

Environmental Considerations in Urban Mass Transit Planning

Urban mass transit has recently experienced a renaissance in the United States, with increased ridership on metropolitan transportation systems across the nation.¹ Moreover, rail-based transit, once the province of the older eastern cities—New York, Chicago, Philadelphia, Boston, and Cleveland—has become the focus of proposed transit systems in a number of urban regions.² In part the result of the energy crunch during the mid- and late-1970's, the continued interest in mass transit may have far-reaching effects in the revitalization of the central cities.

The past two decades have also seen the enactment of legislation aimed at the preservation and enhancement of the nation's environment. These provisions encourage the productive use of natural and man-made resources, and mandate substantive and procedural requirements for the consideration of environmental, economic, and social effects of federal actions on the environment.

Urban mass transit is one such federal action; construction and operation of a transit system will have substantial effects on both its specific location and on the surrounding metropolitan region. There exists in planning for a transit system the potential for beneficial impacts on the economic growth, community development, and overall physical environment of the region. Yet it has been said that the majority of planning effort thus far has been directed toward compliance with the "letter of the law;" too little has been done towards fulfilling the spirit of the law by furthering the art

1. Figures compiled by the American Public Transit Association showed an 8.4 percent increase in ridership, from August 1978 to August 1979, on the nation's transit systems. Holsendolph, "New Data Indicate Greater Transit Use," N.Y. Times, Oct. 28, 1979, § 1 (News), at 31, col. 1 [hereinafter cited as Holsendolph].

2. During the past decade, rapid-rail systems have been built or are being built in Atlanta, Baltimore, Buffalo, Miami, San Francisco, and Washington. Nickel, "Washington's Metro is the Solid-Gold Cadillac of Mass Transit," FORTUNE, Dec. 3, 1979, at 110 [hereinafter cited as Nickel]. Rail systems have also been proposed in Detroit, Honolulu, Los Angeles, and Portland (Oregon). Holsendolph, *supra* note 1, at 31, col. 1.

and science of environmental planning for urban mass transit.³

This Article shall investigate the extent to which environmental planning is considered in the mass transit decision-making process.⁴ Following a review of the legislation, and regulations promulgated thereunder, within which transit decisions are made, a positive analysis will be made of the decisionmaking process for several recent transit projects. Here the questions to be asked are: What effects were considered? At what stage of the planning process were the effects considered? To what extent did these considerations affect the ultimate decision? Finally, a normative discussion of the means by which transit planning can more fully utilize environmental planning will be made, referring to current transit proposals and possible future transit alternatives.

I. STATUTORY AND ADMINISTRATIVE FRAMEWORK

An analysis of the environmental considerations involved in mass transit planning necessarily begins with a review of the statutory provisions within which such considerations are mandated and encouraged. The cornerstone of environmental legislation is the National Environmental Policy Act of 1969,⁵ popularly known as NEPA. The statute's broad congressional declaration of purpose expresses the intention

[t]o declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation.⁶

Section 101⁷ amplifies these substantive policies and goals concerning the environment, and § 102⁸ establishes procedural require-

3. Engineering Department, New York City Transit Authority, Transportation Planning Guidelines, at TP-3-13 (1973).

4. The scope of the Article shall be those planning, design, and implementation stages culminating in the application for federal funding under the Urban Mass Transportation Act of 1964 for the construction of mass transit facilities.

"Mass transit," as used herein, shall be defined as a rail-based, fixed-guideway system located within a metropolitan region. Examples of such a system are rapid-rail, light-rail, commuter rail, trolley, and automated-car transit.

5. 42 U.S.C. §§ 4321-4347 (1976).

6. *Id.* § 4321.

7. *Id.* § 4331.

8. *Id.* § 4332.

ments to insure that environmental considerations are given careful attention and appropriate weight in all decisions of the federal government.

Specifically, § 102(2)(A) requires federal agencies to "utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment."⁹ Section 102(2)(B) further directs these agencies to "identify and develop methods and procedures . . . which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decisionmaking along with economic and technical considerations."¹⁰ Clearly, environmental planning is mandated within transit planning and project decisionmaking.

Much of the litigation which has challenged the sufficiency of environmental considerations in transit decisions has focused upon the Environmental Impact Statement (EIS). This is a required detailed statement on:

- (i) the environmental impact of the proposed action,
- (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.¹¹

9. *Id.* § 4332(2)(A).

10. *Id.* § 4332(2)(B).

11. *Id.* § 4332(2)(C).

Other statutory provisions requiring specific environmental findings as part of, or supplemental to, the EIS are: § 106 of the National Historic Preservation Act of 1966, 16 U.S.C. § 470f (1976), requiring an assessment of the effects of a project "on any district, site, building, structure or object that is included in or eligible for inclusion in the National Register;" §§ 303 and 307(c) of the Coastal Zone Management Act of 1972, 16 U.S.C. §§ 1452, 1456(c) (1976), mandating the preservation of the coastal zone which may be affected by the project; § 404(r) of the Federal Water Pollution Control Act, 33 U.S.C. § 1344(r) (Supp. II 1978), concerned with the discharge of dredged or fill material into the waterways as part of the project's construction; § 309 of the Clean Air Act, 42 U.S.C. § 7609 (Supp. II 1978), regarding the impact of the project on the region's air quality; and § 4(f) of the Department of Transportation Act of 1966, 49 U.S.C. § 1653 (f) (1976), which requires consideration of the impacts of "any program or project which requires use of any publicly owned land from

In challenges to the sufficiency of a transit project's EIS,¹² the courts have consistently avoided review of the substantive decisions made by the planning agency¹³ and have focused their scrutiny only upon the procedural steps taken in arriving at the decisions. In doing so, the courts have held the responsible agency to a standard of "good faith objectivity [in taking] a hard look at the environmental consequences of a proposed action and at the alternatives to that action."¹⁴ Using this limited standard of review, the courts have ruled in each case in favor of the transit agency. Thus, substantive review of the transit decisionmaking process is severely limited by the emphasis on procedural compliance that has developed under NEPA.

Finally, § 102(2)(E) provides for the study, development, and description of appropriate alternatives to "recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources."¹⁵

Subsequent to the enactment of NEPA, President Nixon issued an executive order¹⁶ directing federal agencies to "[m]onitor, evaluate, and control on a continuing basis their . . . activities so as to protect and enhance the quality of the environment,"¹⁷ to

a public park, recreation area, or wildlife and waterfowl refuge of national, State, or local significance."

12. In three cases, the challenged EIS covered a proposed rapid-rail system or an addition to an existing rapid-rail system. *Save Our Sycamore v. MARTA*, 576 F.2d 573 (5th Cir. 1978), *aff'g Inman Park Restoration, Inc. v. UMTA*, 414 F. Supp. 99 (N.D. Ga. 1975); *Main-Amherst Business Ass'n v. Adams*, 461 F. Supp. 1077 (W.D.N.Y. 1978); *East 63rd St. Ass'n v. Coleman*, 414 F. Supp. 1318 (S.D.N.Y. 1976). A fourth case dealt with the connection of two commuter rail lines to form one inter-related rail system. *Philadelphia Council of Neighborhood Organizations v. Coleman*, 437 F. Supp. 1341 (E.D. Pa. 1977).

13. *Inman Park Restoration, Inc. v. UNTA*, 414 F. Supp. 99, 112 (N.D. Ga. 1975): When an attack is made upon an agency's decision to proceed with a particular project Court review is very limited. . . . The substantive decision of the agency is unreachable under NEPA as long as the agency does not abuse its discretion and its decision is not arbitrary.

14. *Save Our Sycamore v. MARTA*, 576 F.2d 573, 575 (5th Cir. 1978). *Accord*, *Philadelphia Council of Neighborhood Organizations v. Coleman*, 437 F. Supp. 1341, 1362 (E.D. Pa. 1977); *East 63rd St. Ass'n v. Coleman*, 414 F. Supp. 1318, 1322 (S.D.N.Y. 1976).

15. 42 U.S.C. § 4332(2)(E) (1976).

16. Exec. Order No. 11514, 35 Fed. Reg. 4247 (1970) [hereinafter cited as Exec. Order]. In 1977, the order was amended by President Carter to authorize the Council on Environmental Quality to "[i]ssue regulations to Federal agencies for the implementation" of NEPA § 102(2). Exec. Order No. 11991, 42 Fed. Reg. 26967 (1977).

17. Exec. Order, *supra* note 16, § 2(a).

“[d]evelop procedures to ensure the fullest practicable provision of timely public information and understanding of Federal plans and programs with environmental impact in order to obtain the views of interested parties,”¹⁸ and to coordinate with other agencies—federal, state, and local—the consideration of the environment in carrying out their activities.¹⁹

The order further outlines the responsibilities of the Council on Environmental Quality (CEQ),²⁰ including the duty to:

(a) [e]valuate existing and proposed policies and activities of the Federal Government directed to the control of pollution and the enhancement of the environment and to the accomplishment of other objectives which affect the quality of the environment

(c) [d]etermine the need for new policies and programs for dealing with environmental problems not being adequately addressed.

(f) [c]oordinate Federal programs related to environmental quality.

(h) [i]ssue guidelines to Federal agencies for the preparation of detailed statements on proposals for . . . Federal actions affecting the environment, as required by section 102(2)(C) of [NEPA; and]

(i) [i]ssue such other instructions to agencies, and request such reports and other information from them, as may be required to carry out the Council’s responsibilities under [NEPA].²¹

Pursuant to NEPA, the order, and related environmental authority,²² CEQ promulgated regulations²³ with the stated purpose “to tell federal agencies what they must do to comply with the procedures and achieve the goals of [NEPA].”²⁴ Of particular importance to transit decisionmaking are the provisions pertaining to integra-

18. *Id.* § 2(b).

19. *Id.* § 2(f).

20. The Council on Environmental Quality was established under the National Environmental Policy Act of 1969, 42 U.S.C. § 4342 (1976), and was given specified duties and functions to carry out the statute’s purpose. *Id.* § 4344.

21. Exec. Order, *supra* note 16, § 3.

22. The Environmental Quality Improvement Act of 1970, 42 U.S.C. §§ 4371-4374 (1976); § 309 of the Clean Air Act, 42 U.S.C. § 7609 (Supp. II 1978).

23. CEQ Protection of Environment, 40 C.F.R. §§ 1500-1508 (1979).

24. *Id.* § 1500.1.

tion of the NEPA process with agency planning;²⁵ to preparation of,²⁶ and commenting on,²⁷ the EIS; and to agency adoption of supplemental procedures to the CEQ regulations.²⁸ CEQ thus provided an additional framework to that set forth by NEPA for consideration of environmental impacts in the decisionmaking process.

The Urban Mass Transportation Act of 1964 (UMTA)²⁹ provides the source from which federal financial assistance is extended to mass transit projects. Section 3(d), applicable to all grants of federal funds under UMTA, requires certification from the applicant agency that it:

- (1) has afforded an adequate opportunity for public hearings pursuant to adequate notice, and has held such hearings unless no one with a significant economic, social, or environmental interest in the matter requests a hearing;
- (2) has considered the economic and social effects of the project and its impact on the environment; and
- (3) has found that the project is consistent with official plans for the comprehensive development of the urban area.³⁰

Moreover, § 5(h)(2) directs the Secretary of Transportation, in approving grants for urban mass transit projects,³¹ to insure

that possible adverse economic, social, and environmental effects relating to the proposed project have been fully considered in developing the project, and that the final decisions on the project are made in the best overall public interest, taking into consideration the need for fast, safe, and efficient transportation, public services, and the costs of eliminating or minimizing any such adverse effects, including:

- (A) air, noise, and water pollution;
- (B) destruction or disruption of man made and natural resources, esthetic values, community cohesion, and the availability of public facilities and services;
- (C) adverse employment effects, and tax and property value losses;

25. *Id.* § 1501.6.

26. *Id.* § 1502.2-.25.

27. *Id.* § 1503.1-.4.

28. *Id.* § 1507.1-.3.

29. 49 U.S.C. §§ 1601-1613 (1976).

30. *Id.* § 1602(d).

31. Section 5 of UMTA authorizes the approval of federal funds for "the acquisition, construction, and improvement of facilities and equipment for use, by operation or lease or otherwise, in mass transportation service. . . ." *Id.* § 1604(d)(1)(A). This funding is available in amount not to exceed 80 percent of project construction cost. *Id.* § 1604(e).

- (D) injurious displacement of people, businesses, and farms;
and
- (E) disruption of desirable community and regional growth.³²

Section 14 incorporates the policies and procedural requirements of NEPA into the transit decisionmaking process.³³ Subsection (c)(2) adds to these requirements by directing agency review of the funding application and of any public hearings held, to insure that "either no adverse environmental effect is likely to result from such project, or there exists no feasible and prudent alternative to such effect and all reasonable steps have been taken to minimize such effect."³⁴ Again, the preparation of an EIS is central to the determination as to whether the requirements of § 14 have been met.

Pursuant to the CEQ directive that agencies adopt procedures for implementation of the NEPA regulations,³⁵ and in view of the myriad of legislatively-mandated environmental findings to be made, the Department of Transportation (DOT) promulgated a series of orders establishing procedures for consideration of environmental impacts in decisionmaking on proposed DOT actions.³⁶ Step-by-step instructions are given for the identification and evaluation of the environmental impacts of a proposed action, the identification of all reasonable measures to mitigate any adverse impacts, the documentation of these environmental considerations in the EIS, the coordination of participant agencies in the environmental review process, and the involvement of the public during each stage. These DOT procedures provide yet another layer of requirements toward compliance with national environmental goals and objectives.³⁷

32. *Id.* § 1604(h)(2).

33. *Id.* § 1610. This section was amended by the Urban Mass Transportation Assistance Act of 1970, Pub. L. No. 91-453, § 6, 84 Stat. 966, to broaden the air pollution requirements of the 1964 Act "to provide that in planning, designing, and constructing mass transportation projects financed under the act special effort shall be made to preserve the natural beauty of the physical environment and important historical and cultural assets." H.R. REP. NO. 91-1264, 91st Cong., 2d Sess. 2, reprinted in [1970] U.S. CODE CONG. & AD. NEWS 4092, 4099.

34. 49 U.S.C. § 1610(c)(2) (1976).

35. Existing agencies and their principal subunits were to adopt such supplementary procedures within eight months after the November 28, 1978, publication of the CEQ regulations. 40 C.F.R. § 1507.3 (1979).

36. The most recently promulgated provisions are contained in DOT Order 5610.1C, 44 Fed. Reg. 56420 (1979).

37. *Id.* at 56423.

The Order is not a substitute for the regulations promulgated by CEQ, nor does

The Urban Mass Transportation Administration (Administration) is the DOT agency responsible for carrying out these environmental procedures in approving any federal or federally-funded transit project.³⁸ Recently, the Administration proposed regulations³⁹ to facilitate consideration of the many environmental factors mandated by legislation, CEQ regulations, DOT procedures, and related federal authority. These regulations would finalize the implementation of NEPA as applied to mass transit projects, in providing a consistent national environmental policy to be considered in the transit planning process. Of special mention are the concepts of "scoping"⁴⁰ and "tiering"⁴¹ to be applied in transit planning, and in preparation of the project EIS. Scoping refers to the determination of the extent of the project and of those issues to be analyzed in depth in the EIS. Projects covered by an EIS should be of sufficient size and independent utility to justify independent environmental review. Tiering refers to the process of focusing upon specific issues and impacts relevant to a given stage of environmental review. These issues and impacts should be addressed separately in the EIS. Moreover, proposed additions to projects and related concurrent projects (transit or non-transit) should be addressed where there may be significant interrelated environmental impacts.⁴²

Additionally, procedures for the preparation and circulation of the draft EIS⁴³ and final EIS⁴⁴ are set forth, as well as provision for continued consideration of environmental factors throughout the development and implementation of a transit project.⁴⁵

it repeat or paraphrase the language of those regulations. Rather, the Order *supplements* the CEQ regulations by applying them to DOT programs. Therefore, all operating administrations . . . shall comply with both the CEQ regulations and the provisions of this Order.

38. 49 C.F.R. § 1.51(f) (1979).

39. UMTA Environmental Impact and Related Procedures, 44 Fed. Reg. 59438 (1979) (to be codified in 49 C.F.R. Part 622).

40. *Id.* at 59449 (to be codified in 49 C.F.R. § 622.211(a)). *See generally* 40 C.F.R. §§ 1501.7, 1508.25 (1979); 44 Fed. Reg. 56420, 56424 (1979).

41. 44 Fed. Reg. 56420, 56425 (1979); *cf.* 44 Fed. Reg. 59438, 59452 (to be codified in 49 C.F.R. § 622.217(c)) (use of tiered EIS where sufficient data of site-specific impacts do not exist at the time earlier systemwide impacts and decisions are documented). *See generally* 40 C.F.R. §§ 1502.20, 1508.28 (1979).

42. 44 Fed. Reg. 59438, 59447 (1979) (to be codified in 49 C.F.R. § 622.201(a)(2)).

43. *Id.* at 59449-51 (to be codified in 49 C.F.R. § 622.211).

44. *Id.* at 59451-52 (to be codified in 49 C.F.R. § 622.213).

45. *Id.* at 59452 (to be codified in 49 C.F.R. § 622.217).

II. THE TRANSIT PLANNING PROCESS

Given the breadth of environmental findings to be made, and the depth of the analysis in environmental review, it is clear that even bare compliance with procedural requirements necessitates a carefully structured, comprehensive planning process. This process, while flexible enough to address the issues and impacts unique to a particular transit project, is generally composed of a series of work steps progressing from the identification of transit needs and goals, to generation of data and criteria necessary for decision-making, to analysis and evaluation of feasible project alternatives, and finally to selection of a preferred alternative and implementation of that choice.⁴⁶

Of course, transit planning is not wholly contained within this seemingly one-way, sequential process. Rather, the process may be viewed as an iterative one, with constant feedback on both regional and specific considerations at each work step. This is necessary in large part because of changing environmental conditions, as well as changing financial and technical constraints, over the course of the planning period. These changing conditions, also, require continuous re-evaluation of decisions made in the environmental review process.⁴⁷

The following subsections will explore more fully the environmental considerations given to the transit project at each work step in the general sequential order of project initiation, setting of goals

46. The U.S. Department of Transportation describes the planning process in a series of four major tasks, and nine work steps contained therein, as follows:

Task A: Project Initiation & Problem Definition

Step 1: project initiation

Step 2: problem definition

Task B: Identification & Initial Screening of Conceptual Alternatives

Step 3: identification of range of alternatives

Step 4: initial screening of alternatives

Task C: Sketch Plan Development & Preliminary Evaluation of Alternatives

Step 5: sketch planning

Step 6: preliminary assessment

Task D: Detailed Development, Final Evaluation & Implementation of Selected Alternative

Step 7: detailed development of alternatives

Step 8: final evaluation

Step 9: decision and implementation

U.S. Dep't of Transp., Environmental Assessment Notebook Series, vol. 1, at 21-27 (1975) [hereinafter cited as DOT Notebook].

47. *Id.* at 21.

and policies, identification of potential route locations, establishment of criteria for evaluation, alternatives analysis and final selection of a preferred alternative, and implementation of the project choice.

A. *Project Initiation*

As one might expect, the decision to construct mass transit facilities is not an overnight process. Rather, it is one evolved over many years of identification, analysis, and evaluation of the many cost and benefit components of a transit system. Moreover, the transit decision should be only a part, albeit a substantial part, of the overall transportation and development plan of the metropolitan region. Consequently, the impetus for initiation of a mass transit system varies from project to project in accordance with the needs and goals of the region to be served by the system.

A distinction may be made between those regions already served by some rail-based transit system and those regions without rail transit. Those regions whose transit projects are additions to, or extensions of, existing rail lines have (or should have) at some point considered the environmental impacts of their transit system. The decision to construct new transit facilities may be to further the beneficial impacts achieved by existing transit or to combat environmental problems (air pollution, energy consumption, land-use patterns) not adequately met by the existing routes or level of service. For example, among the primary reasons for planning the East 63rd Street Line between Manhattan and Queens was to reduce traffic congestion and the level of air pollution caused by the automobile usage of commuters traveling into Manhattan.⁴⁸ The proposal to extend the Red Line in Boston to outlying portions of the metropolitan region was initiated both to reduce congestion in commuting between downtown Boston and the outlying suburbs and to promote development policies in the suburban region to be served by transit.⁴⁹

Of those regions previously without rail-based transit service, two basic patterns predominate. The first is the pattern of a de-

48. Urban Mass Transportation Administration, U.S. Dep't of Transp., Final Environmental Statement: East 63rd Street Line, at 28 (April 1973) [hereinafter cited as New York EIS].

49. Urban Mass Transportation Administration, U.S. Dep't of Transp., Final Environmental Impact Statement: Red Line Extension Harvard Square to Arlington Heights, at I-2, IX-16, IX-17 (August 1977) [hereinafter cited as Boston EIS].

clining central city with a growing population and commercial activity developing in the surrounding suburbs. Here the need for mass transit is viewed in terms of both reversing the land-use trends toward a revitalization of the central city and reducing energy consumption in traveling among residential areas, employment locations, and entertainment and public service centers.⁵⁰

The second pattern is that exhibited by the recent "growth" cities, those regions which have expanded greatly over the past twenty years in terms of population, urbanization, and economic activity. This rapid growth, occurring during a period in which the automobile has been the dominant transportation mode, has resulted in widespread population and commercial clusters throughout the region. Ad hoc land-use policies hastened the wasteful use of natural and man-made resources. Yet the recent energy crunch, as well as the auto-related problems of congestion, air pollution, and scarce parking space, have caused these regions to re-evaluate their development and transportation objectives.⁵¹ Metropolitan Dade County, which includes the city of Miami, is one such region which has proposed a transit system as a means for combatting environmental harm and for effecting a more controlled and efficient development pattern.⁵²

An additional impetus for initiating a mass transit project is the particular climatology of the metropolitan region. For example, Buffalo's location is characterized by wide swings in temperature,

50. Buffalo, New York, is an example of this pattern. Recognizing this shift in both population and economic activity away from the central city, Buffalo transit planners approached its project proposal with the hope that "[i]mplementation of an improved transit system would act as a catalyst to reverse these downward trends and revitalize the City and regional economic picture." Urban Mass Transportation Administration, U.S. Dep't of Transp., Draft Environmental Impact Statement: Buffalo Light Rail Rapid Transit Project, at I-3 (June 1977) [hereinafter cited as Buffalo EIS].

51. Holsendolph, *supra* note 1, at I, col. 4.

52. Urban Mass Transportation Administration, U.S. Dep't of Transp., Final Environmental Impact Statement: Metropolitan Dade County Rail Rapid Transit Project, at I-3:

Like other rapidly expanding urban areas, Dade County has experienced the need for more housing, schools, transportation facilities, and the necessary related public services. With Miami as the hub for most activities, demand for land in and near the central city has steadily increased. Higher densities of population have taken place near the central city and along major transportation corridors. The transportation needs have increased immensely.

(May 1978) [hereinafter cited as Miami EIS].

53. Buffalo EIS, *supra* note 50, at I-3.

high wind speeds throughout the year, and large accumulations of snow during the extensive winter season. The resulting hazardous driving conditions make a reliable mass transit system particularly attractive to commuters.⁵³

B. *Setting Transit Goals and Policies*

The second step in the planning process is that of defining the many transportation and non-transportation goals and objectives to be achieved by the transit system within the overall metropolitan development plan. These serve as the basis for generating project alternatives, for evaluating the alternatives, and for identifying areas of high-priority concern requiring particular attention during the planning process.⁵⁴

Common objectives of a transit system are greater accessibility throughout the metropolitan region, reduction in automobile usage with corresponding reductions in congestion and air pollution, more orderly development in the region's activity centers, and overall energy conservation and cost-effectiveness in the region's transportation system.⁵⁵

Specific goals are established according to particular constraints and desires of the immediate community. Public input is crucial to this step in the planning process, and should be solicited from local governmental bodies, business and community organizations, and interested individuals.⁵⁶ Community involvement was a determinative factor in the establishment of many of the objectives for the

54. DOT Notebook, *supra* note 46, at 24.

55. Additionally, placement of transit lines and stations may be used to stimulate new private real estate investments in adjoining properties, an important objective in furthering the vitality of the central cities. Examples of successful transit systems with major private projects "tied" into them are those located in Toronto and Montreal. Contrast the experience in Washington, where the design policy (requiring entrances situated on corners, accessible from both streets, for all stations) has frustrated the creation of valuable retail frontage on the streets. This will reduce the short-run ability of the Metro system to help create a more efficient land use pattern. Horsley, "Using New Transit to Aid an Area," N.Y. Times, Sept. 12, 1979, at D21, col. 1.

56. As part of the scoping process, *supra* note 40, to identify the significant issues relating to the proposed project, the responsible agency is directed by CEQ regulations to invite the participation of affected federal, state, and local agencies and other interested persons (including those who might not be in accord with the action on environmental grounds). 40 C.F.R. § 1501.7(a)(1) (1979). "Attempts should be made to solicit the views of the public through hearings, personal contact, press releases, advertisements or notices in newspapers . . . , and other methods." 44 Fed. Reg. 56420, 56428 (1979).

Red Line extension in Boston. Decisions as to alignment through the various communities and along existing rights-of-way, communities to be served by transit stations along the route, and the construction methods to be employed, were made in large part on the stated objectives of minimum disruption and increased transit accessibility to the affected region.⁵⁷

The transportation goals and policies for the Dade County project included:

[P]rovide for efficiency, economy and a well-balanced, integrated transportation system within Dade County without detracting from the quality of life of the community.

. . . .
Transportation facilities should be planned and designed to conserve energy and other natural resources and existing manmade facilities.

. . . . [and]
Transportation facilities should be designed to complement adjacent development and also have a distinctly aesthetic identity of their own.⁵⁸

When cost constraints were imposed on the project by the Administrator, an additional level of analysis was conducted to reduce project cost in a manner consistent with the aforementioned goals of the community.⁵⁹

These projects demonstrate the degree of planning effort and public participation that provides a sound base of community objectives from which successful transit planning may be achieved. Contrast the experience in New York, where the initial route selected from cost and technical considerations was subsequently discarded when objections focusing upon the noise and vibration incident to the construction and operation of the transit line were

57. The City of Somerville passed a 1972 resolution expressing its desire to have a Red Line station within the city to provide direct transit service to downtown Boston and to increase transit accessibility to its Davis Square commercial center. The City of Cambridge approved an alignment including a Davis Square station in 1973. These public expressions were major factors in the decision to adopt the endorsed alignment. Boston EIS, *supra* note 49, at IX-23, IX-26, IX-27. The decision to route the transit line along existing rights-of-way and with an underground alignment within the Town of Arlington was made largely in response to public opposition to lengthy construction noise and disruption, as expressed in a 1977 Town resolution. *Id.* at I-5, VII-13, VII-32.

58. Miami EIS, *supra* note 52, at II-2, II-4, II-5.

59. *Id.* at III-3.

raised.⁶⁰ The final route then selected⁶¹ was later subject to litigation on behalf of those residing along this new route.⁶² Though the court's decision was in favor of the planning agency, the added time delays and postponement of potential environmental benefits from transit operation could have been avoided by more complete environmental and community goals at the start of the planning process.

C. *Identification of Potential Route Locations*

That the ultimate success of a transit system is largely based upon its proper location may be thought as too elemental a proposition to warrant further consideration. Yet the process from which the alignment of the system is determined may be quite complex, taking into account a wide range of factors of both present and future impact.

The identification of potential route locations involves analysis directed to specific data of environmental, as well as demographic, socio-economic, and locomotive, characteristics of the region. The focus of the analysis may be on one, or any combination of the following:

1) Determination of the best potential routes for serving the present transit demand of the region. Data generated for this analysis includes the existing physical environment, current population level and distribution, and transportation rights-of-way presently traveled or available for use by transit;

2) Determination of those routes which would best serve the estimated future transit demand. Data used here includes the physical environment as envisioned (given the construction of a fixed-guideway, rail-transit facility), projected population growth and distribution, and regional economic and land use trends; and

60. New York EIS, *supra* note 48, at 21-22.

61. The selection of a 63rd Street alignment was based upon the same considerations as the initial 64th Street selection: topography of the river bottom, location of underlying rock, curvature of the connections to existing transit lines, and other construction implications. *Id.* at 20.

62. *East 63rd St. Ass'n v. Coleman*, 414 F. Supp 1318 (S.D.N.Y. 1976). The plaintiffs argued that the extent of construction and the impacts of transit operation were not disclosed to them until construction had begun. Brief for Plaintiff, at 12-17. Defendant transit agencies argued that meetings between agency officials and the area planning board and a public hearing before area residents had given plaintiffs "precise knowledge of the construction that was contemplated," Brief for Federal Defendants, at 12, and of the associated impacts. Brief for Municipal Defendants, at 8.

3) Determination of those routes which will be most consistent with the transportation and development plans established by the region and its subdivisions. The emphasis here is on the normative—what *should* be. The data generated in the other two categories are also relevant here, insofar as they are applied to the establishment of a comprehensive plan.

Once the potential locations are identified, the accumulated data may be refined and used in subsequent analyses to provide a means for evaluating alternative locations to obtain the system most advantageous to the affected communities.

Comparison of the project proposals displays the level of detail which has evolved over the past decade in the presentation of the data and analyses necessary for identification of potential transit routes. The earlier New York presentation was limited to a description of the physical location, existing traffic condition, geology, and affected parklands along the selected route,⁶³ while the three more recent proposals present accumulated data in three general categories: transportation setting,⁶⁴ demographic characteristics,⁶⁵ and physical environment.

A description of the existing natural and man-made environment which may be affected by a transit system provides a basis from which the comparative beneficial and adverse impacts of the alternative routes may be analyzed in later steps of the planning process. Components of the natural environment include the region's physiography, geology, climatology, vegetation, fish and wildlife, air quality, water quality, noise and vibration, energy con-

63. New York EIS, *supra* note 48, at 15-16B, 46-50A, 67, 68.

64. The transportation setting describes the locomotive pattern of the region, and the present modes of transportation serving the existing travel demand. Also included are projections of the level and composition of future travel demand and the established transportation goals and objectives to be served by the proposed transit system. See Buffalo EIS, *supra* note 50, at 2-35 to 2-40; Miami EIS, *supra* note 52, at II-1 to II-6.

65. Demographic characteristics of the region are included in the data base to provide a framework from which the social, economic, political, legal, and land use impacts of the system may be assessed. In this group are such characteristics as the level and composition of the population, the level and distribution of transit-dependent persons (aged, young, poor, handicapped), the local governmental structure, other municipal services provided, the land value and tax base, the income level and distribution, the location of business, industry, and employment, and the zoning and land use patterns. See Boston EIS, *supra* note 49, at II-62 to II-90; Miami EIS, *supra* note 52, at II-6 to II-20.

sumption, and visual/aesthetic setting.⁶⁶ A listing⁶⁷ of man-made resources—historic and archaeological sites and park facilities—facilitates environmental review of the project as it affects those resources, pursuant to the Department of Transportation Act⁶⁸ and the National Historic Preservation Act⁶⁹ standards.

D. *Establishment of Criteria for Evaluation*

Given the regional profile as defined by the various characteristics and the identified locations for potential transit routes alternatives may be developed and evaluated on the basis of their comparative costs and benefits. To provide a consistent and systematic framework for evaluation of alternatives it is necessary to establish a set of criteria. Use of these criteria presents several obvious problems. First, consideration of purely qualitative factors, such as visual and aesthetic effects, poses a problem of measurement. Second, comparison of qualitative and quantitative factors presents the "apples and oranges" problem of how to balance one against the other. Finally, these qualitative and quantitative measures must be assigned to each alternative; in practice, this is done essentially through a political process. The end result involves a number of subjective judgments and politically-balanced determinations which select the "best" transit system for the region.

Nonetheless, the establishment of criteria is an essential step in the decisionmaking process, one that has been approached by the project proposals with varying degrees of complexity and thoroughness. In the New York proposal, environmental concerns were given only cursory mention; once the decision had been made to expand transit service, cost and technical considerations were

66. See Boston EIS, *supra* note 49, at II-90 to II-126. Often the data are accompanied by maps and charts to amplify the verbal descriptions. See Miami EIS, *supra* note 52, at II-21 (physiography), II-27 (hydrology), II-36 (water quality). Highly detailed analysis is done to measure such components as air quality and noise and vibration, to comply with various governmental standards. *Id.* at II-30 (State of Florida Air Quality Standards); Buffalo EIS, *supra* note 50, at 2-18 (U.S. Dep't of Hous. and Urb. Dev. Noise Criteria).

67. See Buffalo EIS, *supra* note 50, at 6-2; Miami EIS, *supra* note 52, at II-41 to II-44.

68. "[A]ny publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge, . . . or any land from an historic site . . ." required for use by the project. 49 U.S.C. § 1653(f) (1976).

69. "[A]ny district, site, building, structure or object that is included in or eligible for inclusion in the National Register" affected by the project. 16 U.S.C. § 470f (1976).

weighed almost exclusively.⁷⁰ Initial evaluation of systemwide alternatives for both the Boston and Buffalo projects were also based upon non-environmental criteria, though final evaluation of the specific route alternatives did include such environmental impacts as air quality, noise and vibration, land use patterns, and community disruption.⁷¹

The Dade County proposal includes perhaps the most complex and comprehensive system of evaluation criteria established to date. Systemwide alternatives were evaluated on the basis of numerical weights assigned to seven criterion categories, including environmental, energy, urban planning, and community disruption and displacement. Within each category, component subfactors were identified and assigned subweights to show the relative importance of each within the respective major criterion.⁷² A comprehensive process using a broad range of analytical techniques and professional judgments was then employed to generate ratings for each criterion for each system alternative; these ratings formed the basis upon which the system choice was made.⁷³

Evaluation of specific route alternatives was accomplished using a three-level screening process. The first level eliminated from further consideration those alternatives which failed two or more "acid tests" from among six categories, including environmental impact and land use.⁷⁴ The final two levels utilized a ranking technique to evaluate alternatives for eight measures of cost-effectiveness, in-

70. New York EIS, *supra* note 48, at 21.

71. See Buffalo EIS, *supra* note 50, at 3-7, for listing of evaluation criteria used in the subsequent analysis.

72. For example, environmental factors were assigned a major factor weight of 0.84, or 12% of overall decisionmaking weight. Energy considerations were weighted at 0.63 (9%), community disruption and displacement at 0.91 (13%), and urban planning at 1.19 (17%). Within the environmental group, air quality effects were assigned a subfactor weight of 1.29, 43% of the weight given to environmental considerations and 5.2% of overall decisionmaking weight. Noise impacts were assigned a weight of 1.05 (35% of environmental; 4.2% overall) and visual/aesthetic effects were weighted at 0.66 (22% of environmental; 2.6% overall). Miami EIS, *supra* note 52, at III-7, III-8.

73. *Id.* at III-8.

74. *Id.* at IV-2 to IV-11. The overall objective of the environmental impact analysis at this stage was to summarize and analyze environmental impacts which would be caused by the various alternatives. The results of prior environmental studies provided the basis for this analysis. *Id.* at IV-8. Land use criteria included locating mass transit stations in areas with low and moderate incomes and areas with low car ownership. The land use impacts of terminal points, yards and shops, and accessibility were examined at this stage. *Id.* at IV-7, IV-8.

cluding environmental/ecological considerations, land use and urban design, community disruption and displacement, and energy consumption. At both screening levels, the rankings were aggregated to determine the preferred alternatives, with the relative weights for each measure determinant in selecting the recommended transit project.⁷⁵

E. *Alternatives Analysis and Final Selection*

The preceding section outlined the criteria used and the procedural setting for the evaluation of project alternatives. Consideration of alternatives is among the most important requirements set forth in environmental legislation.⁷⁶ NEPA provisions direct the planning agency to consider alternative courses of action where potential conflicts in the use of resources may be present⁷⁷ as well as requiring consideration of project alternatives in the EIS.⁷⁸ Moreover, where park facilities or historic sites may be affected by the project, the agency is required to prefer any "feasible and prudent" alternative which does not have such effect.⁷⁹

As developed in the case law, the procedural steps taken in evaluating alternatives receive far more scrutiny than do the substantive decisions reached. Documentation of alternatives analysis in a

75. Level 2 screening was based upon more detailed data than had been employed at Level 1, and utilized cost and effectiveness measures directly reflecting and related to the weighted community goals developed in the regional planning process. A subjective value was assigned to each alternative for each criterion, based upon the perceived "effectiveness" of the alternative (1.0 implied virtual certainty of realizing the criterion; 0.0 implied such realization was impossible; 0.5 implied no particular advantage or disadvantage to the alternative). The preferred alternatives were those with an overall pattern of perceived "effectiveness" among the choices. *Id.* at IV-11 to IV-13.

Level 3 screening entailed review of the data on the remaining alternatives, evaluation of the performance of each alternative based upon all these data, and scoring of the alternatives so that a preference was established and a recommendation made on which alternative should be implemented. For each of two trials, the alternatives were scored for each criterion (1.0 indicated a perception that the alternative completely satisfied the evaluation measure; 0.0 indicated a complete inability to satisfy the criterion; 0.5 indicated no positive or negative effect of the alternative on the evaluation measure). Comparison of the ranked performances of the alternatives, in accordance with the relative criterion weights, yielded the preferred alternative. *Id.* at IV-36 to IV-41.

76. "This section [Alternatives including the proposed action] is the heart of the environmental impact statement." 40 C.F.R. § 1502.14 (1979).

77. 42 U.S.C. § 4332(2)(E) (1976).

78. *Id.* § 4332(2)(C)(iii).

79. 16 U.S.C. § 470f (1976); 49 U.S.C. § 1653(f) (1976).

project EIS survives judicial review by merely demonstrating that environmental factors were identified and addressed in the selection process to an extent "sufficient to permit a reasoned choice among different courses of action."⁸⁰ For purposes of environmental planning, the substantive environmental factors considered in reaching the final system choice should be subject to a standard of reasonableness,⁸¹ if not the stringent "substantial evidence" test.⁸² However, the courts have thus far adhered to the deferential "abuse of discretion" standard in avoiding substantive review of the planning process.⁸³

In analyzing the environmental effects of the project alternatives, four types of considerations may be present. First, the alternatives may be of differing size and may follow different routes, necessitating consideration of the community disruption, visual impact, and effect on parklands and historic sites of each choice. Second, the transit mode utilized throughout the system—heavy rail, light rail, or bus—may vary, requiring an analysis of the energy consumption, congestion, and air pollution implications of each mode. Third, the grade—subway, surface, or elevated—at which the transit line will be operated presents differing construction, visual, and

80. *Save Our Sycamore v. MARTA*, 573 F.2d 573, 576 (5th Cir. 1978). *Accord*, *Philadelphia Council of Neighborhood Organizations v. Coleman*, 437 F. Supp. 1341, 1366 (E.D. Pa. 1977).

81. Agency compliance with the *procedural* requirements of considering alternatives is subject to a rule of reasonableness. *Philadelphia Council of Neighborhood Organizations v. Coleman*, 437 F. Supp. 1341, 1365 (E.D. Pa. 1977); *East 63rd St. Ass'n v. Coleman*, 414 F. Supp. 1318, 1326 (S.D.N.Y. 1976).

82. Substantial evidence means "such relevant evidence as a reasonable mind might accept as adequate to support a conclusion." *Richardson v. Perales*, 402 U.S. 389, 401 (1971) (emphasis added). This standard of judicial review may best be obtained by incorporation within the substantive and procedural provisions of NEPA and UMTA. Examples of such provisions in other legislation are § 16 of the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. § 136n(b) (Supp. III 1979), § 313(b) of the Federal Power Act, 16 U.S.C. § 8251(b) (1976), and § 405(g) of the Social Security Act, 42 U.S.C. § 405(g) (1976).

83. Without specific statutory provision for a higher standard of review, the "abuse of discretion" or "arbitrary and capricious" standard of the Administrative Procedure Act, 5 U.S.C. § 706(2)(A) (1976), has governed administrative decisions. *See Citizens to Preserve Overton Park v. Volpe*, 401 U.S. 402 (1971), and *Camp v. Pitts*, 411 U.S. 138 (1973), cited in *Philadelphia Council of Neighborhood Organizations v. Coleman*, 437 F. Supp. 1341, 1346-50 (E.D. Pa. 1977). Abuse of discretion may be found "only if there is no evidence to support the decision or if the decision is based upon an improper understanding of the law." *Jaimez-Revolla v. Bell*, 598 F.2d 243, 246 (D.C. Cir. 1979). The burdens of production and persuasion are on those challenging the agency's decision. *Id.*

land use impacts for each kind of grade. Finally, the "no action" alternative is a necessary component of the analysis. "No action" may be construed in either literal (do nothing) or relative (maintain existing transit service) terms; use of either meaning will produce the alternative that is lowest in overall project cost and will most likely have the least impact (for better or worse) on the surrounding community.

Review of the project proposals again demonstrates the varying degrees to which environmental factors are addressed and weighed in the final selection among system alternatives. In New York, only rail-based alternatives were considered; the "no action" choice ruled out in view of the perceived need for increased transit service, and the bus alternative eliminated since it would only add to the congestion and air pollution problems.⁸⁴ Environmental impacts in route alignment and construction method were viewed as short-term problems and were not determinative in the final decision. Initial screening of alternatives for the Buffalo project was based solely upon economic considerations; alternatives with high potential environmental benefits or low potential environmental harm may have been eliminated solely based on a high project cost. Subsequent alternatives analysis did include environmental factors, rating the alternatives in terms of number of property takings, effect on urbanization and growth patterns, impact on air quality, and noise and vibration. The selected alternative did achieve the highest environmental rating among the rail-based alternatives, but was found to have more adverse environmental impacts than both the "no action" and best bus alternatives.⁸⁵

On the other hand, the alternatives analysis for the Dade County project addressed environmental factors at each step of the selection process. The initial system choice did not achieve the highest environmental rating (the "no action" alternative did), but was highly rated in its compatibility with adopted development policies, urban design considerations, air quality impact, and energy savings.⁸⁶ Specific project alternatives were developed to meet the objective of cost reduction imposed by the Administration, and underwent the three-level screening process.⁸⁷ After the first two

84. New York EIS, *supra* note 48, at 41-43.

85. Buffalo EIS, *supra* note 50, at 3-32, 3-33.

86. Miami EIS, *supra* note 52, at III-15 (chart displaying the results of the initial alternatives evaluation).

87. See notes 74 and 75 and accompanying text *supra*.

screenings, the range of alternatives was narrowed to include only conventional rail options. These options were deemed preferable to their light rail counterparts in terms of energy consumption and community disruption, as well as surface traffic mobility and safety.⁸⁸

The final six alternatives were subject to in-depth analysis during the level three screening process. Assessment of environmental/ecological considerations (one of eight criteria in the final screening process) included analyses of noise impacts, air pollution, vegetation disruption, and visual intrusion. Water quality impacts were assumed equivalent for all alternatives and were thus not used as an evaluation measure. Other environmental considerations necessary to a total environmental analysis were evaluated separately (land use, energy, displacements) or were deemed adequately addressed at earlier levels of evaluation. Environmental/ecological considerations and community disruption were weighted the lowest among the eight criteria; nonetheless, the selected alternative was rated the highest in terms of environmental impact and second-highest in terms of land use, community disruption, and energy consumption.⁸⁹

For both the New York and Boston projects, the selected alternative did impact surrounding parklands and historic sites. No other feasible and prudent alternatives, however, would have eliminated such impact and the recommended choices were selected in part for their lesser impact on these protected areas. The potential adverse impacts were addressed and mitigative measures—sound barrier walls, landscaping, and specified construction methods—were proposed for each affected area.⁹⁰

F. *Implementation of the Selected Alternative*

The final stage in the transit planning process begins once the decision has been made to implement the proposed project as developed from the alternatives analysis step. The principal focus here is on refinement of engineering design⁹¹ and environmental considerations. Additional environmental findings may be necessary

88. Miami EIS, *supra* note 52, at IV-12, IV-13.

89. *Id.* at IV-38 to IV-41.

90. See Boston EIS, *supra* note 49, at II-127 to II-184 (Section 4(f) Statement), Appendix G (Section 106 Memorandum of Agreement).

91. Design refinements include station and vehicle design, terminal and yard/shop locations, and rights-of-way requirements.

to identify any impacts of the selected alternative which were overlooked or insufficiently addressed at earlier steps of the planning process. The sum of the environmental impacts addressed in the implementation of the project should be documented in the EIS, in sections devoted to the following:⁹² environmental impacts and measures to mitigate adverse impacts, unavoidable adverse impacts, short-term use of the environment to further long-range productivity, and irreversible and irretrievable commitments of resources. Site-specific considerations are included in these portions of the EIS mainly in the context of identifying the various impacts on specific segments of the project and proposing mitigative measures.⁹³

These site-specific factors often are considered also in subsequent studies to the EIS. One example is the Station Area Design and Development (SADD) program in Dade County. The SADD program examines the opportunities and constraints presented by the proposed transit system in terms of, among other considerations, the impact on the immediate environment, land use control, economic development, and station area design.⁹⁴ Community participation is an important part of the SADD program to enable station and community development to proceed compatibly in a manner consistent with environmental limitations.⁹⁵ Environmental planning at the implementation stage of the process is best served by a continuing accumulation of relevant data and public input and re-evaluation of environmental, transportation, and other objectives once the impacts of the transit system may be more accurately surmised.

III. SUBSEQUENT CHANGES IN THE PROPOSED PROJECT

As may be expected, preparation of an EIS in advance of project approval may require analyses and decisions to be made without

92. These headings are patterned after the language contained in NEPA § 102(2)(C)(i), (ii), (iv), (v), 42 U.S.C. § 4332(2)(C)(i), (ii), (iv), (v) (1976). See 40 C.F.R. § 1502.16 (1979).

93. See Miami EIS, *supra* note 52, at VI-20 to VI-29 (comparison of estimated noise impacts with area classifications along transit route; if the impacts exceeded established acceptability standards for the area classification, sound barriers were proposed to bring noise levels within acceptable limits).

94. *Id.* at VI-40 to VI-42. The local planning agency has recently published station area profiles as the first stage in the SADD program. See Metropolitan Dade County Office of Transportation Administration, Regional Profile (1978).

95. Miami EIS, *supra* note 52, at VI-40, VI-41.

full knowledge of all relevant information. Moreover, changes may be made in the implementation of the transit project based upon information obtained after project approval has been granted. The need for a supplemental EIS, for reconsideration of the earlier analyses and decisions in light of the new information, depends upon whether the changes made are "substantial" or whether the new information is "significant."⁹⁶ Both terms of art have not been clearly defined in the case law,⁹⁷ though it has been decided that the frame of reference should be the entire proposed system.⁹⁸

A supplemental EIS was prepared in New York when it was decided to extend the line further into Queens to include an additional station which would operate as the terminal facility for the new route. The change involved impacts upon new areas, thus the decision was made to prepare an additional EIS to document the new findings, analyses, and decisions made.⁹⁹

On the other hand, new information which resulted in a change in construction method over a portion of the Buffalo project was not deemed "significant" so as to warrant preparation of a supplemental EIS.¹⁰⁰ Complaint was brought against this action, but the court dismissed the motion for a temporary injunction noting that the additional construction impacts were short-term and that suffi-

96. "NEPA itself does not mention the preparation of a supplemental EIS." *Inman Park Restoration, Inc. v. UMTA*, 414 F. Supp. 99, 117 (N.D. Ga. 1975). Bases for the preparation of a supplemental EIS are found in DOT and Administration (proposed) procedures. 44 Fed. Reg. 56420, 56427 (1979); 44 Fed. Reg. 59438, 59452 (to be codified in 49 C.F.R. § 622.217(b)) (1979).

97. *Main-Amherst Business Ass'n v. Adams*, 461 F. Supp. 1077, 1084 (W.D.N.Y. 1978):

There is no clear-cut rule for gauging whether a proposed change is substantial. *Compare, . . . Inman Park Restoration v. Urban Mass Transp. Admin., supra* (change in construction plans for two stations does not require supplemental EIS to be drafted), *with Essex Cty. Preservation Ass'n v. Campbell, supra* (supplemental EIS needed due to Governor's moratorium on highway construction) . . . Changes causing only temporary effects may, in some circumstances, be substantial. *Stimmans v. Grant, supra*.

98. "[A] supplement is contemplated only when there has been a significant change in the *entire project* on which the EIS was prepared or when significant new information has arisen which changes the environmental impact of the *entire project*." *Inman Park Restoration Inc. v. UMTA*, 414 F. Supp. 99, 118 (N.D. Ga. 1975) (emphasis added).

99. *Urban Mass Transp. Admin., U.S. Dep't of Transp., Final Supplemental Environmental Impact Statement: East 63rd Street Line*, at III-1 (April 1978).

100. *Main-Amherst Business Ass'n v. Adams*, 461 F. Supp. 1077, 1081 (W.D.N.Y. 1978).

cient time existed before actual construction to permit new public hearings if warranted.¹⁰¹

The Administration's proposed regulations would attempt to resolve this uncertainty by requiring a brief and concise assessment of the extent of the proposed changes or new information; the need for a supplemental EIS will be evaluated in a manner similar to that afforded to the initial transit proposal.¹⁰² This additional procedural level at least would provide an opportunity for public hearings on the proposed change, yet substantive guidelines informing planning agencies of the criteria for preparation of additional documentation would still be subrogated to judicial standards covering the entire transit project.

IV. THE TRANSIT FUTURE

Transit planning for the metropolitan region of the future necessitates envisioning potential development patterns, new rail technologies, and enhanced environmental design arts. One potential development pattern for urban regions entails a more clustered and densely-populated community, shaped in a series of concentric rings. The central business district would be the geometric center of the region; commercial, entertainment, and public service institutions (schools and hospitals, for example) would be located in the first surrounding ring; and outer rings would include the residential districts.¹⁰³ Mass transit routes for this region would consist of "spokes" emanating from the central business district out to the residential areas and of "rings" circumscribing the region.¹⁰⁴ Location of the "spokes" and "rings" would require analysis of projected ridership, accessibility, costs, and socio-economic and environmental impacts; thus, the planning process would not differ much from that transpiring today.

Developing rail technologies have greatly enhanced the art of transit planning in providing a broader range of feasible alternatives from which a transit system may be selected to best suit the needs of the region in which it is located. Consideration of

101. *Id.* at 1084-85. In deciding against plaintiff, the court emphasized the mitigative measures which had been taken once the construction method was changed and the balance of hardships decidedly in favor of the defendants.

102. 44 Fed. Reg. 59438, 59452 (to be codified in 49 C.F.R. § 622.217(d)) (1979).

103. G. Dantzig & T. Saaty, *Compact City: A Plan for a Liveable Urban Environment*, at 43 (1973).

104. *Id.* at 60-65.

light-rail vehicle technologies enabled the Buffalo planners to develop an adequate transit system within cost constraints. Similarly, future rail technologies may enable those cities still auto-dependent to consider transit alternatives.

One such rail technology envisions a system of automated cars that transport small numbers of people along fixed guideways throughout the city. A prototype of this system is currently being developed in a number of cities,¹⁰⁵ among them Miami¹⁰⁶ and Los Angeles.¹⁰⁷ Known as "people movers," these automated systems have been hailed as a feasible means of reducing traffic congestion and air pollution in downtown urban centers. The systems in Miami and Los Angeles should be operational within the next decade, at which time evidence will be available concerning the technical feasibility and environmental desirability of these transit modes.

The potential for environmental design arts in future transit planning is conditioned upon the changes to the physical and human environment which develop as part of our urbanized society. For example, the symmetry of the concentric-ring city or the freedom and individuality of "personal mass transit" will impact our spatial and aesthetic values. Environmental planning may operate to provide compatibility with these values or may seek to provide variety and encourage group interaction so as to minimize what may be viewed as the adverse consequences of the future society.

Planning for mass transit in the future will encompass a procedural framework very similar to that which exists today, though the substantive considerations that will be identified and evaluated may be drastically different than those of the current planning process.

V. CONCLUSION

Urban mass transit provides a means for satisfying the transportation needs of a metropolitan region while enabling the region to

105. The Urban Mass Transportation Administration granted funding approval to Cleveland, Houston, Los Angeles, Miami, and St. Paul for developing these downtown urban transit systems. Gannett Fleming/SKBB, Executive Summary: The Miami Downtown People Mover, at 1 (July 1979).

106. Long-range transit planning for Miami has provided for two connections between the downtown people mover and the rapid-rail transit system; the downtown people mover will serve as a feeder/distributor system to the downtown activity centers and induce less commuting to this area by automobile. *Id.*

107. " 'People Mover' for Los Angeles Gains," N.Y. Times, Oct. 16, 1979, at A16, col. 3. The 2.9-mile system will run through the heart of the city's business district, and is anticipated to carry about 9,000 passengers an hour during peak periods.

affirmatively plan for its future development. Though current financial constraints have caused a shift in emphasis from fixed-guideway system construction to improvement of bus and existing rail service,¹⁰⁸ no transit mode can positively impact a region's environment and development as much as rapid-rail. In a large sense, transit planning *is* environmental planning. The reduction in automobile usage, with corresponding mitigation of pollution and congestion and energy consumption savings, and increased accessibility throughout the metropolitan region with reduced travel time, are definite impacts of rail transit. Indirect impacts, promoting community cohesion along the transit route and around each station and stimulating land use beneficial to regional economic development, are additional measures by which urban mass transit can provide productive and enjoyable harmony between man and his environment.

Jeffrey E. Shapiro

108. "On March 21, 1977, shortly after he took office, President Carter penned a memo to Brock Adams complaining about 'grossly overdesigned' mass-transit systems. He urged Adams to exhaust the 'preferable' cheaper alternatives of special bus lanes, one-way streets, and off-street parking before turning to subways." Nickel, *supra* note 2, at 124.