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TAMING THE TECHNOLOGICAL TYGER THE REGULATION OF THE ENVIRONMENTAL EFFECTS OF NUCLEAR POWER PLANTS -A SURVEY OF SOME CONTROVERSIAL ISSUES--PART ONE

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TAMING THE TECHNOLOGICAL TYGER
THE REGULATION
OF THE ENVIRONMENTAL EFFECTS OF NUCLEAR POWER
PLANTS -A SURVEY OF SOME CONTROVERSIAL ISSUES--PART
ONE

Cover Page Footnote

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EFFECTS OF NUCLEAR POWER PLANTS—A
SURVEY OF SOME CONTROVERSIAL ISSUES—
PART ONE†

Joyce P. Davis*

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† Part Two of this article will appear in the following issue.

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I. Introduction¹

A. Energy in Our Civilization

[W]e are living in a high-energy civilization in which man has been freed from many physical burdens and has become productive enough to enjoy the pleasures of education, affluence, and leisure. An abundant supply of low-cost energy is the key ingredient in continuing to improve the quality of our total environment.

—Dr. Lee A. DuBridge²

The environment of a city whose life's energy has been cut, whose transportation and communications are dead, in which medical and police help cannot be had, and where food spoils and people stifle or shiver while imprisoned in stalled subways or darkened skyscrapers—all this also represents a dangerous environment that we must anticipate and work to avoid.

—Dr. Glenn T. Seaborg³

OPINIONS differ as to whether the United States is, at this time, in an "energy crisis"⁴ or will soon be in such a situation. The 1970 report on "Electrical Power and The Environment" by the Energy Policy Staff of

1. The scope of this paper is limited to the regulation of environmental factors. Other aspects of utility regulation are excluded, as are questions of system reliability, power demand growth, and the protection of the health and safety of workers. The question of nuclear plant safety with respect to catastrophic accidents has not been specifically considered, nor has the transportation or disposal of radioactive wastes other than normal plant effluents. Developments through March, 1972, are included.

2. Statement of Dr. Lee A. DuBridge, Director of the Office of Science and Technology and Science Advisor to the President in Hearings on Environmental Effects of Producing Electric Power Before the Joint Comm. on Atomic Energy, 91st Cong., 2nd Sess., pt. 1, at 8 (1970).

3. Statement of Dr. Glenn T. Seaborg, Chairman, Atomic Energy Commission, *Id.* at 89.

4. For a discussion of the current controversy, see Energy Crisis: Environmental Issue Exacerbates Power Supply Problem, 168 Science 1554 (1970).

the President's Office of Science and Technology (OST Study) summarizes the status of electrical power demand today and in the immediate future.⁵ According to the OST Study, the use of electricity in the United States has doubled approximately every ten years for many decades, and if prevailing growth patterns and pricing policies are continued, generating capacity may have to be tripled or quadrupled in the next twenty years. The majority of such new units would be nuclear or fossil-fueled steam power plants.⁶

The OST Study notes that "[T]he new concern over the environment or other factors may alter this historical rate of growth and some suggest that growth rates should be reduced."⁷ However, since electricity is a "clean form of energy at the point of consumption"⁸ where pollution problems tend to be most acute, and since electrical power may be increasingly utilized for environmental protection purposes like mass transit and waste recycling, it is probable that the demand for electricity will continue to increase in the foreseeable future.⁹

The OST Study, noting the present uncoordinated federal and state provisions for preconstruction review of electric power industry expansion projects,¹⁰ recommends legislation to ensure that "[n]ew public agencies and review procedures . . . take into account the positive necessity for expediting the decision-making process and avoiding undue delays in order to provide adequate electric power on reasonable schedules while protecting the environment."¹¹ The unanswered questions are, of course, how much electrical power is "adequate" and who is to make that determination.¹²

B. Environmental Benefits of Electrical Power

Our society has come to take plentiful and reliable power for granted. Cities are complex eco-systems, increasingly dependent upon electric energy for propulsion, communications, indoor climate control, and other vital services. This article will focus on many of the environmental

5. Office of Science and Technology, *Electric Power and the Environment*, (U.S. Gov't Print. Office No. 0-409-381, August, 1970) (hereinafter cited as OST Study).

6. *Id.* at vi.

7. *Id.*

8. *Id.*

9. *Id.*

10. *Id.*

11. *Id.* at vii.

12. *Id.* at xi, 2-3, 46-49.

effects which accompany power plant operations, but the reader should be aware throughout that a decrease in the amount or reliability of power supplied to our homes and industries, resulting from concern for these environmental factors might produce other environmental consequences equally severe.

For example, if the electric motors, heating units and similar equipment used in industry were to be replaced by local combustion sources such as steam engines, gas turbines, or diesels, we would expect an increase in local air pollution, noise and fuel handling accidents. The elimination of electrical space heating and air conditioning would contribute to less healthy home and work environments. Particularly in southern sections of the country, the absence of air conditioning could cause sharp decreases in productivity as well as direct adverse effects on the health of persons whose tolerance of heat stress is limited.

The health effects of an interruption of electrical power to home and commercial refrigerators and freezers are obvious. The "Northeast Black-out of '65" dramatically showed us how much we rely on electricity for transportation, both horizontal (subways), and vertical (elevators). The social implications of curtailing the use of electricity at a time of rising expectations of the urban poor are also legitimate concerns.

The reader is invited to consider the myriad applications of electricity in his own life, and decide those which he would be willing to give up to preserve environmental integrity, and those of which he would deprive his neighbor.

C. Nuclear Energy—A Technological Tyger

The regulation of nuclear power plants presents a unique challenge to the field of administrative law. The reactor is a technologically sophisticated device, the detailed workings of which may be fully comprehended only by experts, or rather by teams of experts, since many scientific and engineering disciplines are involved in its design and operation. It utilizes an energy source, nuclear fission, that first came to public attention amidst the horrors of war, one of the major effects of which, nuclear radiation, is essentially undetectable by the unaided senses even at levels where it may be harmful. Understandably, the average citizen approaches the use of so fearful a machine with some trepidation.¹³

13. Anti-nuclear power books and articles, aimed at general audiences, which have appeared in the past few years include: J. Gofman & A. Tamplin, *Poisoned Power* (1971); J. Gofman & A. Tamplin, *Population Control Through Nuclear Pollution* (1970); R. Curtis & E. Hogan, *The Perils of the Peaceful Atom* (1970);

In recent years public concern over the effects of nuclear power plants on the environment has led to organized opposition to proposed plants,¹⁴ to changes in the radiation standards and licensing procedures of the Atomic Energy Commission (AEC), and to federal¹⁵ and state legislation,¹⁶ referenda¹⁷ and numerous law suits.¹⁸ Events during 1970 and 1971, the first years of what has been called the "Environmental Decade,"¹⁹ have caused profound changes in both public awareness of the problems involved and institutional arrangements for considering the environmental aspects of power generation. Current administrative dif-

S. Novick, *The Careless Atom* (1969); Boyle, "The Nukes Are in Hot Water," *Sports Illustrated*, Jan. 20, 1969, at 24.

14. For example, an organized group opposed the proposed nuclear unit which would have discharged heated water into Lake Cayuga. The Bell Station was postponed indefinitely. AEC Docket 50-319. A case study of this situation is presented in D. Nelkin, *Nuclear Power and Its Critics* (1971). See 10 *Nuclear Safety*, No. 6, at 551 (Nov.-Dec., 1969).

15. "According to the Environmental Policy Division of the Library of Congress, about 3,000 bills, or about 20 per cent of the total, introduced in 1971, concerned the environment." Wagner, "Environment Report," 3 *Nat'l J.* 2539 (1971). See *Calvert Cliffs' Coord. Comm. v. United States Atomic Energy Comm'n*, 449 F.2d 1109, 1111 (D.C. Cir. 1971), in which the court finds "[s]everal recently enacted statutes attest to the commitment of the Government to control, at long last, the destructive engine of material 'progress.'" Laws referred to are noted at 1111, n.1.

16. For examples of recent state legislation, see note 182 *infra*.

17. In Eugene, Oregon, a planned nuclear plant to be built by the Eugene Water and Electric Board has been delayed at least four years by a referendum. Opponents of the plant procured enough signatures to require the referendum held on May 26, 1970. By a close vote (11,750 to 10,892), the city charter of Eugene was amended to "forbid the Board to spend money on the plant, except for safety and environmental studies, until 1974." *Nuclear Industry*, June, 1970 at 35. A group of Oregon residents have been collecting signatures to force a referendum on a "Nuclear Safety and Protection Act." The proposed Act states that no public exposure to radioactivity from nuclear power plants will be tolerated and requires that the plant operator assume full liability for any harm that may result from his operations. 3 *Envir. Action Bull.*, No. 1, at 6 (1972). In California, a referendum is on the ballot for the June, 1972 primary which would, *inter alia*, declare a five year moratorium on nuclear plants. 2 *BNA Envir. Rep.-Curr. Dev.* 1393 (March 17, 1972).

18. E.g., *Calvert Cliffs' Coord. Comm. v. United States Atomic Energy Comm'n*, 449 F.2d 1109 (D.C. Cir. 1971) (challenging AEC licensing regulations). See also *In re Sinclair*, 2 *ERC* 1833 (1970).

19. See "The Environmental Decade," H.R. Rep. No. 91-1082, 91st Cong., 2d Sess. (1970), report by the Committee on Government Operations.

difficulties portend even greater changes in the near future.²⁰ Recent power shortages in the Northeast, particularly the notorious "brownouts" during the summer of 1970, have pointed up the need for the construction of new plants to meet the increasing demand. In addition, concern with problems of air pollution²¹ as well as shortages of fossil fuels²² have resulted in the decision by many utilities to "go nuclear."²³

This article reviews the significance placed on environmental factors in nuclear plant licensing during the last decade, first considering the effect of recent legislation and the status of current controversies, and then briefly discussing proposals for legislation and developments that can be expected in the near future.

Three major types of environmental effects²⁴ will be considered separately: radiological effects which are specific to nuclear plants, effects of thermal and chemical effluents which are similar to those to be expected from all types of power plants, and effects of the physical presence of the nuclear plant which are similar to those resulting from the presence of any large industrial facility. Each of these effects will be discussed in turn and some of the major controversies involved in their regulation will be considered. More specifically, with regard to radiological effects, the question of standards setting, the role of the states in regulation, and the placement of responsibility for risk-benefit analysis will be examined. The questions of AEC jurisdiction, and the scope of responsibility of other agencies will follow in a study of effluent effects. And finally, the question of regulation

20. See a brief summary of a recent joint American Bar Association and American Law Institute study conference on atomic energy licensing and regulation in *Nucleonics Week*, Nov. 18, 1971, Vol. 12, No. 46, at 4-8.

21. See, e.g., Shorr, "What Price Clean Air," *The Wall Street Journal*, Jan. 10, 1972, at 24, col. 1.

22. See generally Wilford, "Nation's Energy Crisis," *New York Times*, Jul. 6, 1971, at 1, col. 8; Jul. 7, 1971, at 1, col. 8; Jul. 8, 1971, at 24, col. 1.

23. The phrase was used by James T. Ramey, Commissioner of the AEC in "PDQ's of Nuclear Power Plant Licensing," a speech delivered at the Atomic Industrial Forum Workshop on Power Reactor Licensing in Miami, Feb. 12, 1968, at 13 (hereinafter cited as Ramey).

24. See generally Joint Commission on Atomic Energy, *Selected Materials on Environmental Effects of Producing Electric Power*, 91st Cong., 1st Sess. (1969) (hereinafter cited as *Effects*); *Hearings on the Environmental Effects of Producing Electric Power Before the Joint Comm. on Atomic Energy*, 91st Cong., 1st Sess. (1969) (hereinafter cited as *Effects Hearings I*); *Hearings on Environmental Effects of Producing Electric Power Before the Joint Comm. on Atomic Energy*, 91st Cong., 2nd Sess., (1970) (hereinafter cited as *Effects Hearings II*); "Nuclear Power in the South," *A Report of the Southern Governors' Task Force for Nuclear Power Policy* (1970). For an international view, see "Nuclear Energy and the Environment," I.A.E.A. Report INFCIRC/139/Add. 1 (1970).

of aesthetic features, the role of local jurisdictions in regulating plant location, and the responsibility for land use planning will be considered in relation to physical presence effects.

Before these problems are presented, however, the current regulatory scheme of nuclear plant licensing will be surveyed in order to provide the reader with a basic understanding of the complexities of the field.

II. The Current Regulatory Scheme

At the present time there is no overall federal program for licensing power plants,²⁵ though legislation to set up such a system has been proposed.²⁶ Nuclear power plants, however, are subject to regulation by the AEC.²⁷ Until passage of the National Environmental Policy Act of 1969²⁸ the jurisdiction of the Commission was limited to matters of radiological health and safety and the common defense and security.²⁹ Under NEPA this jurisdiction has been expanded to include all environmental matters.³⁰ However, the AEC does not have the sole responsibility for environmental regulation. There are myriad state, local, regional, and federal agencies with power to issue licenses, orders, permits and variances based on consideration of specific environmental effects.³¹ The jurisdictions of the ma-

25. Many non-nuclear power plants, however, are currently subject to federal licensing in one form or another. Thus, of the twelve conventionally fueled plants that became operational in 1967 and were over 400 megawatts in size, seven required permits from the Corps of Engineers because their construction plans included structures affecting navigable waters and one required another federal permit since it had intake and outflow structures located on federal lands.

26. See generally Trends and Growth Projections of the Electric Power Industry, Effects Hearings I, *supra* note 24 at 53-67. See also text accompanying notes 137-47 *infra*.

27. See text accompanying notes 137-47 *infra*.

28. National Environmental Policy Act of 1969, 42 U.S.C. §§ 4321-47 (1970) (hereinafter cited as NEPA).

29. 42 U.S.C. § 2012(e) (1970). See *New Hampshire v. Atomic Energy Comm'n*, 406 F.2d 170 (1st Cir. 1969), cert. denied, 395 U.S. 962 (1969).

30. Trends in Federal and State Legislation in the United States for the Protection of the Environment and the Regulation of Nuclear Power Plants, paper delivered by Howard K. Shapar, Ass't Gen. Counsel, Licensing and Regulation, U.S. AEC, at Int'l Conference on Peaceful Uses of Atomic Energy, Geneva, 3.4-16-17 (1971) [A/Conf.-49/P-089] (hereinafter cited as Shapar).

31. "In the case of Duke's Keowee-Toxaway project, including the Oconee Nuclear Station, licenses, permits, contracts, agreements, or understandings were necessary between Duke Power and each of sixty-one separate and distinct governmental agencies at the local, State, and Federal levels. The number of proceedings with each of the sixty-one agencies ranged from one to over thirty." Testimony of William S. Lee, Duke Power Company, Effects Hearings II, 1825, 1833 (Vol. I). The experiences of other utilities are similar. As of February 3, 1970, the following

for federal and state agencies in the field are the subject of the following discussion.

A. The Atomic Energy Commission³²

1. The Atomic Energy Act

The Atomic Energy Act of 1954³³ authorizes the AEC to issue licenses³⁴ for "utilization or production facilit[ies],"³⁵ a category that in-

approvals were required for Consolidated Edison plants: Federal: FAA (stack approval); Corps of Engineers (river construction); Dep't of the Interior (water pollution, approval required by Corps of Engineers); FPC (hydroelectric license); AEC (nuclear safety). State: Dep't of Health (air and water pollution); Conservation Commission (river construction); Office of General Service (water grants, if necessary); Hudson River Valley Commission (review of project plans). City: Dep't of Air Resources (air and water pollution); Dep't of Buildings (boiler operation, installation of elevators, occupancy or use of structure); Board of Standards and Appeals (oil facilities, zoning); Dep't of Sanitation (waste removal, land fill); Dep't of Ports and Terminals (waterfront plans); Fire Dep't (blasting permit, hydrogen storage, standpipe, transformer, fire protection, oil storage construction and burner installation); Dep't of Water Resources (water requirements); Health Services Administration (septic tank, as required); Dep't of Highways (street changes). With respect to transmission facilities "permits for a new . . . transmission line from Millwood in Westchester County to Ramapo in Rockland County, a distance of approximately 25 miles, must be obtained from five municipalities in Westchester County, a minimum of three in Rockland County, the Hudson River Valley Commission, the Federal Aviation Agency, the Corps of Engineers, the New York State Highway Department, the East Hudson Parkway Authority and the Palisades Interstate Park Commission. . . . [T]he completion of this line . . . has been delayed over three years by litigation commenced by property owners along the route of another segment of the same line in New Jersey . . . as well as by delays on [sic] obtaining approval of the route in New York State." Testimony of Charles F. Luce, Hearings on the Intergovernmental Coordination of Power Development and Environmental Protection Act, before the Subcommittee on Intergovernmental Relations of the Senate Committee on Government Operations, 91st Cong., 2nd Sess., pt. 1, at 58, 61 (1970).

32. For comments on AEC licensing, see generally remarks by Joseph F. Hennessey, AEC General Counsel, at ALI-ABA Course, 16 AECH, No. 37, at 5 (Sept. 14, 1970); Hearings before the Sub-Committee on Legislation of the Joint Committee on Atomic Energy on AEC Licensing Procedure and Related Legislation, Parts 1-4, June and July 1971, 92nd Cong., 1st Sess. (1971) (hereinafter cited as Licensing Hearings); Hearings before the Joint Committee on Atomic Energy on Licensing and Regulation of Nuclear Reactors, 90th Cong., 1st Sess. (1967); 10 C.F.R. § 50.1-110 (1972); *Power Reactor Dev. Co. v. Int'l Union of Electrical Workers*, 367 U.S. 396, 403-09 (1961).

33. Atomic Energy Act of 1954, 42 U.S.C. §§ 2011-296 (1970).

34. 42 U.S.C. § 2131 (1970) provides that it is unlawful to operate a facility

cludes power reactors. The basis and scope of the AEC's jurisdiction has been the subject of much comment.³⁶ The procedures and criteria which have been developed and are currently in use are set forth in Title 10 of the Code of Federal Regulations,³⁷ and modifications are published in the Federal Register, as part of the rule-making process. Stated briefly, the Administrative Procedure Act³⁸ applies to all "agency action"³⁹ taken under the Atomic Energy Act.

At the present time the licensing of nuclear power plants by the AEC is a two step process. Before plant construction can start,⁴⁰ a construction permit must be issued.⁴¹ Then, before the completed plant can operate, an operating license must be obtained.⁴² The procedures followed in the two steps are similar, the major difference being that while at the *Construction Permit* stage for the acquisition of the license a public hearing is mandatory,⁴³ at the *Operating License* stage such a hearing will be held only if someone petitions to intervene and requests a hearing, or if the Commission directs that a hearing be held because there is a question of "substantial" public interest involved.⁴⁴

without such a license. Commercial licenses are issued under 42 U.S.C. § 2133 (1970) while 42 U.S.C. § 2134 (1970) covers medical therapy, research and development licenses.

35. 42 U.S.C. §§ 2014(cc), (v) (1970); 10 C.F.R. §§ 50.2(a), (b) (1972).

36. See note 32 supra.

37. Applicable sections of 10 C.F.R. (1972) are: § 1 (Statement of Organization, and General Information); § 2 (Rules of Practice); § 40 (Licensing of Source Material); § 50 (Licensing of Production and Utilization Facilities); § 55 (Operators' Licenses); § 100 (Reactor Site Criteria); § 140 (Financial Protection Requirements and Indemnity Agreements); § 170 (Fees for Facilities and Materials Licenses). Also of interest is 10 C.F.R. § 20 (1972) on Radiation Standards.

38. Administrative Procedure Act, 5 U.S.C. §§ 551-59 (1970).

39. 42 U.S.C. § 2231 (1970).

40. Certain below-grade excavation and foundation construction has been allowed to proceed before a permit is issued; additionally, recent AEC regulations redefine the "commencement of construction" for nuclear power plants and production and utilization facilities. 10 C.F.R. § 50.10(b) (1972). This section, as amended, exempts from the definition of construction the activities of site exploration, excavation and preparation; procurement or manufacture of components of the facility; and construction of non-nuclear facilities (such as turbo generators and turbine buildings). *Id.* (1)-(4).

41. 42 U.S.C. § 2235 (1970).

42. *Id.* § 2131 (1970).

43. *Id.* § 2239(a) (1970).

44. 10 C.F.R. § 2.104(a) (1972).

With respect to the considerations of radiological health and safety and the common defense and security which the Commission is mandated to oversee, the licensing procedure begins with the submission of an application⁴⁶ by the utility to the AEC regulatory staff,⁴⁶ though this step is often preceded by informal review of the site by the AEC staff.⁴⁷ As a major part of the application, the company files a Preliminary Safety Analysis Report.⁴⁸ This report presents the preliminary design and safety features of the proposed reactor, as well as comprehensive data on the proposed site.⁴⁹ The report discusses various accident situations and the safety features which will be provided to prevent accidents or, if they occur, to prevent overexposure of the public and employees to radiation.⁵⁰ The AEC furnishes copies of the application to state and local officials in the geographical area concerned,⁵¹ federal agencies with jurisdiction over or expertise in various environmental aspects of the plant,⁵² and the Commission's Advisory Committee on Reactor Safeguards.⁵³

45. Criteria for evaluating the application are contained in 10 C.F.R. § 50.40 (a) Health and Safety, (b) Financial Qualifications, (c) Defense and Security (1972); additional review of environmental impact is required by the National Environmental Policy Act, 42 U.S.C. § 4332(c) (1970). Recent amendments to the Atomic Energy Act require review for antitrust implications. 42 U.S.C. § 2135 (1970).

46. 10 C.F.R. § 50.30 (1972).

47. See Ramey, *supra* note 23, at 9.

48. 10 C.F.R. § 50.34(a) (1972). Under recent changes, the utility must also file an "Environmental Statement." With respect to environmental impact, see note 45 *supra*.

49. 10 C.F.R. § 50.34(a)(1-3) (1972).

50. 10 C.F.R. § 50.34(a)(4) (1972). For information as to availability of AEC records and documents, see 10 C.F.R. §§ 9.7-9 (1971).

51. 42 U.S.C. § 2021(1) (1970). An example of the possible extent of such AEC notification to other governmental bodies is found in the case of the Turkey Point plants wherein the following were notified: the Governor of the State of Florida, the Florida Public Service Commission, the Florida Nuclear and Space Commission, the Florida State Board of Health, the Internal Improvement Fund, the Florida Board of Conservation, the Central and Southern Florida Flood Control, the Dade County District Commission, County Manager, County Zoning Department, County Health Department, County Air Pollution Control Authority, officials of Homestead and Florida City, Florida and various federal agencies, among them the Corps of Engineers, the Federal Aviation Agency, the Coast Guard, and Homestead Air Force Base. See 3 A.E.C. 195, 204 (Apr. 1967). See also *United States v. Florida Power & Light Co.*, 311 F. Supp. 1391 (S.D. Fla. 1970).

52. Agencies contacted include, among others: Fish and Wildlife Service; Environmental Protection Agency (formerly Federal Water Quality Administration); Geological Survey; Coast and Geodetic Survey; Weather Bureau; Corps of Engi-

Review by the ACRS, while independent, proceeds in parallel with that of the Commission's staff.⁵⁴ This committee is made up of experts from without the AEC. It is required by law⁵⁵ to review and report on each major power reactor application. Utility representatives meet with the committee to present their case and respond to questioning. The ACRS, by letter to the Commission which is made public, then comments upon the safety of the project, spells out areas of technical concern, and makes recommendations for research and development efforts in those areas.⁵⁶ The staff review⁵⁷ includes consideration of all the radiation safety aspects of the proposed reactor, as well as the applicant's technical and financial qualifications,⁵⁸ and at the end of its review, which includes

neers; Advisory Council on Historic Preservation. Until NEPA, the AEC could only suggest that the applicant comply with the requirements of these agencies. However, the AEC now requires such compliance: "The Commission will incorporate in construction permits and operating licenses for power reactors . . . a condition to the effect that the licensee shall observe such Federal and State standards and requirements for the protection of the environment . . . as are validly imposed pursuant to authority established under Federal and State Law . . ." Statement of Policy, AEC Press Release No. N-54, at 4-5 (April 2, 1970). See also 10 C.F.R. § 50, Appendix D (1972).

53. 42 U.S.C. § 2232(b) (1970). Legislation has been proposed to allow discretionary rather than mandatory ACRS review in certain cases. See Licensing Hearings, *supra* note 32, pt. 2, App. 4, at 508.

54. 42 U.S.C. § 2039 (1970).

55. *Id.* § 2232(b) (1970).

56. See Ramey, *supra* note 23, at 11.

57. The Director of the regulatory staff which reviews the application reports directly to the Commission and thus is independent of the AEC's operating and reactor development functions. Only the five-member Commission itself (see 42 U.S.C. § 2031 (1970)) has the dual responsibility for both regulation and promotion of atomic energy activities. Below the Commission level, these two staffs are separated, both organizationally and geographically. The dual nature of the "Commission-level" responsibility is, however, often characterized as a conflict of interest within the AEC by its critics. See summary of remarks of Irving Like, at ALI-ABA Conference, *supra* note 20, at 4-5. See also remarks by AEC Commissioner Ramey in *Nuclear Power and Lawyers: What Are The Alternatives?*, AEC Press Release No. S-26-71 (Nov. 29, 1971), in which he discussed the "\$64 question of a separate regulatory agency," and outlined considerations for establishing such. *Id.* at 12-13. A court challenge to this dual role is pending in *Conservation Soc'y of S. Vt., Inc. v. AEC* (D.C. Cir. No. 19-72, filed Jan. 6, 1972), reported in 18 *AECH* No. 3, at 38 (Jan. 17, 1972), 2 *BNA Envir. Rep.—Curr. Dev.* 1118 (Jan. 14, 1972).

58. See 10 C.F.R. § 50.40(b) (1972). See generally AEC pamphlet, *Licensing of Power Reactors* (U.S. Gov't Printing Office No. 0-249-17, April 1967).

detailed questioning of the applicant,⁵⁹ the AEC staff issues its own Safety Analysis Report, which is also made available to the public and is sent to state and local officials and news media in the plant area.

The next step in the licensing process is a public hearing to consider issuance of the construction permit.⁶⁰ Public notice of the hearing date and location is published in advance in the Federal Register⁶¹ and in an AEC announcement sent to the news media in the vicinity of the site.⁶² The Commission's Rules of Practice⁶³ permit persons whose interests may be affected by the proceedings to intervene as parties.⁶⁴ Persons who wish only to make a statement of their views concerning the project may be permitted to make a "limited appearance."⁶⁵

The hearing is conducted before a three-member Atomic Safety and Licensing Board⁶⁶ appointed by the Commission from a panel of qualified persons.⁶⁷ Two of the members are technical experts; one is a lawyer who serves as chairman.⁶⁸ In a hearing on an uncontested application the Licensing Board determines: (1) whether the application and the record contain sufficient information, and (2) whether review by the AEC staff has been adequate to support the findings proposed to be made by the Director of Regulation.⁶⁹ If the application is contested, that is, if there is controversy between the staff and the applicant concerning the issuance of the permit or any of its terms or conditions, or if the application is opposed by an intervening party, the Licensing Board will consider any matters in controversy.⁷⁰ Upon completion of the hearing, the Board issues its decision, and, if that decision so authorizes, a construction permit is issued.⁷¹ The decision and the permit are subject

59. It is usual for hundreds of detailed technical questions to be asked, in writing, by the staff. The review generally takes a year or more and recently this time span has been increasing. See Licensing Hearings, *supra* note 32, pt. 2, App. 8, at 549.

60. 42 U.S.C. § 2239(a) (1970).

61. *Id.*

62. Licensing of Power Reactors, *supra* note 58, at 8.

63. 10 C.F.R. §§ 2.1-2.914 (1972).

64. 10 C.F.R. § 2.714 (1972).

65. 10 C.F.R. § 2.715(a) (1972).

66. Atomic Energy Act of 1954, 42 U.S.C. § 2241 (1970).

67. *Id.* § 2241(a).

68. See Ramey, *supra* note 23, at 12. See also Atomic Energy Act of 1954, 42 U.S.C. § 2241(a) (1970).

69. 10 C.F.R. § 2.104(b)(2) (1972).

70. 10 C.F.R. § 2.104(b)(1) (1972).

71. 10 C.F.R. §§ 2.764, 50.50 (1972).

to review by the Commission⁷² (or, in some cases, by the Atomic Safety and Licensing Appeal Board)⁷³ upon its own motion⁷⁴ or upon the filing of a petition for review by a party.⁷⁵ The decision is likewise subject to judicial review.⁷⁶

The steps in obtaining an operating license are similar to those steps described above for a construction permit, and will not be described in further detail herein.

2. Expansion of AEC Jurisdiction: NEPA and the Calvert Cliffs' Decision⁷⁷

The National Environmental Policy Act of 1969⁷⁸ requires the federal government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate federal plans, functions, programs and resources to foster environmental protection.⁷⁹ Federal agencies are required to include in every recommendation on "major Federal actions significantly affecting the quality of the human environment,"⁸⁰ a detailed discussion of the basic short-term and long-term environmental consequences of the proposed action,⁸¹ and to "utilize a

72. 10 C.F.R. §§ 2.760, 62, 70 (1972).

73. 10 C.F.R. §§ 2.785-87 (1972).

74. 10 C.F.R. § 2.760(a),(b) (1972).

75. 10 C.F.R. § 2.762 (1972).

76. Administrative Procedure Act, 5 U.S.C. §§ 704-06 (1970). See also Atomic Energy Act of 1954, 42 U.S.C. § 2231 (1970).

77. *Calvert Cliffs' Coord. Comm., Inc. v. United States Atomic Energy Comm'n*, 449 F.2d 1109 (D.C. Cir. 1971). See Shapar, *supra* note 30, at 3.4-16. For cases interpreting the National Environmental Policy Act see notes 87 and 112 *infra*. For scholarly comment on NEPA cited in the Calvert Cliffs' decision see Donovan, *The Federal Government and Environmental Control: Administrative Reform on the Executive Level*, 12 B.C. Ind. & Com. L. Rev. 541 (1971); Hanks and Hanks, *An Environmental Bill of Rights: The Citizen Suit and the National Environmental Policy Act of 1969*, 24 Rutg. L. Rev. 230 (1970); Sive, *Some Thoughts of an Environmental Lawyer in the Wilderness of Administrative Law*, 70 Colum. L. Rev. 612, 643-50 (1970); Peterson, *An Analysis of Title I of the National Environmental Policy Act of 1969*, 1 *Envir. Rptr.* 50035 (1971); Yannacone, *National Environmental Policy Act of 1969*, 1 *ELR* 8 (1970); Note, 37 *Brooklyn L. Rev.* 139 (1970). 449 F.2d at 1115-6, n. 13. See *Selected Materials on the Calvert Cliffs' Decision, Its Origin and Aftermath*, Joint Committee on Atomic Energy, 92nd Cong., 1st Sess. (Feb. 1972).

78. 42 U.S.C. §§ 4321-47 (1970).

79. *Id.* § 4331(a) (1970).

80. *Id.* § 4332(2)(C) (1970).

81. *Id.*

systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences . . . in decision making [sic] which may have an impact on man's environment. . . ."⁸² They must also develop appropriate alternatives to recommended courses of action in any proposal involving alternative uses of available resources.⁸³ The Act also established the Council of Environmental Quality which reports to the President and which is charged with reviewing the activities of the government in light of NEPA and recommending national policies to foster environmental quality.⁸⁴ NEPA has expanded the AEC's regulatory jurisdiction into the area of nonradiological environmental effects of nuclear power plants. The AEC regulations implementing NEPA and challenges to their sufficiency are discussed below.

The scope of NEPA⁸⁵ covers not only nuclear power plants licensed by the AEC but hydroelectric plants licensed by the FPC and all plants, both nuclear and non-nuclear, for which a permit from the Corps of Engineers is required under the Rivers and Harbors Act. Controversies over the interpretation of the language of NEPA⁸⁶ have already resulted in litigation in the federal courts,⁸⁷ and a great deal more may be expected because of the broad wording of the Act and the absence of specific procedural guidance.⁸⁸

NEPA became effective on January 1, 1970. In March, the Council on Environmental Quality (CEQ)⁸⁹ was established and in April, the Water Quality Improvement Act of 1970 (WQIA)⁹⁰ became effective.

82. Id. § 4332(2)(A) (1970).

83. Id. § 4332(2)(D) (1970).

84. Id. §§ 4342-46 (1970).

85. Shapar, *supra* note 30, at 3.4-17.

86. Id.

87. The leading case is *Calvert Cliffs' Coord. Comm. v. United States Atomic Energy Comm'n*, 449 F.2d 1109 (D.C. Cir. 1971). Only the Fifth Circuit had previously interpreted the NEPA in *Zabel v. Tabb*, 430 F.2d 199 (5th Cir. 1970). Federal district court decisions interpreting the NEPA before *Calvert Cliffs'* were mainly concerned with the problem of retroactivity. See 449 F.2d at 1120 n. 25 and Note, 69 Mich. L. Rev. 732 (1971). Other district court cases "stress[ed] the discretionary aspects of the act." 449 F.2d at 1115-16, n. 13, which cites *Environmental Defense Fund v. Corps of Engineers*, 325 F. Supp. 749 (E.D. Ark. 1971); *Bucklein v. Volpe*, — F. Supp. —, 2 ERC 1082 (N.D. Cal. 1970); *Pennsylvania Environmental Council, Inc. v. Bartlett*, 315 F. Supp. 238 (M.D. Pa. 1970).

88. See *Calvert Cliffs' Coord. Comm. v. United States Atomic Energy Comm'n*, 449 F.2d 1109, 1122 (D.C. Cir. 1971).

89. Exec. Order No. 11514, 3 C.F.R. 104 (1971).

90. Water Quality Improvement Act, 33 U.S.C. §§ 1151-75 (1970).

On April 2, 1970, the AEC published general policies and procedures⁹¹ applicable to the issuance of construction permits and operating licenses for nuclear power reactors which the AEC determined would significantly affect the quality of the environment.⁹² These AEC regulations, designed to satisfy the provisions of NEPA, enlarged the scope of the non-radiological issues which might be raised in licensing proceedings, and imposed new environmental requirements on holders of nuclear power reactor licenses already issued by the Commission.⁹³

On July 23, 1971, the United States Court of Appeals for the District of Columbia decided *Calvert Cliffs' Coordinating Committee, Inc. v. Atomic Energy Commission*.⁹⁴ Plaintiffs, interested environmentalists, challenged several of the NEPA provisions. Two of the provisions,⁹⁵ applicable to plants already in the licensing process, will not be discussed because of their transitory nature.⁹⁶ Two other provisions, which are of general applicability to all future licensing procedures under NEPA, are discussed below.

Plaintiffs contended that the AEC regulations being challenged provided for no mandatory consideration of environmental factors by licensing boards.⁹⁷ They argued:

Although environmental factors must be considered by the agency's regulatory staff under the rules, such factors need not be considered by the hearing board conducting an independent review of staff recommendations, unless affirmatively raised by outside parties or staff members.⁹⁸

In its decision the court noted:

91. 35 Fed. Reg. 5463 (1970).

92. AEC Press Release No. N-54 at 2-3 (Apr. 2, 1970).

93. Guidelines to environmental impact considerations may be found in Appendices A of 10 C.F.R. § 2 (1972) and D of 10 C.F.R. § 50 (1971). Less than a year before, the Court of Appeals for the District of Columbia was asked to review the AEC's refusal to consider environmental factors in a licensing proceeding. The court said the case was not ripe for review, but stated, "[i]f the Commission persists in excluding such evidence, it is courting the possibility that if error is found a court will reverse its final order, condemn its proceeding as so much waste motion, and order that the proceeding be conducted over again in a way that realistically permits de novo consideration of the tendered evidence." *Thermal Ecology Must Be Preserved v. Atomic Energy Comm'n*, 433 F.2d 524, 526 (D.C. Cir. 1970).

94. 449 F.2d 1109 (D.C. Cir. 1971).

95. *Id.* at 1117.

96. *Id.* at 1116-17.

97. *Id.* at 1117-18.

98. *Id.* at 1116-17.

NEPA makes only one specific reference to consideration of environmental values in agency review processes. Section 102(2)(c) provides that copies of the staff's "detailed statement" and comments thereon "shall accompany the proposal through the existing agency review processes." The Atomic Energy Commission's rules may seem in technical compliance with the letter of that provision. They state:

"
13. When no party to a proceeding . . . raises any [environmental issue] . . . such issues will not be considered by the atomic safety and licensing board. Under such circumstances, although the Applicant's Environmental Report, comments thereon, and the Detailed Statement will accompany the application through the Commission's review processes, they will not be received in evidence, and the Commission's responsibilities under the National Environmental Policy Act of 1969 will be carried out in toto outside the hearing process."

The question here is whether the Commission is correct in thinking that its NEPA responsibilities may "be carried out in toto outside the hearing process"—whether it is enough that environmental data and evaluations merely "accompany" an application through the review process, but receive no consideration whatever from the hearing board.⁹⁹

The court considered the AEC's "crabbed interpretation . . . [to make] a mockery"¹⁰⁰ of NEPA:

The word "accompany" in Section 102(2)(c) must not be read so narrowly as to make the Act ludicrous. It must, rather, be read to indicate a congressional intent that environmental factors, as compiled in the "detailed statement," be *considered* through agency review processes.¹⁰¹

The court noted that since it is "unrealistic to assume that there will always be an intervenor"¹⁰² with the resources to challenge a staff recommendation, the AEC must "take the initiative"¹⁰³ of considering the environment at every stage of the licensing process. This means that hearing boards must independently review and balance conflicting factors:

The Commission's regulations provide that in an uncontested proceeding the hearing board shall on its own "determine whether the application and the record of the proceeding contain sufficient information, and the review of the application by the Commission's regulatory staff has been adequate, to support affirmative findings on" various nonenvironmental factors. NEPA requires at least as much automatic consideration of environmental factors. In

99. Id. at 1117.

100. Id.

101. Id. at 1117-18.

102. Id. at 1118.

103. Id. at 1119.

uncontested hearings, the board need not necessarily go over the same ground covered in the "detailed statement." But it must at least examine the statement carefully to determine whether "the review . . . by the Commission's regulatory staff has been adequate." *And it must independently consider the final balance among conflicting factors that is struck in the staff's recommendation.*¹⁰⁴

Using a figure of speech that had been used before in a landmark environmental case,¹⁰⁵ the court pronounced that the responsibility of the Commission:

. . . is not simply to sit back, *like an umpire*, and resolve adversary contentions at the hearing stage. Rather, it must itself take the initiative of considering environmental values at every distinctive and comprehensive stage of the process beyond the staff's evaluation and recommendation.¹⁰⁶

Although the *Calvert Cliffs'* decision calls attention to the need for consideration of environmental factors by the AEC, it does not interpret NEPA as setting environmental protection as an absolute, but rather as one element in a delicate balance:

"Environmental amenities" will often be in conflict with "economic and technical considerations." To "consider" the former "along with" the latter must involve a balancing process. In some instances environmental costs may outweigh economic and technical benefits and in other instances they may not. But NEPA mandates a rather finely tuned and "systematic" balancing analysis in each instance.¹⁰⁷

As a result of the *Calvert Cliffs'* decision, which the AEC decided not to appeal,¹⁰⁸ the licensing regulations for nuclear reactors have been changed to reflect the court's requirements,¹⁰⁹ as the Commission interprets them.¹¹⁰ In addition to the discussion of direct environmental effects of a facility, the Commission now requires applicants to submit with their environmental statement a discussion of the effects of possible accidents, transporting radioactive matter and building transmission lines, a discussion of alternatives to the proposed action, a "cost-benefit analysis," quantified

104. *Id.* at 1118 (emphasis added).

105. *Scenic Hudson Preservation Conf. v. FPC*, 354 F.2d 608, 620 (2d Cir. 1965).

106. 449 F.2d at 1119 (emphasis added).

107. *Id.* at 1113.

108. AEC Plans No Appeal of Court Decision, AEC Press Release No. 0-147, Aug. 26, 1971.

109. 449 F.2d at 1128-29.

110. 10 C.F.R. § 50, App. D (1972).

“to the fullest extent possible,” and a discussion of all factors with respect to water quality, whether or not certification from the appropriate authority has been obtained.¹¹¹

The *Calvert Cliffs*' decision and the AEC's response have drawn much comment and criticism.¹¹² The post-*Calvert Cliffs*' AEC regulations have already been challenged,¹¹³ and suggestions for possible changes in the

111. *Id.*

112. Since the *Calvert Cliffs*' decision several cases interpreting NEPA have cited *Calvert Cliffs*': *Comm. for Nuclear Responsibility, Inc. v. Schlesinger*, 404 U.S. 917 (1971); *Natural Resources Defense Council v. Morton*, — F.2d — (D.C. Cir. 1972); *Greene County v. FPC*, 455 F.2d 412 (2d Cir. 1972); *Comm. for Nuclear Responsibility, Inc. v. Seaborg*, — F.2d — (D.C. Cir. 1971); *Scenic Hudson Preservation Conf. v. FPC*, 453 F.2d 463 (2d Cir. 1971); *Penna. Envir. Council v. Bartlett*, 454 F.2d 613 (3d Cir. 1971); *Ely v. Velde*, 451 F.2d 1130 (4th Cir. 1971); *Lathan v. Volpe*, 455 F.2d 111 (9th Cir. 1971); *Nat'l Helium Corp. v. Morton*, 455 F.2d 650 (10th Cir. 1971); *Upper Pecos Ass'n v. Stans*, 452 F.2d 1233 (10th Cir. 1971); *Morningside-Lenox Park Ass'n v. Volpe*, 334 F. Supp. 132 (N.D. Ga. 1971); *Cohen v. Price Comm'n*, 3 ERC 1548 (S.D.N.Y. Jan. 24, 1972); *Citizens for Reid State Park v. Laird*, 3 ERC 1580 (D. Me. Jan. 21, 1972); *City of New York v. United States*, 3 ERC 1570 (E.D.N.Y. Jan. 20, 1972); *Environ. Defense Fund v. TVA*, 3 ERC 1553 (E.D. Tenn. Jan. 11, 1972); *Kalur v. Resor*, 335 F. Supp. 1 (D.D.C. 1971); *Natural Resources Defense Council v. TVA*, 3 ERC 1468 (S.D.N.Y. Dec. 9, 1971); *Goose Hollow Foothills League v. Romney*, 3 ERC 1087 (D. Ore. Sept. 9, 1971); *United States v. 247.37 Acres*, 3 ERC 1098 (S.D. Ohio Sept. 9, 1971). See *Hearings before Senate Interior and Insular Affairs Comm.*, Nov. 3, 1971, reported in 2 BNA Env. Rptr. 793 (1971); *Remarks of Commissioner Ramey* reported in 17 AECH., No. 41, at 2 (Oct. 11, 1971); *Remarks of Rep. Aspinall*, reported in 17 AECH., No. 34, at 22 (Aug. 23, 1971); *Comments on AEC NEPA Regulations—Effect on Electric Power Supply by Edison Electric Institute*, 17 AECH., No. 42, at 12 (Oct. 18, 1971). See also *Comment, America's Changing Environment—Is the NEPA a Change for the Better?* 40 Fordham L. Rev. 897, 910 (1972).

113. The Izaak Walton League of America and several of its constituent units, the United Automobile, Aerospace and Agricultural Implement Workers of America, the Illinois State Community Action Program and the State of Illinois sought *inter alia* a declaration that the Commission's regulations implementing NEPA in licensing proceedings are invalid, because the “rulemaking process culminating in the adoption of Appendix D did not include provision for public hearings” and because Appendix D was promulgated without the preparation and distribution of an “Environmental Statement,” both alleged violations of the CEQ guidelines. See complaint in 17 AECH., No. 45, at 5 (Nov. 8, 1971). The plaintiffs argued that attention be directed toward the new AEC regulations on procedures for considering environmental effects, and that the detailed statement of such effects be made available to the public for thirty days before such regulations are adopted—in other words, that the NEPA proceedings be held applicable to the AEC's rulemaking as well as to its licensing. The court dismissed the count challenging the

law on licensing procedures have been advanced and will be discussed in later sections of this article.

3. The Water Quality Improvement Act of 1970

The Water Quality Improvement Act of 1970¹¹⁴ amended the existing Federal Water Pollution Control Act¹¹⁵ which established a framework of state-federal cooperation under which the states were given the opportunity to set water quality standards¹¹⁶ for interstate waters.¹¹⁷ Under the 1970 amendments the AEC and other federal agencies which issue permits or licenses for electric power plants must now receive from the utility

rulemaking as being improperly brought before the district court. However, in ruling on another count, the court granted the environmentalists an injunction prohibiting the AEC from issuing a reduced power operating license for Quad Cities Nuclear Power Station Units 1 and 2. A letter from CEQ Counsel Timothy Atkeson to AEC Chairman Schlesinger stated that CEQ considers the claims in the Quad Cities suits to be "without merit." As to the claim that the AEC be required to submit an impact statement on the regulations implementing NEPA, Mr. Atkeson said, "This was not intended with respect to Section 3 NEPA Procedures and the Council will make clear in its next revision of the Guidelines that this was not intended." 2 BNA Envir. Rptr. 995 (1971). On December 23, 1971, the AEC announced that it had requested the Justice Department to appeal the preliminary injunction which restrains the Commission from issuing a partial operating license for the Quad Cities Units in Illinois before completion of the NEPA review. AEC Press Release No. 0-272, Dec. 23, 1971. The Quad Cities injunction was dissolved when the plaintiffs settled with the utility the AEC granted a 207 license for the units. Nuclear Industry April, 1972 at 25. A challenge from another side has been raised by Carolina Power & Light Co. in a licensing proceeding. The utility contends that the Atomic Energy Act does not give AEC jurisdiction over non-nuclear, off-site facilities such as a discharge canal or transmission lines, and that the AEC's suspension of work on such facilities at the Brunswick Station after issuance of a construction permit, pending NEPA review, was outside the scope of the AEC's authority. Nucleonics Week, March 16, 1972, Vol. 13, No. 46, at 1.

114. 33 U.S.C. §§ 1151-75 (1970).

115. *Id.*

116. As interpreted by the AEC, these standards do not include radiological criteria. Because of its reliance on state certification, questions of the applicability of WQIA to state regulation of radioactive discharges have been raised. The Commission does not interpret the WQIA as taking away the federal preemption of regulation of radioactive effluents in waterways, since there has been no indication of congressional intent to remove the present exclusive authority of the AEC. Should a state authority refuse to issue a certificate on radiological grounds, the applicant could properly take the matter to the courts. Statement of Joseph Hennessey, AEC Gen'l Counsel, reported in 16 AECH., No. 16, at 2-3 (Apr. 20, 1970).

117. 33 U.S.C. § 1160(c) (1970).

applicant, before the license may be granted, a certification that there is "reasonable assurance" of compliance with the applicable water quality standards.¹¹⁸ The certification must come from the state¹¹⁹ where the discharge originates¹²⁰ or, in some circumstances, interstate agencies or the federal government.¹²¹

Until *Calvert Cliffs'* the AEC had interpreted its duties under the WQIA as superseding those of NEPA in the field of water quality. Thus in its pre-*Calvert Cliffs'* regulations on NEPA review the AEC stated:

With respect to those aspects of environmental quality for which environmental quality standards and requirements have been established by authorized Federal, State, and regional agencies, *proof that the applicant is equipped to observe and agrees to observe such standards and requirements will be considered a satisfactory showing* that there will not be a significant, adverse effect on the environment. *Certification by the appropriate agency that there is reasonable assurance that the applicant for the permit or license will observe such standards and requirements will be considered dispositive for this purpose.*¹²²

The *Calvert Cliffs'* court, discussing the "plain language"¹²³ of Section 104 of NEPA,¹²⁴ and WQIA,¹²⁵ found that the Commission's rule was in fundamental conflict with the basic purpose of NEPA.¹²⁶

Obedience to water quality certifications under WQIA is not mutually exclusive with the NEPA procedures. It does not preclude performance of the NEPA duties. Water quality certifications essentially establish a *minimum condition* for the granting of a license. But they need not end the matter. The Commission can then go on to perform the very different operation of *balancing the overall benefits and costs of a particular proposed project, and consider alterations (above and beyond the applicable water quality standards) which would further reduce environmental damage. Because the Commission can still conduct the NEPA balancing analysis, consistent with WQIA, Sec-*

118. Id. § 1171(b) (1970).

119. State Certification of Activities Requiring a Federal License or Permit, 36 Fed. Reg. 8563 (May 8, 1971).

120. Shapar, *supra* note 30, at 3.4-18.

121. 33 U.S.C. § 1171(b) (1970).

122. 10 C.F.R. § 50, App. D at 249 (1971), quoted in *Calvert Cliffs' Coord. Comm. v. United States Atomic Energy Comm'n*, 449 F.2d at 1122 (emphasis added).

123. Id. at 1125.

124. Id. at 1124.

125. Id.

126. Id. at 1123.

tion 104 does not exempt it from doing so. And it, therefore, must conduct the obligatory analysis under the prescribed procedures.¹²⁷

The AEC was directed to change its rules in this respect¹²⁸ and has done so. Representatives of several of the federal environmental agencies have since stated their disagreement with this part of the *Calvert Cliffs'* decision, which, in effect, has returned all decisions on water quality to a case-by-case basis,¹²⁹ and legislative reform is probable.¹³⁰

4. Clean Air Act Amendments of 1970¹³¹

Under the Clean Air Act,¹³² the federal government had the authority to set air quality criteria for certain pollutants, but could not regulate the *emission* of such matter into the air.¹³³ The 1970 Amendments, *inter alia*:

... provided for Federal establishment of national primary ambient air quality standards (to protect health) and national secondary ambient air quality standards (more stringent standards to protect the public welfare), and an opportunity for adoption by the States of implementation and enforcement plans for such standards.¹³⁴

The federal government may now itself establish emission standards for new stationary sources, and may also promulgate emission standards for hazardous air pollutants from all stationary sources, new or existing.¹³⁵

127. *Id.* at 1125 (emphasis added).

128. *Id.* at 1129.

129. See Hearings before Senate Interior and Insular Affairs Comm., *supra* note 112; Statement of Russell E. Train, 17 AEC H., No. 45, at 15 (Nov. 8, 1971); Statement of William O. Doub, 2 BNA Envir. Rptr. 793 (1971).

130. Statement of Rep. Aspinall, reported in 17 AEC H., No. 34, at 22 (Aug. 23, 1971). An amendment to the proposed Federal Water Pollution Control Act Amendments of 1971 (S. 2770), sponsored by Senator Baker, would state that the WQIA certification program satisfies NEPA without independent analysis. 2 BNA Envir. Rptr. 793-94 (1971).

131. See Shapar, *supra* note 30, at 3.4-18-19. See Pub. L. 91-604, 84 Stat. 1705 for text of the 1970 amendments. See also Willrich, *The Energy-Environment Conflict: Siting Electric Power Facilities*, 58 Va. L. Rev. 257 (1972).

132. Air Quality Act of 1967, Pub. L. 90-148, 81 Stat. 485. Air Quality Act of 1967 and the 1970 amendments are codified in the Clean Air Act, 42 U.S.C. §§ 1857-571 (1970).

133. Shapar, *supra* note 30, at 3.4-18, citing 81 Stat. 490, repealed, Pub. L. No. 91-604, Dec. 30, 1971.

134. Shapar, *supra* note 30, at 3.4-18.

135. "It must delegate to the States enforcement authority with respect to the standards of performance for new sources within the State and with respect to emission standards for hazardous air pollutants. The authority of States and their

The provisions relating to new stationary sources have particular relevance for electric power plants—particularly fossil-fuel plants which release oxides of sulphur and nitrogen. As to nuclear power plants, the legislative history of the amendments indicates that the responsibilities of the AEC with respect to radiological health and safety aspects of nuclear facilities were to remain unchanged by enactment of the amendments.¹³⁶

B. Federal Power Commission¹³⁷

At the present time, the Federal Power Commission¹³⁸ regulates the electrical industry in three ways: (1) by licensing the use of hydropower sites¹³⁹ on navigable rivers under the federal jurisdiction,¹⁴⁰ (2) by regulating the wholesale rates of power sold for resale in interstate commerce,¹⁴¹ and (3) by encouraging the inter-connection and co-ordination of power systems.¹⁴² It also serves as an information collection agency.¹⁴³

political subdivisions to set standards for new stationary sources and emission standards for hazardous air pollutants is expressly reserved, provided that their requirements are no less stringent than applicable Federal standards or those contained in Federally approved implementation plans." *Id.*

136. *Id.* at 3.4-19.

137. See generally *An Informal Explanation of the Organization and Work of the Federal Power Commission* (U.S. Gov't Print. Office, No. 0-314-512 1968); See *Effects*, supra note 24, ch. VII, *Considerations Affecting Steam Power Plant Site Selection*, 145-283; *Trends and Growth Projections of the Electric Power Industry, Effects Hearings I*, supra note 24, at 53; *Hearings on Powerplant Siting and Environmental Protection Before the Subcomm. on Communications and Power of the House Comm. on Interstate and Foreign Commerce, 92d Cong., 1st Sess., Parts 1-3 (1971)* (hereinafter cited as *Siting Hearings I, Siting Hearings II, Siting Hearings III*); *OST Study*, supra note 5.

138. The statutory basis is found in the Federal Power Act, 16 U.S.C. §§ 791-828c (1970). See 16 U.S.C. §§ 792-93 (1970) for the actual structural and functional guidelines of the Commission.

139. The FPC has been asked to extend its regulatory authority to steam power plants that utilize navigable waterways. In a complaint filed with the FPC, the Sierra Club and several American Indian groups have asked the Commission to require construction licenses for six thermal power plants being built on federal lands in the Southwest. The environmentalist groups argued that use by the proposed thermal plants of water drawn from public waterways would provide a sufficient basis for an extension of FPC jurisdiction. FPC spokesmen pointed out that prior holdings have been consistent in stating that the regulatory authority over waterways provided by the Federal Power Act applied only to hydroelectric projects. *Electrical Week*, Sept. 20, 1971. See 16 U.S.C. §§ 796, 797, 811, 814, 817 (1970) for language indicative of a legislative intent to generally limit applicability of the Act to hydroelectric power projects.

140. 16 U.S.C. § 797(e) (1970).

141. *Id.* § 824(b),(d) (1970).

In contrast to the limited regulatory mandate of the Atomic Energy Act of 1954¹⁴⁴ the Federal Power Act¹⁴⁵ provides the basis for comprehensive consideration and control of the environmental effects of hydroelectric generating stations.¹⁴⁶ For example, the FPC, as part of its authority to license the construction of hydroelectric projects, even before the passage of NEPA, could condition such licenses to limit thermal discharges from fossil and nuclear plants located on water impoundments under FPC license.¹⁴⁷ However, like other federal agencies, the FPC is now also subject to the provisions of NEPA¹⁴⁸ and WQIA.

142. *Id.* § 824a(a), (b) (1970).

143. See generally Exec. Order No. 11514, 3 C.F.R. 104 (1971). See also Siting Hearings II, *supra* note 137, at 414 for testimony of John H. Nassikas, Chairman of the Federal Power Commission.

144. 42 U.S.C. §§2011-2296 (1970). See Shapar, *supra* note 30, at 3.4-15.

145. 16 U.S.C. § 791-828c (1970). See Shapar, *supra* note 30, at 3.4-15-16.

146. Shapar, *supra* note 30, at 3.4-15-16. The FPC's mandate, as authorized by 16 U.S.C. § 825h (1970), is truly "comprehensive" and involves evaluating even aesthetic factors in passing upon a licensing application. See, as an example of FPC general policy (and as an interpretation thereof), 18 C.F.R. § 2.13 (1972) (design and construction criteria) which stipulates that approved power plant construction will minimize conflicts with "natural, historic, scenic and recreational values" and will comply with specific guidelines referred to in § 2.13(b). For a discussion of approval authority for transmission lines and for the respective roles of federal and state agencies in reviewing proposed transmission line construction, see Effects Hearings I, *supra* note 24, at 65-66.

147. The FPC has additional influence in the field of utility rate regulation. For example, in February 1970, the FPC proposed to amend its Uniform System of Accounts to permit inclusion of power plant sites, purchased well in advance of the utility's actual need, in the rate base. Previously, site purchase was includable only if the property was to be used within ten years. Preservation of environmental quality is the major reason for the change, to encourage utilities to consult with planning agencies concerned with the orderly development of land. State public utility commissions generally adhere to the FPC's Uniform System in establishing rates. Nuclear Industry, February 1970, at 53-55. See also Nuclear Industry, April 1970, at 18-21, for comments on FPC proposals. The FPC is also clarifying its accounting and rate-making policies to encourage more extensive research and development effort by utilities. In a rule-making order of August 26, 1970, the Commission allowed utilities to include unrecovered portions of their research expenditures in their rate base. Under the old policy, these costs were generally treated as an expense in the year in which they were incurred and were charged against that year's revenue so that the utility earned no return on them. The FPC has suggested that the present definition of research and development may be too restrictive and should be reviewed. Public Utilities Fortnightly, December 17, 1970 at 59.

148. See *Greene County Planning Bd. v. FPC*, 455 F.2d 412 (2d. Cir. 1972).

C. Corps of Engineers, Department of the Army¹⁴⁹

The jurisdiction of the Corps of Engineers over fossil and nuclear power plants encompasses the uses that such plants may make of the navigable waterways of the United States. Under the Rivers and Harbors Act of 1899,¹⁵⁰ the placement of a structure, other than a dam, dike, causeway, or bridge, in a navigable waterway,¹⁵¹ requires a permit from the Corps of Engineers.¹⁵² The operators of a nuclear or fossil plant, who propose to use such waters for cooling purposes by inserting water intake and outlet structures into navigable waterways, first must apply for, and be granted, such a permit.¹⁵³

Within the past few years, another provision of the Rivers and Harbors Act of 1899, referred to as the Refuse Act,¹⁵⁴ has been given new life.¹⁵⁵ This statute makes it unlawful to discharge "refuse matter" into navigable waters without a permit from the Corps.¹⁵⁶ Until recently, implementation of the 1899 Act had been directed toward protection of navigation, but it now also serves the end of environmental protection.¹⁵⁷ The comprehensive regulatory program currently being developed¹⁵⁸ under this Act may significantly affect the design and operation of power plants, particularly fossil-fueled plants, heretofore generally unregulated by federal authorities.¹⁵⁹ For nuclear plants it is expected that the actions of the Corps will be coordinated with those of the AEC as well as the Environ-

149. For a discussion of the role of the Corps of Engineers, past and present, see Nelson, *State Disposition of Submerged Lands Versus Public Rights in Navigable Waters*, 3 *Natural Resources Lawyer* 491, at 508 (1970).

150. 33 U.S.C. §§ 401-66 (1970).

151. Dams, dikes and causeways on navigable waters must be approved by the Chief of Engineers and the Secretary of the Army before construction. 33 U.S.C. § 401 (1970). For regulations relating to bridges see 33 U.S.C. §§ 491-98 and §§ 525-33 (1970). See also 33 C.F.R. § 114.10 (1972).

152. 33 U.S.C. § 401 (1970).

153. Regulations for permit issuance are to be found in 33 C.F.R. § 209.120(b) (1972).

154. 33 U.S.C. § 407 (1970).

155. Shapar, *supra* note 30, at 3.4-16. See also Exec. Order No. 11514, 3 C.F.R. 104 (1971) which implements the program and provides for the cooperation of the federal agencies concerned.

156. 33 U.S.C. § 407 (1970). Regulations for obtaining permits are in 33 C.F.R. § 209.110-200 (1971). See also proposed § 209.131 as amended in 36 Fed. Reg. 6564 (Apr. 7, 1971).

157. *The Refuse Act: Its Role within the Scheme of Federal Water Quality Legislation*, 46 *N.Y.U. L. Rev.* 304 (1971).

158. 36 Fed. Reg. 6564 (Apr. 7, 1971).

159. Shapar, *supra* note 30, at 3.4-16.

mental Protection Agency (EPA). Of course, the Corps is also subject to provisions of NEPA¹⁶⁰ and WOIA.

D. Environmental Protection Agency

The Environmental Protection Agency, formally established by Reorganization Plan No. 3 of 1970 which became effective on December 2, 1970,¹⁶¹ consolidated several environmental agencies of the executive department. The functions transferred to the EPA included administration of the Federal Water Pollution Control Act¹⁶² and the Clean Air Act.¹⁶³ In the radiological field the new agency took over part of the AEC's Division of Radiation Protection,¹⁶⁴ and part of the Bureau of Radiological Health¹⁶⁵ from the Public Health Service of the Department of Health, Education, and Welfare. The staff and functions of the Federal Radiation Council,¹⁶⁶ described later herein, were also transferred to the EPA. The EPA is now responsible for establishing generally applicable standards for the protection of the environment from radioactive materials.¹⁶⁷

E. Other Federal Agencies and Statutes¹⁶⁸

Other significant federal statutes which relate to environmental matters that may be involved in nuclear plant licensing include the Fish and Wildlife Coordination Act,¹⁶⁹ requiring federal agencies to take into account the conservation of fish and wildlife resources in connection with certain activities; the Wild and Scenic Rivers Act¹⁷⁰ designed to preserve scenic rivers in their free-flowing condition; the National Historic Preservation Act,¹⁷¹ requiring federal licensing agencies to take into account the effect of a licensed undertaking on historical sites which are included in the National Register; the Resource Recovery Act of 1970¹⁷² authorizing the

160. See *Kalur v. Resor*, 335 F. Supp. 1 (D.D.C. 1971).

161. Reorganization Plan No. 3 of 1970, 35 Fed. Reg. 15623 (Oct. 6, 1970), as detailed in 42 U.S.C. §§ 4321-47 (1970).

162. 33 U.S.C. § 466a (1970).

163. 42 U.S.C. §§ 1857-57l (1970).

164. Reorganization Plan No. 3 of 1970, § 2(6), 35 Fed. Reg. 15623 (Oct. 6, 1970).

165. *Id.* § 2(3)(ii)(c).

166. *Id.* § 2(7).

167. *Id.* § 32(6).

168. Shapar, *supra* note 30, at 3.4-19.

169. 16 U.S.C. §§ 661-68ee (1970).

170. *Id.* §§ 1271-87 (1970).

171. *Id.* §§ 461-70n (1970).

172. 42 U.S.C. §§ 3251-59 (1970).

expenditure of federal funds for research and development in the recycling and disposal of solid wastes; and the Federal Aviation Act of 1958¹⁷³ which requires anyone proposing to construct certain structures to give notice to the Federal Aviation Administration which may then evaluate the hazards posed by the structure.¹⁷⁴

**F. State Regulation of Power Plant
Siting and Construction¹⁷⁵**

State regulatory commissions having jurisdiction over electric utilities vary widely in their authority and the extent to which they exercise jurisdiction over siting, construction and the environmental effects of power plants and transmission lines.¹⁷⁶ A study published in 1969¹⁷⁷ indicated that with respect to the continental United States "28 of the state regulatory commissions at that time exercised no jurisdiction in the mat-

173. 49 U.S.C. §§ 1301-1542 (1970).

174. *Id.* § 1501 (1970). For specifics as to character of structure see 14 C.F.R. § 77.13 (1972). For procedural details see 14 C.F.R. §§ 77.1-.75 (1972).

175. OST Study, *supra* note 5, at 11-12. In their control over rates, state utility commissions can encourage research in environmental fields by allowing utilities to include the costs in their rate base. See *supra* note 147. One illustration of this was found in New York where an intervenor "in an electric rate case before the New York commission sought to exclude from the rate base substantial costs incurred in the construction of a nuclear generating plant over and above the estimated cost of a fossil-fueled plant. . . . The commission . . . [found that the company had] . . . gone into the nuclear field with a view to taking advantage of the long-range potentialities of nuclear energy as a low-cost power source and in view of the rising cost of fossil fuel and air pollution considerations. The Commission observed that . . . [although] . . . there were uncertainties involved in the company's action . . . [t]his was not a sufficient basis for characterizing the company's action as imprudent. The company contributed to the development of an important new power source which should prove to be a substantial benefit to the company's customers in the future. The full costs of the plant were allowed." Public Utilities Fortnightly, Dec. 17, 1970, at 60, summarizing *In re Consol. Edison Co.*, 85 P.U.R.3d 276 (N.Y. Pub. Serv. Comm'n 1970). Similarly, the New Jersey Board allowed "as a part of the cost of a nuclear generating plant, the projected cost of a three-year research program to evaluate the environmental effects of discharges of heated water into Barnegat Bay. The program would be undertaken jointly by the electric company and the State Department of Conservation and Economic Development." Public Utilities Fortnightly, Dec. 17, 1970, at 61, summarizing *In re Jersey Central Power and Light Co.*, 64 P.U.R.3d 152 (N.J. Bd. of Pub. Util. Comm'rs 1966).

176. OST Study, *supra* note 5, at 55.

177. Effects, *supra* note 24, ch. VII, Considerations Affecting Steam Power Plant Site Selection, Table XI-2, at 235.

ter of licensing or power plant site selection and the remaining . . . commissions were vested with varying degrees of licensing authority."¹⁷⁸

According to the recent report of the President's Office of Science and Technology (OST), "[i]ncreasing public concern for the quality of the environment is evident in the actions of state legislatures in recent years [strengthening] the role of the state regulatory commissions and other state agencies in controlling environmental effects of electric power facilities."¹⁷⁹ The majority of states whose commissions possess a degree of licensing authority permit public hearings on licensing applications¹⁸⁰ and most of these, nineteen out of twenty-nine, take environmental impact factors into consideration, and in seventeen out of the twenty-nine instances, data and advice on matters involving these environmental considerations are available to the state regulatory body.¹⁸¹

Although detailed discussion is beyond the scope of this report, the recent actions of the legislatures of several states (Arizona, California, Connecticut, Maine, Maryland, Nevada, New Hampshire, New York, Oregon, South Carolina, Vermont and Washington) in adopting a variety of approaches to the problem of power plant siting are worthy of note.¹⁸²

178. OST Study, *supra* note 5, at 55.

179. *Id.* at 57. With reference to state commissions in the continental United States the OST Study found that "19 state commissions are presently without any kind of licensing authority. Twenty-nine commissions now exercise some degree of licensing authority. Twenty-two state commissions now require that formal authorization be obtained before a utility system can construct either fossil-fuel or nuclear power plants and transmission lines. An additional four state commissions have licensing authority only over power plants and another three commissions issue certificates only for transmission lines." *Id.* "The states of Minnesota, Nebraska, Texas and South Dakota do not have state regulatory commissions with jurisdiction over electric utilities." *Id.* at 55, n.1.

180. *Id.* at 57.

181. *Id.* In three states the regulatory commissions are required by law to abide by the other agencies' views and in only two other states are the commissions required to obtain such views.

182. *Id.* at 57-61. See the OST Study for legislative developments in Maine, Maryland, Vermont and Washington. The changes to the New York law, the new Article VII of the N.Y. Pub. Serv. Law §§ 120-30 (McKinney Supp. 1971), effective July 1, 1970, are discussed more fully by Joseph C. Swidler, Chairman, Public Service Commission of New York, in *Siting Hearings III*, *supra* note 137, at 905-09, wherein it is stated that the result of the amended law is to "require that before any electric or gas company may begin construction of a major utility transmission facility . . . it must apply for and receive from the [Public Service] Commission a 'certificate of environmental compatibility and public need.' To certificate such a transmission line the Commission must [find on the basis of] sub-

stantial evidence in the record, that it 'represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations' and also 'that such facility conforms to a long-range plan for expansion of the electric power grid of the electric systems serving this state and inter-connected utility systems, which will serve the interests of electric system economy and reliability.'" *Id.* at 905, quoting from §§ 121 and 126 of the amended N.Y. Pub. Serv. Law (McKinney Supp. 1971). With respect to the planning process, another amendment added the stipulation that the Public Service Commission "shall encourage all persons and corporations subject to its jurisdiction to formulate and carry out long-range programs, individually or cooperatively, for the performance of their public service responsibilities with economy, efficiency and care for the public safety, the preservation of environmental values and the conservation of natural resources." N.Y. Pub. Serv. Law § 5(2) (McKinney Supp. 1971). "The obverse side of this effort will be to screen out site possibilities that do not conform to the applicable criteria." *Siting Hearings III*, *supra* note 137, at 906. The New York law has been used as the basis of the proposed Model State Utility Environmental Protection Act of the National Association of Regulatory Utility Commissioners (NARUC). The NARUC legislation covers generating as well as transmission facilities. See statement of George Bloom, NARUC, in *Siting Hearings III*, *supra* note 137, at 890-92. On May 1, 1972, the New York legislature passed a compromise power plant siting act. *N.Y. Times*, May 2, 1972, at 1, col. 7. Among the other foremost recent state actions are: establishment of long-range planning requirements and of certification procedures for electric power plants in California, Cal. Pub. Util. Code §§ 2851-55 (West Supp. 1971); promulgation of rigid standards for the siting and operation of nuclear power plants in Oregon, Ore. Laws, ch. 609, §§ 1-29 (1971); enactment of the Utility Environmental Protection Act establishing a permit system for utilities in general [in essence, NARUC'S Model Act] in Nevada, Nev. Rev. Stat., ch. 311, §§ 1-17 (Supp. 1971), enacting §§ 2-17 of Nev. Rev. Stat., ch. 704 (Supp. 1971) and amending § 1 thereof, noted in *Siting Hearings III*, *supra* note 137, at 912; and enactment of "Powerplant Siting" acts in Arizona (Ariz. Rev. Stat. tit. 40, §§ 40-360-40-360.12 (Supp. 1971-72)), New Hampshire (N.H. Rev. Stat. Ann. ch. 162-E:1-E:13 (Supp. 1971)), and South Carolina (S.C. Code Ann., tit. 58, ch. 15 (Supp. 1971)). Connecticut has also dealt with the problems that such utility constructions pose by enacting the Public Utility Environmental Standards Act, which established a nine-member Power Facility Evaluation Council with authority to regulate the construction and operations of generating and transmission facilities. The Council consists of appointees of the State House and State Senate, the Chairman of the Public Utilities Commission or his designee, the Chairman of the Department of Environment, and five members of the public appointed by the governor. Of these five, "not more than one" may have had any affiliation with any utility or governmental regulatory agency, while two members must represent environmental interests. Whenever a utility wishes to construct such facilities, it must apply for a "certificate of environmental compatibility and public need" from the council, paying a fee of up to \$25,000 and providing extensive information about all aspects of the proposal, particularly its environmental impact. The Council must then call a public hearing on the plan,

and may appoint independent consultants to make environmental impact studies, before ruling on the utility's proposal within one year of the application. This certification legislation became effective April 1, 1972. See provisions of the Public Utility Environmental Standards Act, Public Act No. 575, Conn. Legis. Serv. Supp. to Conn. Gen. Stat. Ann. at 717-25 (1971).