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VII

Air Zoning

Throughout the preceding Comments, reference has been made to the varied ways in which decisions made pursuant to the Clean Air Act may affect patterns of growth and land use. This chapter will explore one method of combining complex source regulation and a strategy of no significant deterioration into an effective tool for land use planning.

A

AN OVERVIEW OF MODERN GROWTH PATTERNS

Since the end of World War II most metropolitan growth has been suburban. Industrial, residential, and commercial development have spread at low densities across the formerly rural land surrounding the central cities. The decentralizing effect has been so strong that in some metropolitan areas the cities have actually lost population.¹ As suburban population grows to equal or to surpass that of the cities, the central economic attraction which has always given life to the city is being outweighed by the smaller and comparatively random pulls of the suburbs. In many heavily urbanized states the suburban sprawl of one city merges with the sprawl of another, and the development pattern has become continuous, creating megalopolitan spines of development along narrow transportation corridors.²

City dwellers moved to the suburbs in search of amenities they could not find in the cities: home ownership, safety, high quality public

1. Between 1950 and 1960, the central city lost population in 16 of the 27 largest metropolitan areas in the United States. W. SMITH & ASSOCIATES, *FUTURE HIGHWAYS AND URBAN GROWTH* 13 (1961). Between 1960 and 1970, 17 of the same 27 metropolitan areas suffered population decline in their central cities. U.S. Bureau of the Census, *Population of SMSA's, Preliminary Report PC (P3)-3*, Nov. 1970, at 10.

2. A study of development in almost any metropolitan area since World War II will show the emergence of a continuous sprawl pattern. See *HOW TO SAVE URBAN AMERICA* 189 (W. Caldwell ed. 1973) for a map depicting the extent of development in the New York Urban Region in 1935 and 1962. See also J. GOTTMAN, *MEGALOPOLIS passim* (1961); Regional Plan Ass'n (New Jersey, New York, Connecticut), *Spread City*, Bull. 100, Sept. 1962 [hereinafter cited as *Spread City*] at 3, for an apt description of suburban sprawl: "Spread-city . . . is not a true city because it lacks centers, nor a suburb because it is not a satellite of any city, nor is it truly rural because it is loosely covered with houses and urban facilities."

services, and a green environment.³ They did not, however, foresee the costs which would attend and undercut these benefits: increased housing, transportation, and energy costs, higher taxes, pollution, and sprawl development. Nor did they intend the cities to decay and be populated predominantly by the poor. We are now becoming aware that these costs are inextricably bound to the benefits of suburbanization.⁴

Despite growing awareness of the costs of decentralization, it is politically difficult to alter this growth pattern in favor of policies of centralizing new development. The difficulty is that the present pattern is attributable to no single, comprehensive public policy designed to decentralize urban areas. Rather, it is the result of numerous decisions at all levels of government, each made in isolation with a view towards more limited goals, but interacting with one another and with strong forces in the private sector.⁵ For example, federal and state highway programs promoted the suburban location of residential and manufacturing development.⁶ Federal housing policies subsidized the construction of suburban single-family homes instead of urban apartments.⁷ Local governments encouraged the outward spread of develop-

3. See H. GANS, *THE LEVITTOWNERS* 31-41 (1967).

4. These costs are presented in Regional Plan Ass'n, *The Second Regional Plan: A Draft for Discussion*, Nov. 1968 *passim*. See also Clawson, *Urban Sprawl and Speculation in Urban Land*, in 38 *LAND ECONOMICS* 99 (1962).

5. For an excellent synthesis of the private and public forces that have decentralized urban areas see M. CLAWSON, *SUBURBAN LAND CONVERSION IN THE UNITED STATES passim* (1971) [hereinafter cited as *SUBURBAN LAND*].

6. Federal and state highway construction coupled with widespread automobile ownership have expanded in geometric proportion the area surrounding a city that can be travelled in a given amount of time, opening vast stretches of relatively inexpensive land to housing development and enabling residents to commute to work from distant suburbs to the center city and to other suburbs. Highway programs made it possible for trucks to compete favorably with railroads for freight transportation. The economic advantages of trucks over railroads and of single-story production facilities over multi-story urban factories stimulated the location of post-World War II industrial growth along radial and circumferential highways, reinforcing the worker's incentives to move to the suburbs. See B. CHINITZ, *FREIGHT & THE METROPOLIS* 165-72 (1960); W. GARRISON, *STUDIES OF HIGHWAY DEVELOPMENT AND GEOGRAPHIC CHANGE* 5-17 (1959); W. OWEN, *THE METROPOLITAN TRANSPORTATION PROBLEM* 12-25 (1966); *SUBURBAN LAND, supra* note 5; at 40; Bone, *Rt. 128 Impact Study*, HWY. RESEARCH BD. BULL. 227 (1959). A study of the Hartford, Connecticut, area concludes that development in suburbs served by an interstate highway expanded farther from the center city at lower densities than development served by a state arterial road. See Hoey, *Transportation Planning and the Energy Crisis*, 33 *URBAN LAND* (no. 2) 3, 4-5 (1974).

7. Since the 1930's the Federal Housing Administration (FHA) and since World War II the Veterans Administration (VA) have guaranteed low-interest mortgages on single-family houses in stable (not "transitional") neighborhoods—a combination available only in suburbs. While at most these programs accounted for only about one-fifth of annual housing construction, they virtually determined financing terms and construction standards for the rest of the market. It has been widely asserted that these policies

ment through their zoning, taxing, and development policies.⁸ Federal subsidies for construction of water and sewer infrastructure and state laws permitting easy financing of this infrastructure also encouraged the spread of development.⁹ By and large, these policies continue to operate today.¹⁰

The very absence of an articulated decentralization policy makes it necessary to reverse or counter each of these component policies individually. To add to the difficulty, the beneficiaries of each such policy constitute powerful political interests. Even during the energy crisis, for example, automobile and construction interests continued to

have encouraged racial segregation on a geographic scale previously unparalleled. Provisions of the Internal Revenue Code also encourage home purchase rather than rental by making mortgage interest payments and property taxes deductible. INT. REV. CODE of 1954, §§ 163(a), 164(a)(1). Renters receive no such benefits. An increase in demand for home ownership encourages the construction of single-family dwellings rather than apartments. See generally H. AARON, *SHELTERS AND SUBSIDIES* 44-107 (1972); NATIONAL COMM. AGAINST DISCRIMINATION IN HOUSING, JOBS AND HOUSING 162-64 (1970); NATIONAL COMM'N ON URBAN PROBLEMS, *BUILDING THE AMERICAN CITY* 99 (1968); *SUBURBAN LAND*, *supra* note 5, at 41-42, 99.

8. Reliance on the property tax to finance suburban municipal services, principally education, encourages "fiscal mercantilism," the use of zoning to keep residential density low and to attract industry. By limiting housing supply in developed parts of metropolitan regions, these local policies force housing demand to look to undeveloped fringe areas, thus furthering decentralization. See D. NETZER, *ECONOMICS OF THE PROPERTY TAX* (1966); D. NETZER, *IMPACT OF THE PROPERTY TAX: ITS ECONOMIC IMPLICATIONS FOR URBAN PROBLEMS*, REPORT TO THE NATIONAL COMM'N ON URBAN PROBLEMS (1968).

9. For example, in low-density, far-flung residential developments, septic tanks are cheaper to install than sewers. In most instances, however, septic tanks eventually have to be replaced with sewers, at an expense not reflected in the original cost of the homes. Spread development may occur in spite of these costs to the extent that they are underwritten by federal subsidies or by state laws providing for formation of and borrowing by sewer districts. Such provisions for subsidies and financing could be used to control the location and timing of water and sewer lines in the exurban fringe, thereby directing residential development as well. K. Kenney, *Public Policy Alternatives Affecting Water and Sewer Service in Urban Growth Areas* (unpublished master's thesis, Univ. of North Carolina, 1964); Pepper & Jorgensen, *Influence of Waste Water Management on Land Use: Tahoe Basin 1952-1972*, report prepared for EPA Office of Research & Development (summer 1974); *Urban Systems Research and Engineering*, *Interceptor Sewers and Urban Sprawl*, report prepared for U.S. Council on Environmental Quality (1974).

10. These programs are often defended by the assertion that each is merely a response to market demand. For example, by building single-family homes and avoiding transitional neighborhoods, the FHA and VA appear to be responding to the supply of inexpensive suburban land and the risk that urban investments would be jeopardized by social change and neighborhood decay. Highway programs are justified by current or anticipated demand for transportation. But if the highways are largely responsible for the availability of inexpensive land and for substantial destructive forces in many of the transitional urban neighborhoods, and if suburban housing construction is largely responsible for demand for transportation, then there is a circularity in the reasoning which justifies the programs as responses. Seen in the context of all applicable public policies, each becomes as much a cause as a response.

be successful in their support of highway projects.¹¹ Local governments have been another strong political force opposing policies of centralization. Even though many municipalities realize that metropolitan development policy cannot adequately be formulated at the local level, they are reluctant to trade the limited control over their future which the zoning power affords them for the hypothetical benefits of land use policy set at higher levels of government, which they cannot fully control.¹²

For the foreseeable future it is unlikely that a broad policy of centralizing new metropolitan development will be adopted and implemented over the objections of these political interests. Proponents of centralizing new development, then, must turn to those federal- and state-level strategies which are available, even if these strategies offer only partial solutions.

This chapter examines the usefulness of the Clean Air Act as such a strategy. Specifically, it will suggest how a state could use stationary and complex source regulation, in conjunction with a stringent policy of no significant deterioration, to create a form of "air zoning" which directs future development into already developed areas and prevents its further spread into rural areas.

11. Their success was such that in New York, former Governor Wilson's 1974-75 budget requested \$234 million in highway construction funds, an increase of \$64.5 million over the previous year. "(H)is office expressed the hope that by the time the highways were built there would be enough gasoline to drive on them." N.Y. Times, Feb. 27, 1974, at 39, col. 1. See generally Shannon, *The Untrustworthy Highway Fund*, N.Y. Times, Oct. 15, 1972, § 6 (Magazine).

12. There are several common regional approaches to problems of metropolitan areas that cannot be solved by local governments. Most metropolitan areas have either a council of governments (COG), composed of the chief elected officials of local governments, or a regional planning commission or agency (RPC or RPA), composed of local planning officials and private citizens. Some areas have both. These bodies are charged with broad, area-wide planning and with review of local governments' grant requests to agencies of the federal government (OMB's A-95 review). Local governments often cooperate on a bilateral basis for the provision of such services as fire and police protection, water supply, public transportation, or sanitation. With increasing frequency states have established single-purpose regional districts to provide one or another of these services on a regional scale. These arrangements generally are not, however, equal to the problems of metropolitan sprawl and inner-city decay alluded to throughout this chapter. Membership in COG's or RPC's is voluntary and their recommendations are advisory. Bilateral agreements and single-purpose districts are insufficient to cope with the complex interrelationships of various service problems. There are a few multi-purpose regional governments with broad planning authority and substantial powers of implementation, but their number is curtailed by local government's determination to retain control over planning and development decisions. See U.S. ADVISORY COMM'N ON INTERGOVERNMENTAL RELATIONS, *REGIONAL DECISION MAKING: NEW STRATEGIES FOR SUBSTATE DISTRICTS* (1973) [hereinafter cited as *REGIONAL DECISION MAKING*]. See also notes 21 and 42 *infra*.

B

A PLAN OF AIR ZONING TO CENTRALIZE NEW DEVELOPMENT

Four levels of development density and air quality can be identified in most metropolitan areas: urban, suburban, exurban, and rural.¹³ Air quality is generally worst, and generally exceeds the primary standards established under the Clean Air Act, in the most densely developed parts of a region—the older, urban centers and major highway corridors—and gradually improves with distance from the centers and corridors. In substantially undeveloped areas, which even in heavily urbanized states still account for one-quarter to one-half of the land, the air quality is better than is required by the secondary standards. Thus, air quality has a highly inverse correlation with development density.¹⁴

An air quality control plan could encourage new development in already developed areas by maintaining this correlation, *i.e.*, by mandating progressively better air quality in progressively less developed areas. The Clean Air Act¹⁵ could provide the basis for such a plan.

As previously discussed,¹⁶ a state implementation plan formulated under the Clean Air Act must include adequate assurance that the state possesses authority to order modification or elimination of existing pollution sources whose operations interfere with the attainment or maintenance of the federal ambient air quality standards, and to prohibit or to permit conditionally the construction of new sources that would similarly interfere. The Act also requires implementation plans to include land use and transportation controls where such measures are necessary to attain and maintain federal standards.¹⁷ Furthermore, judicial decisions have required implementation plans to include provisions for “complex source” regulation and prevention of significant deterioration of air quality in all regions.¹⁸

13. “Exurban” refers to the fringe of metropolitan development where rural land is being converted to suburban uses. Exurbia is the outer, newer portion of what is usually referred to as suburbia. Consequently, the term “suburban” is used in two ways in this chapter. Generally it refers to all low-density metropolitan development outside the older, central cities. When used in conjunction with “exurban,” however, “suburban” is meant to refer specifically to the older suburbs relatively close to the center city and in which all rural land has been developed.

14. The strength of this correlation is important to the feasibility of an air zoning plan with development objectives. The correlation is weakened by a number of factors discussed at text accompanying notes 25-30 *infra*.

15. 42 U.S.C. §§ 1857 *et seq.* (1970).

16. See Comment, II: *State Implementation Plans and Air Quality Enforcement*, 4 ECOLOGY L.Q. 595 (1975), text accompanying notes 97, 98 [hereinafter cited as *State Plans and Enforcement*].

17. See *id.*, text accompanying note 80.

18. See Comment, V: *Control of Complex Emissions Sources—A Step Toward*

Earlier discussion has focused upon the deficiencies in EPA's response to those court decisions.¹⁹ The air zoning plan suggested here would rest on stronger and more interlocking "non-degradation" and complex source regulations than those presently adopted or proposed by EPA. Significant deterioration would be defined as a fixed percentage increment (FPI) of existing pollution in the ambient air. The same percentage would be applied to all areas. In an urban or suburban area an FPI of, for example, ten percent, would allow a substantial amount of growth. On the other hand, an FPI of ten percent would permit only minor growth in a rural area. In no event would the addition of the increment to existing pollution be allowed to raise pollution levels above the primary and secondary standards. Thus the proposed air zoning plan would not open the door to greater pollution of areas already suffering pollution dangerous to the public welfare. In areas with immeasurably small current amounts of pollution, on the other hand, a modest absolute increment would be permitted so that some growth may occur.²⁰

Under the air zoning plan the state agency responsible for air pollution control would establish four zones of ambient air quality corresponding to the four levels of development density and air quality in a metropolitan area—urban, suburban, exurban, and rural. These zones would take the form of bands around urban nodes and along transportation corridors. (See figures 1 and 3.) In each zone the agency would determine a baseline level with respect to each pollutant, from which the FPI would be calculated and to which the FPI would be added to yield the maximum level of ambient pollution allowed. Thus there would be a set of baselines for each zone, descending in steps from high levels in the cities and along transportation corridors to low levels in rural areas.

The FPI should be set small enough to prevent the pollution level in exurban zones from growing to the level in suburban zones. By implication this would prevent exurban zones from growing to suburban densities of development. If the FPI is determined in this way, it will also prevent rural zones from growing to exurban densities.

The agency would review all new development and prohibit both point and complex sources which would cause a zone to exceed its permissible maximum level of air pollution. This permit would be re-

Land Use Planning, 4 *ECOLOGY L.Q.* 693 (1975) [hereinafter cited as *Complex Sources*]; Comment, VI: *Sierra Club v. Ruckelshaus—On A Clear Day . . .*, 4 *ECOLOGY L.Q.* 739 (1975) [hereinafter cited as *On a Clear Day*].

19. See *Complex Sources*, *supra* note 18, *On a Clear Day*, *supra* note 18.

20. Connecticut Dep't of Environmental Protection, *Comments of State of Connecticut to U.S. EPA on Proposed Rule Making to Prevent Significant Air Quality Deterioration*, Oct. 14, 1973 [hereinafter cited as *State Comments*].

Air zoning in a hypothetical Metropolitan area

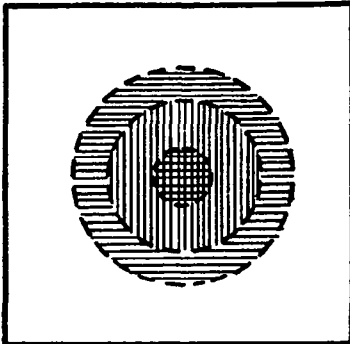


Fig. 1: Development density in base line year

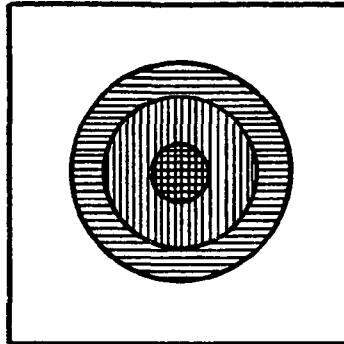


Fig. 3: Baseline development with delineation of air zones according to density

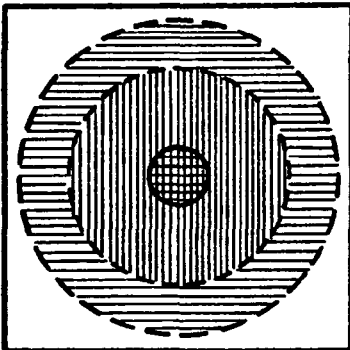


Fig. 2: Development trend without air zoning or other policy to halt decentralization

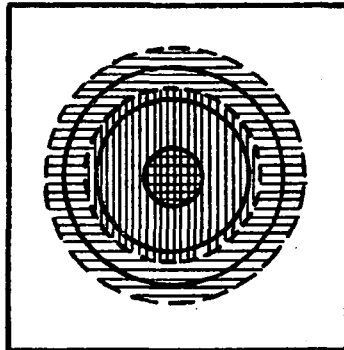


Fig. 4: Development trend with air zoning—sprawl contained by limits on pollution



Urban development density



Exurban development density



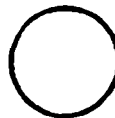
Suburban development density



Rural development density



Boundaries of development densities



Air zone boundaries

Air zones are associated with baseline levels of development density (urban, suburban, exurban, and rural) on the basis of either (a) ambient air quality model, or (b) emissions inventories in baseline year.

quired in addition to local approval. The state agency need not be more involved in nor interfere more with local planning and zoning than to establish an upper constraint based on air pollution factors. It would be left to local governments, presumably acting through regional councils of governments, metropolitan governments, or regional planning agencies, to allocate the allowable growth within each zone, and to prevent one town or development interest from appropriating the lion's share of that growth.²¹ By placing these constraints on development, the air zoning plan would be an incentive to greater regional cooperation than exists today.

It is apparent that this scheme would require more stringent NSD (no significant deterioration) and complex source regulations than EPA presently envisions. EPA's NSD regulations, announced in August 1974,²² allow maximum levels of pollution in clean air areas to be set without regard to present levels. While a state *could* assign the three classifications of clean air areas in a way consistent with the approach presented here, it would not have to do so. Thus EPA's NSD proposals, in addition to possibly failing to prevent significant deterioration of air quality, would fail to halt urban decentralization.

Furthermore, EPA's substitute complex source regulations apply different minimum size criteria in the determination of whether to review sources inside and outside of SMSA's. This alone encourages further decentralization.²³ In addition to applying the same minimum size criterion regardless of location, complex source review should extend to many types of facilities which induce suburban growth but

21. As suggested previously (see note 12 *supra*) COG's and RPC's in their present forms generally would not be capable of performing this allocation. Even though these bodies are intended to provide forums for the solution of regional problems, they lack firm regional constituencies. They are composed either of local elected officials or of local planning officials and private citizens appointed by the local elected officials. They are funded by contributions from local governments and by grants from the federal and state governments. In some cases RPC's are actually affiliated with state planning and budgeting departments. Regional priorities, therefore, are often outweighed by the local, state, or federal priorities of the members and the sources of funds. In addition, because membership is voluntary and authority close to nil, the structure of the COG or RPC is not conducive to controversial discussion or action. Metropolitan governments with substantial authority, such as that of greater Atlanta, are rare. They usually would require state legislation, which local governments oppose. In the California legislature, for example, bills have been introduced without success for five years to establish a multi-purpose regional government in the San Francisco Bay Area. See Assoc. of Bay Area Gov't's, Comparison of Legislative Proposals to Establish a Regional Planning Agency in the San Francisco Bay Area, May 1974. The adoption of the air zoning plan by a state air pollution control agency, however, would create a strong need for a regional entity with authority to allocate growth, and this need might motivate the legislature to enact a measure to strengthen the COG's or RPC's or to create regional governments. See REGIONAL DECISION MAKING, *supra* note 12; see also note 42 *infra*.

22. See *On a Clear Day*, *supra* note 18, text accompanying note 38.

23. See *Complex Sources*, *supra* note 18, text accompanying notes 75, 76.

which have been omitted from EPA's final regulations, such as highways and sewer, water, power, and gas lines, and other infrastructure necessary to the extension of development over new land.²⁴

Figures 1 and 2 show the expected future development pattern in a metropolitan region without air zoning or any other policy to halt decentralization. If the Clean Air Act is not used to promote centralization of new development and if no other policy is interposed to vary present development trends, development will continue eating into rural areas in the suburban sprawl pattern. Figures 3 and 4 show the delineation of air zones and their effect to constrain further sprawl once the pollution increments are consumed. The air zoning plan presented here would permit more growth toward the center of a metropolitan region than in the exurban fringe and in rural areas. The plan would create a strong incentive to centralize new development, permitting suburban and exurban development to encroach upon the air zone borders only until the allowed FPI is consumed.

C

TECHNICAL QUALIFICATIONS TO THE AIR ZONING PLAN

The technical acceptability of an air zoning plan as an instrument for centralizing new development depends on the strength of the correlation between ambient air quality and development density. We have assumed a very strong correlation so far. Three major factors influence the strength of the correlation: (1) the effects of meteorological and topographical patterns and photochemical reactions, (2) the location of large sources, and (3) the geographic grain or scale observed.²⁵

The first problem is that meteorological and topographical patterns displace air pollution. Prevailing winds, often operating in natural air basins, can shift the worst urban pollution to rural areas.²⁶ The amount blown away from the city may be a small fraction of that remaining over the city but many times the amount produced locally in the area to which it is displaced. This displacement often makes it impossible to control the ambient air quality in a particular area

24. *Id.*, text accompanying notes 39, 40.

25. See generally Rydell & Schwartz, *Air Pollution and Urban Form*, 34 J. AM. INST. PLAN. 115 (1968); Kurtzweg, *Urban Planning and Air Pollution Control*, 39 J. AM. INST. PLAN. 82 (1973). These articles are concerned mainly with street- and city-scale relationships, but they touch on metropolitan ones as well.

26. This problem is particularly severe in areas with pronounced air basins, such as California. The basins can channel air pollution into dispersal patterns that do not follow the prediction of a simple model that pollution will decrease in accordance with distance from its source.

merely by controlling emissions from that area alone. Therefore, the air zoning plan would require that displaced ambient air pollution be counted against the zone of its sources, rather than against the zone to which it is displaced. This would prevent one zone from using another's growth increment. At present no models exist which adequately track these displacements. In addition, complicated photochemical reactions occur among certain pollutants in the ambient air, whose dispersal patterns are not well understood. Thus, it is not possible at this time to charge pollution in the ambient air against its sources to the degree which, ideally, the air zoning plan would require.²⁷ Until such models are developed, total emissions may be used as an interim alternative measure of pollution.²⁸ The state agency would make a detailed emissions inventory of all sources within a zone and would establish this inventory as the baseline from which to calculate the FPI. Rather than base its decision on poorly understood effects of a proposed development on ambient air quality, the state agency would determine if the development would produce emissions sufficient to exceed the maximum total emissions allowable in its zone.

Second, pollution patterns may differ from density patterns if large sources are located away from densely developed areas. For instance, a power plant located at the outskirts of a city or in the suburbs can shift sulfur dioxide and particulate matter patterns.²⁹ Highways can funnel concentrations of pollution through otherwise clean suburbs or pristine rural areas. A relatively small town can be the seat of several large factories which blanket pollution over a rural area. Unlike meteorological and topographical displacement, which may eventually be accounted for by sophisticated models, this weakness in the correlation of air quality with development density cannot be avoided. Under the air zoning plan the baseline from which to compute FPI would be inflated in some less developed areas by the presence of large polluters such as large factories or super highways. The effect would be to permit a greater increment of development in these areas than their overall development density would indicate. But this plan would not allow new large polluters to be established in pristine areas, unless their emissions fell within the FPI.

27. See *On a Clear Day*, *supra* note 18, text accompanying notes 193, 194.

28. Using total emissions as a surrogate for ambient air quality is the approach taken by consultants to the California Air Resources Board, although this plan makes no explicit attempt to centralize new development. See Livingston & Blayney, Report on Guidelines for Relating Air Pollution Control to Land Use and Transportation Planning in the State of California, prepared for the California Air Resources Bd., July 1973, at 28-34.

29. The Four Corners power plan in the Southwest is the most drastic example, spreading pollution on a pristine area hundreds of miles from the cities it supplies with power. See S. GORDON, *BLACK MESA: ANGEL OF DEATH* (1974).

Third, the strength of the correlation between air quality and development density weakens as it is applied to smaller geographic areas. Even when models are developed to predict the displacement and dispersal of pollutants on the metropolitan scale, they will probably not be sensitive enough to make distinctions at the scale of acres. Particularly in the exurban zone, outposts of suburban development planted in rural areas may enjoy rural air quality. Conversely, islands of undeveloped land remaining in the suburbs may suffer suburban air quality. The air zoning plan, which determines allowable growth as a function of ambient air quality, could not be used either to protect rural islands or to permit development of suburban outposts. This scale problem illustrates that at best the air zoning plan paints with a broad brush; it is not an instrument for precise land use planning.

A final paradox remains: because of its success in controlling air pollution, the air zoning plan would become less effective over time as a centralizing policy. The FPI zoning will operate as an incentive to invent and use increasingly effective control devices, on existing as well as new development. Consequently, as development and growth begin to create less pollution, the plan will exercise less control over their location.³⁰

D

APPLYING THE AIR ZONING PLAN IN CONNECTICUT

Connecticut's industrial age development patterns were largely determined by the means of transportation. Development first followed the coast and rivers, then the railroads, and most recently, the highways.³¹ The major industrial cities grew up dramatically in the nineteenth and twentieth centuries at the strategic harbors and rail links.³² Many industries also located in smaller factory towns, making Connecticut one of the most heavily industrialized states.

The development pattern has changed since World War II. Automobile stimulated sprawl has filled the corridors along three major highways, most intensively along the coast from New York City to

30. A standard for review which is the same in all locations encourages the development of better technological devices to control emissions, whereas a standard which differs with location encourages sources to relocate in areas where the standard is most relaxed. See Mandelker & Rothschild, *The Role of Land-Use Controls in Combating Air Pollution under the Clean Air Act of 1970*, 3 *ECOLOGY* L.Q. 235, 242-43 (1973).

31. A brief history of Connecticut's urban development may be found in Connecticut Office of State Planning, *A Plan of Conservation and Development (Proposed)*, Jan. 1973 [hereinafter cited as *Proposed Plan*], at 6-7.

32. These cities include Hartford, New Haven, Bridgeport, Waterbury, and New London.

New Haven,³³ somewhat less intensively in the corridor from New Haven through Hartford toward Springfield and Boston, Massachusetts, and less intensively along the coast from New Haven to the Rhode Island border.³⁴ Many of the smaller factory towns have withered as firms have closed or moved elsewhere. Air quality violates the primary standards over the state's major industrial cities and along its highways. The air improves with distance from these areas; it's superior to the secondary standards in northwestern and eastern portions of the state.³⁵ This development pattern is consistent with the model presented in figures 1-4, *supra*.

The Connecticut Department of Environmental Protection (DEP), whose FPI proposal for prevention of significant deterioration is at the root of the air zoning plan proposed here,³⁶ is the state agency charged with implementing the Clean Air Act.³⁷ DEP has currently developed complex source regulations more stringent than EPA's. Under these regulations, DEP will review the construction or modification of any source which emits or induces an aggregate of more than fifty tons of pollutants.³⁸ This review includes sources much smaller than those within the purview of the federal regulations, and relies on aggregate total emissions rather than upon surrogates such as the

33. This growth has brought another city, Stamford, to the prominence enjoyed by the older large cities. Stamford has grown, as has the rest of southwestern Connecticut, because it is in the orbit of the New York urban region.

34. This development pattern can be seen on the map of Use of Land, Proposed Plan, *supra* note 31, facing p. 34. The pace of this development is astounding. In 1960 there were 307,850 acres of built-up land in Connecticut. By 1970 that number had grown to 506,703 acres, an increase of 64 per cent. *Id.* at 33.

35. Connecticut Dep't of Environmental Protection, Air Quality Implementation Plan, May 1972, at 108; telephone interview with Douglas M. Costle, then Comm'r. of Dep't of Environmental Protection, Mar. 6, 1974.

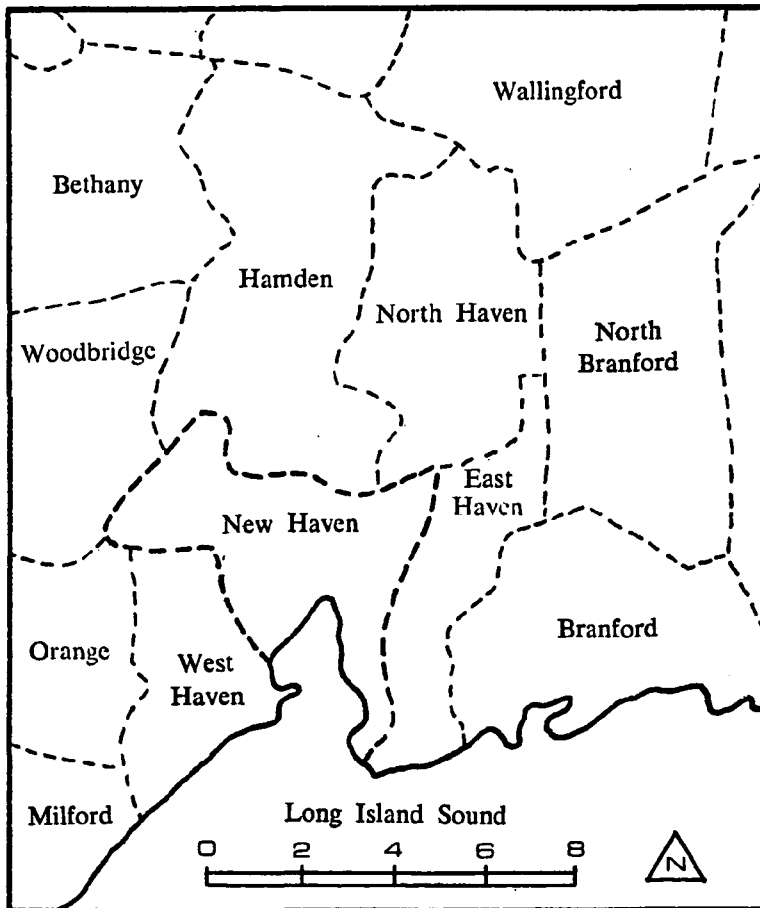
36. See State Comments, *supra* note 20.

37. See CONN. GEN. STAT. ANN. §§ 19-505 to -520a (Supp. 1973). The DEP Commissioner has authority to make regulations consistent with the Clean Air Act and, subject to such regulations, to require submission of plans and other information, to issue or deny permits for the construction or enlargement of new sources or to condition such permits upon specific plan modifications, and to require periodic source inspection and maintenance of necessary records. *Id.* § 19-508. The Commissioner is instructed to consider the character and degree of injuries which the proposed new source might produce, the activity's social and economic value, its suitability to the location, and the practicability of discharge reduction, but he is left "a wide discretion in weighing the equities involved and the advantages and disadvantages . . ." *Id.* § 19-510; cf. 42 C.F.R. § 51.2(d) (1973). To insure compliance with an order, the Commissioner has recourse to heavy fines and injunctive relief. CONN. GEN. STAT. ANN. § 19-516 (Supp. 1973). An applicant may be exempted from a regulation if he can make a strong showing that, even though violating the regulation, his facility would present no danger to the public health and welfare, and application of the regulation would cause him to suffer hardship outweighing the benefit to the public. *Id.* § 19-519.

38. Telephone interview with Armando Carbonell, Director of Land Use Policy Planning, Office of Planning and Research, Conn. Dep't of Environmental Protection, Apr. 10, 1974.

size of associated parking areas.³⁹ Furthermore, DEP's regulations became effective in October 1974, three months prior to the effective date of the federal regulations.⁴⁰

Fig. 5: Greater New Haven Area, Connecticut

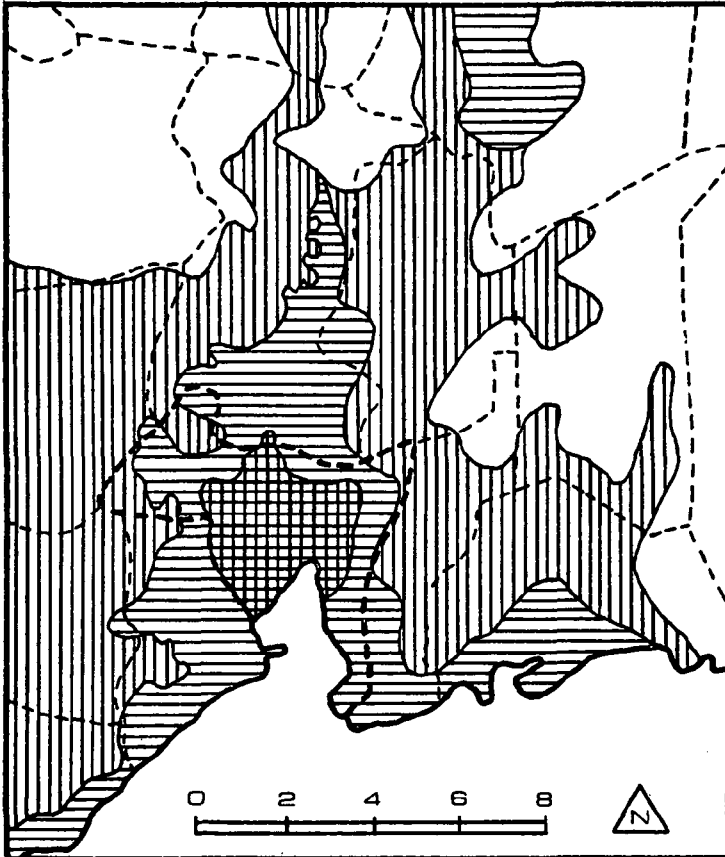






39. See *Complex Sources*, *supra* note 18, text accompanying note 77.

40. Even Connecticut's strong complex source regulations, however, are inconsistent with the requirements of NSD. All complex sources proposed for areas approaching or in violation of the primary and secondary standards will, of course, be reviewed and will be prohibited if they would interfere with maintenance of the standards. But in clean air areas only complex sources which would consume fifty percent or more of the difference between the secondary standards and present pollution levels must be reviewed. In the absence of an implemented non-degradation policy, the Connecticut regulations leave disapproval of these sources to the discretion of the Commissioner. These regulations will have the effect of allowing serious deterioration in cleaner areas. Mr. Carbonell acknowledges that when EPA adopts a non-degradation policy, this inconsis-

Fig. 6: Overlay of Air Zones

Adapted from Connecticut Office of State Planning, *A Plan of Conservation and Development (Proposed)*, Jan. 1973, Map facing p. 34.



- 
Urban Air Zone: present density ½ acre or less per dwelling unit
- 
Suburban Air Zone: present density ½-1 acre per dwelling unit
- 
Exurban Air Zone: present density more than 1 acre per dwelling unit
- 
Rural Air Zone: Mostly undeveloped
- - - - - Boundary of City of New Haven
- - - - - Other town boundaries

DEP could adopt the full air zoning plan under its present legislation. Since Connecticut does not yet have adequate models to relate emissions to ambient air pollution, DEP would have to use the interim measure of regulating emissions, as outlined above.⁴¹ Figures 5 and 6 represent how air zones might be delineated for the New Haven metropolitan area. The urban air zone covers the central business district and most of the rest of New Haven, land which presently is developed for business and for residential densities of less than one-half acre per dwelling unit. The edges of New Haven and parts of the towns immediately surrounding the city make up the suburban zone, presently developed at densities of one-half to one acre per dwelling unit. The remainder of these towns and parts of some more distant ones are in the exurban zone, which is composed of homes with one acre of land or more and undeveloped woodlands, wetlands, and other open areas. Beyond this ring is the rural zone of substantially undeveloped land. To the west and north, the suburban and exurban zones extend beyond the edges of the map. To the west lies the Bridgeport metropolitan area and the smaller subcenter of Ansonia. The Waterbury area and the subcenter of Meriden lie to the north. These are illustrations of the merging sprawl of neighboring metropolitan areas.

Because these zones have been drawn to reflect existing density patterns, their borders do not follow municipal boundaries; a town could find itself in two or more zones. The councils of governments and the regional planning agencies that have been formed for each of the metropolitan areas in Connecticut might be appropriate bodies to allocate allowable growth within each zone. At present they have only advisory powers, and legislation would be needed to strengthen them for this role.⁴²

As in the model presented in figures 1-4, *supra*, more development would be possible in already developed areas than in rural areas. Under the air zoning plan suburban encroachment on rural areas would be severely curtailed, and parts of presently suburban areas

tency will have to be rectified. Telephone interview with Armando Carbonell, *supra* note 38.

41. See text accompanying note 28 *supra*.

42. Connecticut is divided into 15 Regional Planning Areas, each with a council of governments (COG) and most with a regional planning agency (RPA). The South Central Connecticut Area covers greater New Haven, and has both a COG and an RPA. Typically they have little power and little appetite for controversy. To develop either body into the role of growth allocation, new state legislation would be required to give them sufficient authority and resources to take more forceful positions on regional growth issues. The South Central Connecticut RPA, along with the state's other RPA's, has been involved in substantial advisory planning in cooperation with the Office of State Planning for the last decade or so. This experience might be of great help in its new role. See notes 12 and 21 *supra*.

might take on an urban character and density.⁴³ If the air quality of the urban centers is improved beyond the secondary standards, as DEP expects,⁴⁴ the urban centers would be available for major new investment.

E

CONCLUSION

It is clear that the air zoning plan is a broad-brush instrument unsuited for detailed land use decisions. In the long run, regardless of air pollution control measures, demand is developing for an instrument of regional and state land use control more sensitive than local zoning. The air zoning plan might enlarge this demand by encouraging local governments to favor some form of regional or state control of growth in each zone in order to prevent one town from appropriating the lion's share of its zone's growth. A long-range consequence of the air zoning plan, then, might be passage of a state planning law to subsume the control of air pollution within a broader and more sensitive land use program. The air zoning plan is not a permanent solution; in fact, its very effectiveness as an air pollution control technique would weaken its effectiveness as a land use measure by encouraging the use of better pollution controls. Rather, the air zoning plan should be seen as a stopgap measure and a goad to the institution of a direct state land use policy of a broader and more sensitive nature.

David D. Doniger

43. The land use policy that would result from the air zoning plan is very similar to the policy advanced in Proposed Plan, *supra* note 31. This plan, based on the availability of water and sewer capacity in different parts of the state, proposes only limited extension of development into now undeveloped areas. *See id.*, land use policy map facing p. 10.

44. DEP expects pollution levels for sulfur oxides and particulate matter to be brought within the secondary standards by mid-1975. For automotive pollutants, however, Connecticut will probably seek an extension of the deadline. Telephone interview with Armando Carbonell, *supra* note 38.

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