NEPA EVALUATION OF TECHNOLOGICAL RESEARCH AND DEVELOPMENT PROGRAMS

In response to the country's rapidly growing energy needs, the federal government is accelerating the flow of funds into research for more efficient methods of energy production.[1] The current research priority is the Liquid Metal Fast Breeder Reactor (LMFBR) being developed by the Atomic Energy Commission (AEC).[2] By 1986 the Commission expects to spend more than two billion dollars on development of the breeder reactor in preparation for its commercial use.[3]

In *Scientists' Institute for Public Information, Inc. v. Atomic Energy Commission*[4] Scientists' Institute sued the AEC, claiming that the Commission must issue an environmental impact statement assessing the longe-range consequences of and possible alternatives to the overall LMFBR program.[5] The AEC argued that the National Environ-

1. Tarlock, *Balancing Environmental Considerations and Energy Demands: A Comment on* Calvert Cliff's Coordinating Committee, Inc. v. AEC, 47 IND. L.J. 645, 645-46 (1972) [hereinafter cited as Tarlock].

2. President Nixon announced the breeder reactor program in a message to Congress. 117 CONG. REC. 18049 (1971). The LMFBR program focuses on the development and testing of LMFBR components as well as the construction and operation of experimental facilities and demonstration plants. Brief for Appellant at 10, Scientists' Institute for Pub. Information, Inc. v. AEC, 481 F.2d 1079 (D.C. Cir. 1973). Like other nuclear reactors, the LMFBR produces heat by the splitting of the atom. Its main advantage is its ability to produce new atomic fuel while at the same time producing heat for electrical energy generation. The LMFBR also produces more fuel than it uses. The fuel used by the LMFBR, however, is plutonium-239, one of the most explosive and toxic substances known to man. Operation of the LMFBR will therefore produce enormous quantities of radioactive waste that must be prevented from entering the biosphere for hundreds of years. The LMFBR program also risks explosions and discharges of plutonium and radioactive wastes into the atmosphere despite all precautions that may be taken. Thermal pollution caused by the discharge of waste heat into bodies of water is another environmental hazard. *Id.* at 13-18 & Technical App.

3. These funds are authorized and appropriated by Congress on a yearly basis. The AEC requested 130 million dollars for fiscal year 1972. Brief for Appellant at 10 n.5, Scientists' Institute for Pub. Information, Inc. v. AEC, 481 F.2d 1079 (D.C. Cir. 1973). For fiscal year 1973, 182 million dollars was requested. Tarlock 646 n.6.

4. 481 F.2d 1079 (D.C. Cir. 1973).

5. The AEC interpreted Scientists' Institute's claim as seeking an impact statement evaluating the LMFBR program through the year 2000, as well as the

mental Policy Act (NEPA) only required impact statements for particular facilities[6] and not for an overall research and development program.[7] The Commission did concede, however, that eventually an environmental impact statement would be required, but argued that to require one now would compel the Commission "to look into the crystal ball" and "would be meaningless in terms of content."[8]

The National Environmental Policy Act of 1969[9] requires that federal agencies consider environmental factors in planning and decision-making for legislation and major federal action. NEPA became necessary because federal agencies were isolated and mission-oriented, systematically under-representing environmental considerations in most of their short-range and long-range planning.[10] NEPA applies to "every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment"[11] and compels an agency to prepare a "detailed statement," commonly known as an environmental impact statement, conforming to the five-part outline set forth in the Act.[12]

---

alternatives to the projected action within the same time frame. Brief for Appellee at 21, Scientists' Institute for Pub. Information, Inc. v. AEC, 481 F.2d 1079 (D.C. Cir. 1973).

6. Normally, an environmental impact statement on a nuclear power plant is prepared when an applicant seeks a construction permit. *See* 10 C.F.R. Part 50, app. D (1973). President Nixon announced that there was a national commitment to construct the first LMFBR demonstration plant by 1980, and asked for the immediate preparation of an impact statement to insure compliance with environmental standards before plant construction. 117 CONG. REC. 18050 (1971).

7. 481 F.2d at 1085. The AEC contended that an analysis of the broader aspects of the total program takes place within the statements on individual facilities. While it had not planned to prepare an impact statement on the LMFBR program, the AEC stated that it was in the process of preparing a comprehensive environmental survey of the broader implications of the program. *Id.* at 1085-86.

8. *Id.* at 1086.

9. 42 U.S.C. § 4331 *et seq.* (1970).

10. Tarlock 657-70.

11. 42 U.S.C. § 4332(2)(C) (1970).

12. *Id.* The section provides in part:

(2) all agencies of the Federal Government shall—

. . . .

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

(i) the environmental impact of the proposed action,

The environmental impact statement serves to coordinate agency activities and to describe the effect on the environment of major decisions.[13]

In *Scientists' Institute* the courts were confronted for the first time with the issue of the applicability of NEPA to an agency's technological research and development program as a whole and to the question of when an impact statement must be submitted if required. The district court held that no impact statement was presently required since the program was still in the research and development stage and no specific implementation had yet been taken that would significantly affect the environment.[14] The court of appeals reversed, holding that the AEC must file a progammatic environmental impact statement assessing the cumulative effects of the whole LMFBR program, separate from statements evaluating individual test projects.[15]

To determine the applicability of NEPA to the AEC's overall LMFBR program, the circuit court of appeals had to decide whether the program constituted "Federal action significantly affecting the quality of the human environment" within the meaning of NEPA.[16] Courts have previously construed this phrase to encompass a broad

---

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
(iii) alternatives to the proposed action,
(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented. . . .

13. *See, e.g., The President's Message to the Congress Transmitting the Second Annual Report of the Council on Environmental Quality,* 7 WEEKLY COMPILATION OF PRES. DOCUMENTS 1132 (Aug. 6, 1971); Peterson, *An Analysis of Title I of the National Environmental Policy Act of 1969,* 1 E.L.R. 50035 (1971); Note, *A Preliminary Assessment of the National Environment Policy Act of 1969,* 1973 URBAN L. ANN. 209.

14. Scientists' Institute for Pub. Information, Inc. v. AEC, Civil No. ..... (D.D.C., Mar. 27, 1972).

15. 481 F.2d at 1093.

16. NEPA also requires that an impact statement accompany "every recommendation or report on proposals for legislation." *See* note 12 *supra.* The Council on Environmental Quality (CEQ) was established by Title II of NEPA, 42 U.S.C. §§ 4341-47 (1970), to coordinate and oversee agency efforts to achieve its purposes. The CEQ has noted that this phrase includes legislation for appropriations. CEQ, Statements on Proposed Federal Actions Affecting the Environment: Guidelines, 36 Fed. Reg. 7724 (1971) (Guideline 5(a)(i)) [hereinafter cited as CEQ Guidelines]. The court of appeals noted this as a reason for applying NEPA to the overall LMFBR program since the program annually comes before Congress as a proposal for appropriations legislation. 481 F.2d at 1088.

range of agency activities, such as construction of highways,[17] operation of nuclear power plants at less than 50 percent capacity,[18] stream channelization and dam construction,[19] leasing of Indian reservations,[20] construction of penal facilities,[21] and sale of off-shore oil lands.[22] In *Natural Resources Defense Council, Inc. v. Grant*[23] a federal district court offered a definition of the statutory phrase reflecting the broad scope attributed to NEPA—any federal action that requires substantial planning, time, resources or expenditures and affects a broad range of aspects of the environment, either beneficially or detrimentally.[24] The court of appeals in *Scientists' Institute* noted that NEPA has been held to apply not only when an agency proposes to do something itself "but also whenever an agency makes a decision which permits action by other parties which will affect the quality of the environment."[25] The court concluded that the AEC, by developing a technology for future commercialization, was permitting others[26] to take action affecting the environment.[27]

17. Lathan v. Volpe, 455 F.2d 1111 (9th Cir. 1971); Scherr v. Volpe, 336 F. Supp. 886 (W.D. Wis. 1971).

18. Izaak Walton League v. Schlesinger, 337 F. Supp. 287 (D.D.C. 1971).

19. Natural Resources Defense Council, Inc. v. Grant, 341 F. Supp. 356 (E.D.N.C. 1972); Environmental Defense Fund, Inc. v. Corps of Eng'rs, 325 F. Supp. 749 (E.D. Ark. 1971).

20. Davis v. Morton, 469 F.2d 593 (10th Cir. 1972).

21. Ely v. Velde, 451 F.2d 1130 (4th Cir. 1971).

22. Natural Resources Defense Council, Inc. v. Morton, 458 F.2d 827 (D.C. Cir. 1972).

23. 341 F. Supp. 356 (E.D.N.C. 1972).

24. *Id.* at 367; *see, e.g.*, Calvert Cliffs' Coordinating Comm., Inc. v. AEC, 449 F.2d 1109, 1112-13 (D.C. Cir. 1971); CEQ Guidelines, Guidelines 5(b) & (c) providing in part:

> (b) The statutory clause "major Federal actions significantly affecting the quality of the human environment" is to be construed by agencies with a view to the overall, cumulative impact of the action proposed (and of further actions contemplated). . . . Proposed actions, the environmental impact of which is likely to be highly controversial, should be covered in all cases. . . .
> (c) Significant effects can also include actions which may have both beneficial and detrimental effects, even if, on balance, the agency believes that the effect will be beneficial . . . .

25. 481 F.2d at 1088.

26. Commercialization of LMFBR will, for the most part, *not* be carried on by the government. "Industry should play the major role in this area, but the government can help by providing technical leadership and by sharing a portion of the risk for costly demonstration plants." 117 CONG. REC. 18050 (1971).

27. 481 F.2d at 1089. The court stated: "Development of the technology serves as much to affect the environment as does a Commission decision . . . for

The Council on Environmental Quality (CEQ) had recommended in 1972 that when an agency's individual actions are closely related, or when a program contemplates a number of subsequent actions, a single impact statement would be more appropriate for the comprehensive consideration of the environmental effects and alternatives.[28] This view of NEPA could be construed to mean that an agency should issue an environmental impact statement on an overall technological research and development program, as well as subsequent statements on major individual actions covering the local impact of particular facilities. Yet the application of NEPA to technological research and development programs had not been litigated prior to *Scientists' Institute.* The court held as false the AEC's assumption that environmental impact statements were required only for particular facilities within broad agency programs.[29]

The court also cited NEPA's legislative history to support the application of NEPA to technological development programs. Congress recognized new technology as a major cause of environmental degradation.[30] NEPA's declaration of policy expresses this idea: "The Congress, recogniz[es] the profound impact of man's activity on the *interrelations of all components of the natural environment,* particularly the profound influences of . . . *new and expanding technological*

---

a specific plant. Development of the technology is a necessary precondition of construction of any plants." *Id.*

28. CEQ, Recommendations for Improving Agency NEPA Procedures (May 16, 1972), *reprinted in* 3 E.L.R. 46162, 46164 (1972). *See also* CEQ Guidelines, Guideline 10(a) providing in part:

> Agencies will need to identify at what stage or stages of a series of actions relating to a particular matter the environmental statement procedures of this directive will be applied. It will often be necessary to use the procedures both in the development of a national program and in the review of proposed projects within the national program . . . .

But see note 7 *supra.*

29. 481 F.2d at 1087. In Wilderness Soc'y v. Hickel, 325 F. Supp. 422 (D.D.C. 1970), *rev'd on other grounds sub nom.* Wilderness Soc'y v. Morton, 463 F.2d 1261 (D.C. Cir. 1972), defendant had treated permit applications for right-of-way, adjacent temporary access space, and a haul road for one pipe line as separate and distinct permits. No impact statement had been prepared concerning the right-of-way or access space. The court enjoined the granting of any permits, in part because of failure to fully comply with NEPA, holding that the three permits must be considered as a single application for a pipe line right-of-way. This case indicates judicial willingness to consolidate aspects of a project for the purpose of NEPA.

30. *See, e.g.,* S. REP. No. 91-296, 91st Cong., 1st Sess. 6 (1969).

advances . . . ."[31] The court in *Scientists' Institute* reasoned that NEPA's objective of controlling the impact of new technology would be frustrated unless the statute applied to federal agency programs of research and development that, when commercially applied, would significantly affect the environment.[32]

At the development stage of a program the agency can make its most meaningful decisions by "balancing" environmental factors against the functional and economic benefits of a given technology.[33] Once commercial feasibility is at hand, the balance will almost certainly tip in favor of the technology, given the tremendous costs incurred in its development.[34] Commitment of resources to a particular technological development forecloses other more preferable alternatives.[35] Perhaps this problem explains CEQ's recommendation that agencies involved in research should prepare broad program impact statements *before* research activities have reached a level of investment or commitment likely to restrict other alternatives.[36] The danger that agencies might have precluded options having a less detrimental effect on the environment has prompted courts to enjoin agency activities until an impact statement can be prepared, in spite of immediate costs and the delay involved.[37] Some courts have held an en-

---

31. 42 U.S.C. § 4331(a) (1970) (emphasis added).

32. 481 F.2d at 1090-91.

33. Calvert Cliffs' Coordinating Comm., Inc. v. AEC, 449 F.2d 1109, 1123 (D.C. Cir. 1971) stated:

> NEPA mandates a case-by-case balancing judgment on the part of federal agencies. In each individual case, the particular economic and technical benefits of planned action must be assessed and then weighed against the environmental costs; alternatives must be considered which would affect the balance of values . . . . In some cases, the benefits will be great enough to justify a certain quantum of environmental costs; in other cases, they will not be so great and the proposed action may have to be abandoned or significantly altered so as to bring the benefits and costs into a proper balance. The point of the individualized balancing analysis is to ensure that, with possible alterations, the optimally beneficial action is finally taken.

34. *See* note 3 and accompanying text *supra.*

35. 481 F.2d at 1089 n.43. Environmentalists have criticized current research priorities on the ground that they slight more preferable energy sources. Tarlock 646.

36. CEQ, Recommendations for Improving Agency NEPA Procedures, *supra* note 28, at 46164. *See also* CEQ Guidelines, Guideline 6(iv).

37. *See, e.g.,* Lathan v. Volpe, 455 F.2d 1111 (9th Cir. 1971); Calvert Cliffs' Coordinating Comm., Inc. v. AEC, 449 F.2d 1109 (D.C. Cir. 1971); Environmental Defense Fund, Inc. v. Corps of Eng'rs, 325 F. Supp. 749 (E.D. Ark. 1971).

vironmental impact statement inadequate because of insufficient consideration of the alternatives.[38]

When the nuclear reactor at issue in *Scientists' Institute* is put into commercial use,[39] the direct effects and potential consequences to the environment will be significant.[40] The circuit court held that even though the program's "effects will not begin to be felt for several years, perhaps over a decade, [that] is not controlling,"[41] and an environmental impact statement must be prepared immediately. NEPA mandates consideration of "both the long- and short-range implications to man, his physical and social surroundings, and to nature . . . in order to avoid . . . undesirable consequences"[42] because "each generation [is] trustee of the environment for succeeding generations."[43] Thus, the court in *Scientists' Institute* held that technologi-

38. *See, e.g.*, Natural Resources Defense Council, Inc. v. Morton, 458 F.2d 827 (D.C. Cir. 1972); Committee for Nuclear Responsibility, Inc. v. Seaborg, 463 F.2d 783 (D.C. Cir. 1971); Akers v. Resor, 339 F. Supp. 1375 (W.D. Tenn. 1972).

39. In 1969, the AEC conducted a study to determine how many LMFBR's would be ordered by utility companies if a commercially viable LMFBR industry were established in the mid-1980's. The following number of commercial-sized reactors would be built:

Decade	LMFBR's
1980-89	49
1990-99	453
2000-09	733
2010-19	1369

The AEC projects that by the year 2000 a fourth or more of the total U.S. electrical energy output will come from LMFBR plants. Brief for Appellant at 12-13, Scientists' Institute for Pub. Information, Inc. v. AEC, 481 F.2d 1079 (D.C. Cir. 1973). *See also* AEC, Potential Nuclear Power Growth Patterns, WASH-1098 (1970).

40. For a discussion of the environmental implications of the LMFBR see note 2 *supra.*

41. 481 F.2d at 1090.

42. CEQ Guidelines, Guideline 2.

43. 42 U.S.C. § 4331(b)(1) (1970). *See also* CEQ Guidelines, Guideline 6(v). In Greene County Planning Bd. v. FPC, 455 F.2d 412 (2d Cir.), *cert. denied*, 409 U.S. 849 (1972), plaintiff asserted that the FPC violated its comprehensive planning duties when it refused to consider impending plans at the same time it considered the license application for a pumped storage power project, even though the project was part of an overall power plan. The court, taking notice of NEPA's requirement for an agency to "recognize the world-wide and long-range character of environmental problems," stated that they were

cal programs intended for actual commercial use, like the LMFBR program, fall under the reach of NEPA and require the preparation of an environmental impact statement for the overall program.[44]

The same factors that compel the preparation of an impact statement on the overall effect of technological research and development programs influenced the court's decision regarding the second issue, the timing of the statement.[45] NEPA requires that impact statements "shall accompany the proposal through the existing agency review processes . . . ."[46] Generally, impact statements have not been required any earlier than before an agency conducts public hearings on its proposed action.[47] In *Lathan v. Volpe*[48] the Ninth Circuit emphasized that the impact statement must be prepared before it is "too late to adjust the formulated plans so as to minimize adverse environmental effects" and before "flexibility in selecting alternative plans has to a large extent been lost."[49] *Calvert Cliff's Coordinating Committee, Inc. v. Atomic Energy Commission*[50] held that environmental factors must be considered at "every distinctive and comprehensive stage of the process beyond the staff's evaluation and recommendation."[51]

"startled" at the Commission's refusal to consider proposed plans, but deferred to the Commission's discretion concerning the "proper information gathering technique."

44. 481 F.2d at 1091. The *Scientists' Institute* court held that the procedural requirements of NEPA were not dispensable technicalities. Therefore, the environmental survey being prepared by the AEC could not be substituted for an impact statement. *Id.* at 1091-93. For a thorough discussion of the "non-discretionary" nature of NEPA requirements see Natural Resources Defense Council, Inc. v. Morton, 458 F.2d 827 (D.C. Cir. 1972); Calvert Cliffs' Coordinating Comm., Inc. v. AEC, 449 F.2d 1109 (D.C. Cir. 1971).

45. "[T]he efficiency and responsiveness of government is enhanced when environmental considerations are an integral part of decision-making from the time when a project is first considered and not merely added as after-thoughts when most matters have already been decided."

The President's Message to the Congress Transmitting the Second Annual Report of the Council on Environmental Quality, supra note 13, at 1133.

46. 42 U.S.C. § 4332 (1970). CEQ advises that the statements be submitted "as early as possible and in all cases prior to agency decision . . . ." CEQ Guidelines, Guidelines 2, 10.

47. Oakes, *Developments in Environmental Law*, 3 E.L.R. 50001, 50007 (1973).

48. 455 F.2d 1111 (9th Cir. 1971).

49. *Id.* at 1121. *See also* Ely v. Velde, 451 F.2d 1130 (4th Cir. 1971); Calvert Cliffs' Coordinating Comm., Inc. v. AEC, 449 F.2d 1109 (D.C. Cir. 1971).

50. 449 F.2d 1109 (D.C. Cir. 1971).

51. *Id.* at 1119.

In that case the AEC was required to file impact statements prior to proceedings that determined the granting of construction permits for nuclear power plants; it could not delay until the operating/licensing stage. The court argued that unless environmental factors were considered early, corrective action would be impossible.[52] In *Greene County Planning Board v. Federal Power Commission*[53] the Second Circuit required the Commission to circulate an impact statement prior to its formal hearings on construction permit applications in which final decisions are announced. Previously, most impact statements were circulated at the time the final decision was made.[54]

These cases exemplify NEPA's policy of favoring meaningful and timely information on the effects of agency actions so that all data can be used in decision-making.[55] The court in *Scientists' Institute* stated that a balance must be struck so that the impact statement will be made late enough in the development process to contain meaningful information, but early enough to serve as a practical input to the decision.[56] The decision sets down four factors that an agency should weigh when striking the balance: (1) is the technology commercially feasible and how soon will that time occur; (2) to what extent is information available on the effects of application of the technology and on the alternatives to it; (3) to what extent are irretrievable commitments made and options foreclosed as the development program progresses; and (4) how severe will the environmental effects of the technology be if it proves commercially feasible?[57] Using

52. *Id.* at 1122, 1127-28.

53. 455 F.2d 412 (2d Cir.), *cert. denied,* 409 U.S. 849 (1972).

54. 455 F.2d at 419. The court held that the FPC can draft its statements on the basis of preliminary hearings, but the statements must be circulated and made available to the public and appropriate agencies before final decisions are made.

55. *See also* Natural Resources Defense Council, Inc. v. Morton, 458 F.2d 827 (D.C. Cir. 1972) (reasonable discussion required in light of time and resources); Committee for Nuclear Responsibility, Inc. v. Seaborg, 463 F.2d 783 (D.C. Cir. 1971) (environmental source material for Congress, President, and the public); Environmental Defense Fund, Inc. v. Corps of Eng'rs, 325 F. Supp. 749 (E.D. Ark. 1971) (full disclosure law).

56. 481 F.2d at 1093-94.

57. *Id.* at 1094. The court held that this balancing of factors requires agency expertise and must be made by the agency and not the court. At the same time, a need exists for judicial scrutiny of an agency's decision that the time is not ripe for preparation of an impact statement in order to assure that the policies of the Act are not frustrated or ignored.

this framework, the court decided, from the material in the record,[58] that the AEC had no rational basis for concluding that the time was not yet ripe for drafting an impact statement on the overall LMFBR program. The environmental impact statement would always be subject to change as new information was obtained in the course of the program.[59]

Some commentators doubt whether NEPA is the solution to a federal agencies' failure to consider the environmental consequences of their acts.[60] They suggest that NEPA's impact is upon the character of specific projects rather than upon the agency's major goals or policies not directly related to environmental issues. One commentator said:

> [T]he basic weaknesses of the Act are that it neither provides a meaningful set of resource use priorities nor alters the basic missions of existing departments and agencies. These weaknesses limit the effectiveness of the impact statement procedure, for . . . agencies . . . are now being asked to make decisions for which impact information is not available and to decide questions outside the scope of their normal mission. . . . In response to these demands, agencies . . . are merely giving better explanations of what they have been and are doing.[61]

Scientists' Institute represents a step forward in solving these problems by requiring an early overall evaluation of an agency's program—as early as the research and development stage. Perhaps this case will

---

58. The court held that when an agency decides that an impact statement is not necessary, as the AEC did for the LMFBR program, the agency should state reasons for its decision to ensure that the agency has given adequate consideration to the problem and understands the statutory standards, and to give the courts a focal point for judicial review. *Id.* at 1095; *see* Citizens Ass'n of Georgetown, Inc. v. Zoning Comm'n, 477 F.2d 402 (D.C. Cir. 1973); Hanley v. Kleindienst, 471 F.2d 823 (2d Cir. 1972), *cert. denied,* 412 U.S. 908 (1973), in which both courts held that threshold impact statements are mandatory.

59. In summary, the court found that: (1) commercial implementation of LMFBR is far from speculative; (2) meaningful information on reasonably foreseeable environmental impacts of developing LMFBR technology already exists; (3) the AEC has available much information on alternatives and their effects; and (4) anticipated environmental effects of the LMFBR program are among the most controversial of all federal programs. 481 F.2d at 1095-98.

60. *See, e.g.,* Caldwell, *A National Policy for Energy,* 47 IND. L.J. 624 (1972); Tarlock, Tippy & Francis, *Environmental Regulation of Power Plant Siting: Existing and Proposed Institutions,* 45 S. CAL. L. REV. 502 (1972).

61. Tarlock 671.

be narrowly applied to those agencies, like the AEC, that are involved in research and development of a serious and controversial nature, such as nuclear energy. Although not all agencies engage in research and development, they do formulate comprehensive plans of attack that form the context for individual actions. This planning stage is the point at which *Scientists' Institute* has its greatest potential effect.

Rochelle Golub