Easement in State Forest
- Massachusetts State Board of Labor & Industries
  - Boston Edison has registered with the Mass. Board of Labor and Industries for storage of radioactive sources.

III. U.S. GOVERNMENT

- United States Atomic Energy Commission (now NRC)
  - Exemption to Place Concrete Before Receipt of an Official Construction Permit
  - Pilgrim Station Construction Permit*
  - Nuclear Fuel Storage
  - Nuclear Source Storage
  - Licensing of Station Operators
  - Pilgrim Station Operating Permit
- United States Army Corps of Engineers
  - Placement of Oceanographic Instruments
  - Waterfront Construction, Dredging and Spoil Disposal
  - Water Refuse (Environmental Protection Agency)
- Federal Aviation Administration
  - Meteorology Tower Construction and Lighting
  - Main Off-Gas Stack Construction and Lighting

*The AEC (now NRC) Construction Permit process, including preparation of the Preliminary Safety Analysis Report (PSAR) is by far the most involved element of the site approval process.

APPENDIX D:

ELECTRIC ENERGY GROWTH PROJECTIONS

Recent estimates of energy development have projected that the Nation's total energy growth is likely to increase at an annual rate of 2-3%, while electric energy growth is projected to increase 5-7% annually. The following tables indicate the range of recent energy projections and the general relation between increases in total energy consumption and per capita energy consumption.

Table 1 indicates the rates of growth and factors of increase contained in the Atomic Energy Commission Environmental Impact Statement on the Liquid Metal Fast Breeder Reactor-- one of the last and most comprehensive documents published by the AEC (Dec. '74). The figures represent base case projections and are essentially compatible with most other government and industry forecasts. Table 2 illustrates the contribution of electric energy to the total U.S. energy budget, and the heat losses associated with electric conversion (at the rate of 3,412 BTU/kWhr). Table 3 indicates the range of other recent forecasts.

By examining the data in the first table, it is apparent that while total energy consumption is projected to increase approximately three-fold (2.93) by the year 2,000, per capita electric energy consumption is projected to increase more than fourfold (4.12); and total electric energy consumption is expected to increase almost sixfold (5.63). At the same time it is apparent from table 2, that the increased electric energy consumption will result in energy losses (in the year 2000) approximately equal to the Nation's total energy consumption in 1971 (68.969 QBTU).

In general these forecasts have been based on the observed correlation between increased in GNP and BTU consumption, extrapolating from past trends with variables introduced for price fluctuations, demand elasticities, and the introduction of anticipated new technologies. Implicitly these studies have similarly assumed continued substitution of electric for non-electric energy forms (without specific market analysis or examination of potential non-electric substitutions), and they have assumed a causal relation between energy consumption and economic growth (despite the historic displacement of labor with the introduction of energy intensive technologies).

The tables are drawn from The Need for Energy Facility Sites in the United States: 1975-1985 and 1985-2000, a report prepared by the Environmental Policy Institute under contract with the Council on Environmental Quality.

RATES OF GROWTH AND FACTORS OF INCREASE FOR PROJECTED U.S. ENERGY CONSUMPTION: 1971-2000

	1971 (actual)	2000 (projected)	Annual Rate of Growth (%)	Factor of Increase
Population (millions)	207[a]	279[a]	0.9	1.35
Per Capita Energy Consumption (MBTU)	333[b]	726[b]	2.7	2.18
Total Energy Consumption (QBTU)	68.969[c]	202.637[c]	3.8	2.93
Installed Per Capita Generating Capacity (kW)	1.78[a]	6.72[a]	4.7	3.78
Per Capita Electric Energy Consumption (kWhr) *	7,800[a]	32,210[a]	5.0	4.12
Total Electric Generating Capacity (millions of kW)	367.5[a]	1,880.0[a]	5.8	5.12
Total Electric Energy Production (TkWhr)	1.60[a]	9.01[a]	6.1	5.63

M. Messing/EPI

a Energy Research and Development Administration Wash 1535, Dec., 1974, Table 2.1-13
b Computed from "a" above
c Op. cit., Table 2.1-12
* Per capita energy consumption computed on the basis of total energy divided by population

note: columns three and four have been computed from columns one and two

COMPARISON OF ELECTRIC ENERGY PRODUCTION AND TOTAL U.S. ENERGY PRODUCTION: 1971 - 2000

	1971	percent of Total	2000	percent of Total
Total Energy Budget[a]	68.969	100	202.637	100
Electric Energy Resource Consumption[a] (resource input in QBTU)	17.048	25	100.287	49
Electric Energy Production[b] (resource output in QBTU)	5.868	8.5	38.019	18.7
Energy Lost in Electric Generation[c] (computed on the basis of 3,412 BTU per kWhr, presented in QBTU)	11.180	16.5	62.268	37.5

M. Messing/EPI

a Energy Research and Development Administration Wash 1535, Dec., 1974, Table 2.1-12
b Computed from "a" above
c Computed from data above

note: percent figures represent percent of Total Energy

APPENDIX E:

MAJOR FEDERAL STATUTES AND ADMINISTRATIVE AGENCIES

Energy Reorganization Act of 1974
88 Stat 1233
U.S. Nuclear Regulatory Commission

Air Quality Act of 1967
Amended by Clean Air of 1970
42 USC Sec 1857 et seq
Environmental Protection Agency

Federal Water Pollution Control Act of 1972 (as amended)
33 USC Sec 1251 et seq
Environmental Protection Agency

Safe Drinking Water Act
42 USC 300 et seq
Environmental Protection Agency

Rivers and Harbors Act of 1899
33 USC § 403 (1970)
Army Corps of Engineers

Refuse Act
§ 13 of Rivers and Harbors Act
33 USC § 407 (1970)
Army Corps of Engineers

Coastal Zone Management Act
16 USC § 1451 et seq
Department of Commerce

Housing Act of 1954
§701, 40 USC § 461 as amended by Housing and Community Development Act of 1974, 42 USC § 5301
Department of Housing and Urban Development

National Environmental Policy Act
42 USC § 4321 et seq, 1969
Council on Environmental Quality

Federal Power Act
16 USC § 792 et seq 1970
Federal Power Commission