

# Land Use Planning Approaches To Mitigating General Aviation Aircraft Noise

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Land use controls are one technique for regulating the adverse impact of aircraft noise in airport environs. Air carrier airports have generally been the focus of land use compatibility planning. However, general aviation airports represent the vast majority of airports in the United States. Encroaching development in the vicinity of general aviation airports in suburbanizing regions will, absent effective land use planning, result in public pressure to close airports. An examination of the characteristics, advantages, and disadvantages of available land use planning techniques and strategies for mitigating aircraft noise is presented. The effectiveness of land use controls depends on the implementation of policies and regulations at different governmental levels. A case study of airport noise compatibility planning in New Jersey is presented. It appears that some effective planning controls exist to regulate land uses and to limit land use incompatibilities. However, the concentration of land use regulatory powers at the local level has not and cannot ensure that noise compatibility planning will take precedence over other local interests. A more direct role for the state and federal governments in regulating land use compatibility in the airport community environment is suggested. Their participation is necessary in order that the viability of the national system of airports not be lost.

Aircraft noise in the airport environs continues to be a serious problem in the United States. It has been estimated that more than 5,000,000 people living near airports are subject to adverse noise levels from aircraft (1). Though technological advances have significantly lessened the amount of noise from aircraft engines, the problem of noise is expected to grow as the air transport industry continues to expand. The goal of reducing the amount of aircraft noise concerns land use planners as well as engineers. "Airport land use compatibility planning and implementation" describes the achievement and maintenance of land uses in the airport environs that are not adversely affected by aircraft noise. The process involves developing plans and using strategies and techniques that preserve the airport and maintain its economic viability. Planning is by its nature continuous and forward-oriented and must create, lead, and respond to changes in development patterns, legal constraints, and the political climate.

Airport land use compatibility planning is becoming increasingly important as urbanization encroaches on an ever greater number of airports, both air carrier and general aviation. Many of these airports were once remotely situated and were never intended to be compatible with noise-sensitive land uses, especially residential uses. General aviation refers

to all civil aircraft operated in the United States except those operated under Parts 121 and 127 of the Federal Aviation Regulations (FAR) (2). The predominant types of aircraft in the general aviation fleet are piston-powered aircraft, turboprops, and corporate jet aircraft. The general aviation fleet comprises more than 210,000 aircraft, representing almost 98 percent of the entire U.S. civil fleet (3). However, less attention is generally paid to aircraft noise impacts near general aviation airports. This research focuses on general aviation airports, which make up 97 percent of the nation's airports (3).

The goal of the research is to describe the land use controls that are used to mitigate aircraft noise impacts and to analyze the effectiveness of the controls considering technical, political, and practical realities. The analysis focuses on the following subject areas:

- An analysis of the land use planning controls applied to regulate land uses in the airport vicinity,
- Legal considerations in airport land use planning,
- The roles and responsibilities of various levels of government with regard to airport land use compatibility planning,
- A case study of airport land use compatibility planning in New Jersey, and
- Options to strengthen noise compatibility planning around general aviation airports on the basis of the analysis of the preceding subject areas.

The importance of finding an acceptable and effective method of ensuring land use compatibility around general aviation airports is necessitated by the continuing and steady decline in the number of public use airports [airports open to the public without prior permission and without restrictions within the physical capacities of available facilities (4)]. From 1979 to 1986 the number of public use airports in the United States dropped from 6,659 to 5,626, a decline of 15.5 percent (3). In addition to facing the burden of property taxes and real estate development pressures, general aviation airports must face the challenge of accommodating growth while maintaining compatibility with the airport environs.

## LAND USE CONTROLS

The regulation of noise around airports takes two major forms: operational noise control measures (e.g., curfews, noise

abatement flight tracks, etc.) and land use control measures. Cline (5) surveyed aircraft noise control methods. The survey involved updating the information contained in FAA's Airport Noise Control Strategies report. More than 400 airports were sampled. A rank order of the land use control techniques is presented in Table 1. This research focuses on six of the most common land use controls: zoning, comprehensive or master plan, land acquisition, easement purchase, development rights (purchase and transfer), and land banking. The characteristics, advantages, and limitations of the six land use controls are examined.

### Zoning

There are many types of zoning controls. In general, zoning is defined as "the dividing of a municipality into districts and the establishment of regulations governing the use, placement, spacing and size of land and buildings" (6). Zoning normally consists of a zoning ordinance, which delineates the zone districts and defines the use and bulk requirements of each district, among other things. The zoning ordinance is usually based on the land use element of a community's comprehensive (master) plan.

The most commonly used types of airport zoning are height and hazard zoning, noise impact zoning, exclusive zoning, floating zones, and performance standards. They are defined as follows:

- Height and hazard zoning: regulations designed to protect runway approaches from the hazards of high objects or structures;
- Noise impact zoning: districts established in areas with high levels of aircraft noise with the purpose of directing uses compatible with different noise levels;
- Exclusive zoning: districts permitting a singular type of use;
- Floating zones: an unmapped zone district where all the zone requirements are contained in the ordinance and the

zone is fixed on the map only when the application for development is approved and certain conditions are met (6); and

- Performance standards: a set of criteria relating to nuisance elements that a particular use may not exceed.

Zoning as a means of ensuring noise compatibility is not perfect. For example, zoning is not retroactive. Incompatible land uses that predate zoning are usually permitted to remain. However, they are designated "nonconforming" until the use changes voluntarily. In some states, an amortization period is permitted in which the use must be made conforming.

Airports may extend into more than one political jurisdiction. The zoning within the different jurisdictions may conflict and must be coordinated to achieve desired objectives.

Finally, local politics have an important influence on zoning. Citizen opposition may force an airport to be zoned as a nonconforming use, requiring an expensive and time-consuming application procedure for airport expansion.

A governing body is not bound by prior zoning plans, and frequent changes, often in response to political pressure, can be detrimental to effective long-term planning for the airport operator. A locality may also want a larger tax base or more population growth, which may not be consistent with the need to preserve land around airports for other than residential purposes.

The effectiveness of zoning to regulate land uses in the airport vicinity is still debated. On one hand zoning is seen as "the most widely used and potentially the most effective land use regulatory mechanism available" (7), whereas zoning is also criticized as "overrated" in its effectiveness (8). Zoning, though, will probably continue to be the dominant land use control technique despite its shortfalls.

### Master Plan

An adopted master plan is a long-range plan designed to guide the growth and development of a region or community. The

TABLE 1 AIRPORT NOISE CONTROL STRATEGIES (1)

Rank Order	Land Use Control	Airport Number	Communities Percent
1	Zoning	133	33.0
2	Comprehensive Plan	108	26.8
3	Land Acquisition	77	19.1
4	Avigation Easement	49	12.1
5	Noise Disclosure	34	8.4
6	Environmental Impact Review	33	8.2
7	Building Code	32	7.9
8	Capital Improvements	18	4.4
9	Sound Insulation	18	4.4
10	Development Rights	10	2.4
11	Site Design	9	2.2
12	Land Banking	7	1.7

Sample Size: 402 airports

master plan provides analysis of trends, recommendations, and implementation strategies for such areas as housing, land use, population, and transportation. The master plan, specifically the land use element, is frequently the basis of the zoning ordinance. In most cases, the master plan is the policy document guiding land use, whereas zoning is the means of implementing the policy. In some cases, the master plan may be the sole document guiding land use.

The master plan can be an effective method to ensure long-term development and compatible uses in the airport vicinity. As mentioned, the master plan is often the basis for zoning regulations. The master plan is the opportunity for a governmental entity to make a policy statement recognizing community assets, such as airports, and suggesting techniques to preserve and enhance them.

### Land Acquisition

Land acquisition of adversely noise-affected property involves fee-simple acquisition of lands to achieve noise compatibility. This can be done by either an airport proprietor or local government. Land may also be acquired through condemnation proceedings; however, this option exists only for public agencies with the power of eminent domain.

An advantage of land acquisition is that the airport proprietor or governmental entity has direct control over the land and can restrict it to compatible uses. Land under control of a public entity may be resold with covenants or easements restricting development to compatible uses. Redevelopment of land with compatible uses is one strategy to maximize that use of property and to keep property on the tax rolls (9). Though land acquisition may be an effective way to achieve noise compatibility, it is the most expensive, especially where property is already developed.

### Easements

An easement is a grant of one or more property rights by a property owner to another entity, public or private. Purchasing a property easement for noise compatibility purposes involves purchasing the right to fly (and make noise) over a property [known as an avigation (aviation navigation) easement] and the right to develop noncompatible land uses. An avigation easement permits the trespass of aircraft and aircraft noise within given time parameters and for a set fee (10).

The major advantage of easements is their permanence; title is held unless sold or released by the owner. This contrasts with zoning, which can be more easily changed by action of the governing body. Easement purchase is also usually not as expensive as fee-simple purchase of property. In addition, easement purchase, rather than outright purchase, permits land to remain on the tax rolls and available for compatible development (11).

### Development Rights (Purchase and Transfer)

A development right is the right to develop or build on a property. Transfer of development rights (TDR) involves the

removal of this right (usually in the form of development density, such as dwelling units per acre) from land in one zone district to land in another district.

Purchase of development rights (PDR), or conservation easements, involves outright purchase of the right to build on a property. Because the development restriction is on the deed, PDR gives long-term assurances that land uses will remain compatible. In addition, the owner receives compensation for restrictions imposed on his property. Attempting to accomplish the same objective using zoning could constitute a taking of property (12).

TDR and PDR are relatively new concepts in land use planning. They have been used primarily in farmland preservation and historic preservation in urban areas.

### Land Banking

Land banking is a process by which a public agency purchases land for future use and development to implement a public land use policy (1).

Land banking, when coupled with a long-range master plan, can be an effective mechanism with which to preserve land for airport expansion or to maintain or create a noise compatibility buffer. However, land banking is expensive, especially if development exists on lands surrounding an airport. The constitutionality of land banking varies from state to state. The courts have deemed pursuit of a land-banking program without a clear public purpose an illegal taking of property.

### Are Available Land Use Controls Effective?

Six widely used land use controls are described here: zoning, comprehensive plan, land acquisition, easement purchase, development rights (purchase and transfer), and land banking. Each technique has its particular advantages and disadvantages. The availability of a particular land use control to a governmental entity varies from state to state and depends on enabling legislation.

Land use controls do not function in a vacuum. Their effectiveness in a given situation depends on a number of factors. First, there are legal considerations and restrictions that may limit their applicability. Second, land use controls function within a multijurisdictional governmental framework. Finally, the effectiveness of land use controls and airport land use compatibility planning depends on political considerations. The following sections examine the legal restrictions on land use planning, the responsibility of government, and the governmental framework in which land use compatibility planning functions.

### LEGAL PRECEDENTS

The responsibility for controlling aircraft noise rests with the airport owner and the government. Both have legal rights and responsibilities related to airport land use compatibility planning. This section briefly explores these legal issues.

The airport owner has rights to use his property in a manner that does not adversely affect adjacent landowners. The government has the responsibility to protect the health, safety, and welfare of the population from the adverse impacts of airports.

Whereas the airport proprietor has the right to use his property, he is also responsible for impacts on surrounding property owners that may be deemed a nuisance or a taking. The taking issue was addressed in *Griggs v. Allegheny County, Pennsylvania* 369 U.S. 85 (1962). In the *Griggs* case it was ruled that the flight path of the airport created a direct and immediate interference with the enjoyment and use of the lands of surrounding property owners and thus a taking had occurred (13). An airport owner that is a governmental agency may use the eminent domain power to take a property for just compensation to create a noise compatibility "buffer." Eminent domain is the power to take private property for public use by a governmental entity for just compensation (14).

Airport owners that are not governmental entities do not have the power of eminent domain and have limited options. In fact, the airport owners may be limited to seeking zoning support from their governing zoning agency to ensure land use compatibility and continued economic viability.

Thus, private airport owners have almost no options to influence land use decisions in the airport environs except through the political process and rely heavily on the effectiveness of government regulation.

#### GOVERNMENT ROLES AND RESPONSIBILITIES IN AIRPORT LAND USE COMPATIBILITY PLANNING

The roles and responsibilities of governmental units in airport land use planning are important components of the framework in which land use planning policy decisions are made. The effectiveness of land use compatibility planning depends on the preparation and implementation of plans at a given level of government. However, the more political entities involved, the more complicated and less effective the coordination process becomes. The following is a review of the roles of each governmental unit in airport planning.

##### Federal

The role of the federal government, namely FAA, in airport planning is generally limited to providing funding for airport improvements, land purchase, and technical assistance to state and local governments. The most direct role of the FAA in noise compatibility planning is defined within FAR Part 150. FAR Part 150 prescribes procedures, standards, and methodology by which airport noise compatibility programs and aircraft noise exposure maps are governed. Part 150

1. Prescribes systems for measuring noise in the airport environs,
2. Prescribes systems for determining exposure of individuals to noise, and
3. Identifies the compatibility of land uses at various sound levels.

FAR Part 150 was created in response to a demand for better coordination of noise compatibility planning, the development of noise exposure maps, and guidance relative to the compatibility or incompatibility of various land uses, but the programs and systems for planning are voluntary.

The National Plan of Integrated Airport Systems (NPIAS) is the national airport system plan for the development of public use airports in the United States. The plan is prepared by the FAA every 2 years. The plan contains the type and estimated costs of "eligible airport development considered necessary to provide a safe, efficient and integrated system of public use airports to meet the needs of civil aviation" (15). Airports within the plan are classified as either commercial service airports, primary airports, or reliever airports.

##### State

Generally, state governments do not take an active role in airport land use compatibility planning and delegate the zoning and planning powers to local governments. The states are primarily involved in preparation of state airport system plans, provision of financial aid for airport development, and technical assistance.

##### Local

The land use planning power is generally in the hands of a municipal or county government, although enabling legislation varies from state to state. The specific powers of local governments to plan and zone also vary from state to state.

One other important variable has not thus far been mentioned: politics. Land use controls do not implement themselves; their effective implementation is the responsibility of government, and this is driven by politics, or in more academic terms, public policy. How does airport noise compatibility function given political realities? Airport noise compatibility planning in New Jersey is used as a case study and is examined next.

#### CASE STUDY: NEW JERSEY

A number of effective land use strategies and techniques are available for land use compatibility in the airport environs. A case study is used to assess the effectiveness of available land use techniques in a political and practical framework.

New Jersey was chosen for the case study for several reasons:

- New Jersey is a suburbanizing state with incompatible development encroaching on many airports.
- The state has a network of public use general aviation airports with many serving as relievers of the major air carrier airports in the New York and Philadelphia metropolitan areas.
- Land use planning powers are largely delegated to municipal governments.

New Jersey is the most densely populated state in the nation, with 1,042 persons per square mile compared with a national average of about 63 persons per square mile (16). New Jersey is part of two large metropolitan areas, New York and Philadelphia. Yet, New Jersey still has areas with low

population densities that are just now beginning to experience the pressures of suburbanization.

**Airport Land Use Compatibility Planning in New Jersey**

Airport land use compatibility planning in New Jersey functions under a system of airports operating within state and local regulations and policies.

*Airport Network*

The network of airports in New Jersey consists of 52 licensed public use airports (excluding three public use seaplane bases) (Figure 1). Five of the airports (Newark International, Atlantic City International, Atlantic City-Bader, Mercer County, and Cape May County) are served by scheduled air carriers. The remaining 47 are general aviation airports, of which more than 70 percent are privately owned, public use airports. The state does not own any airports (17).

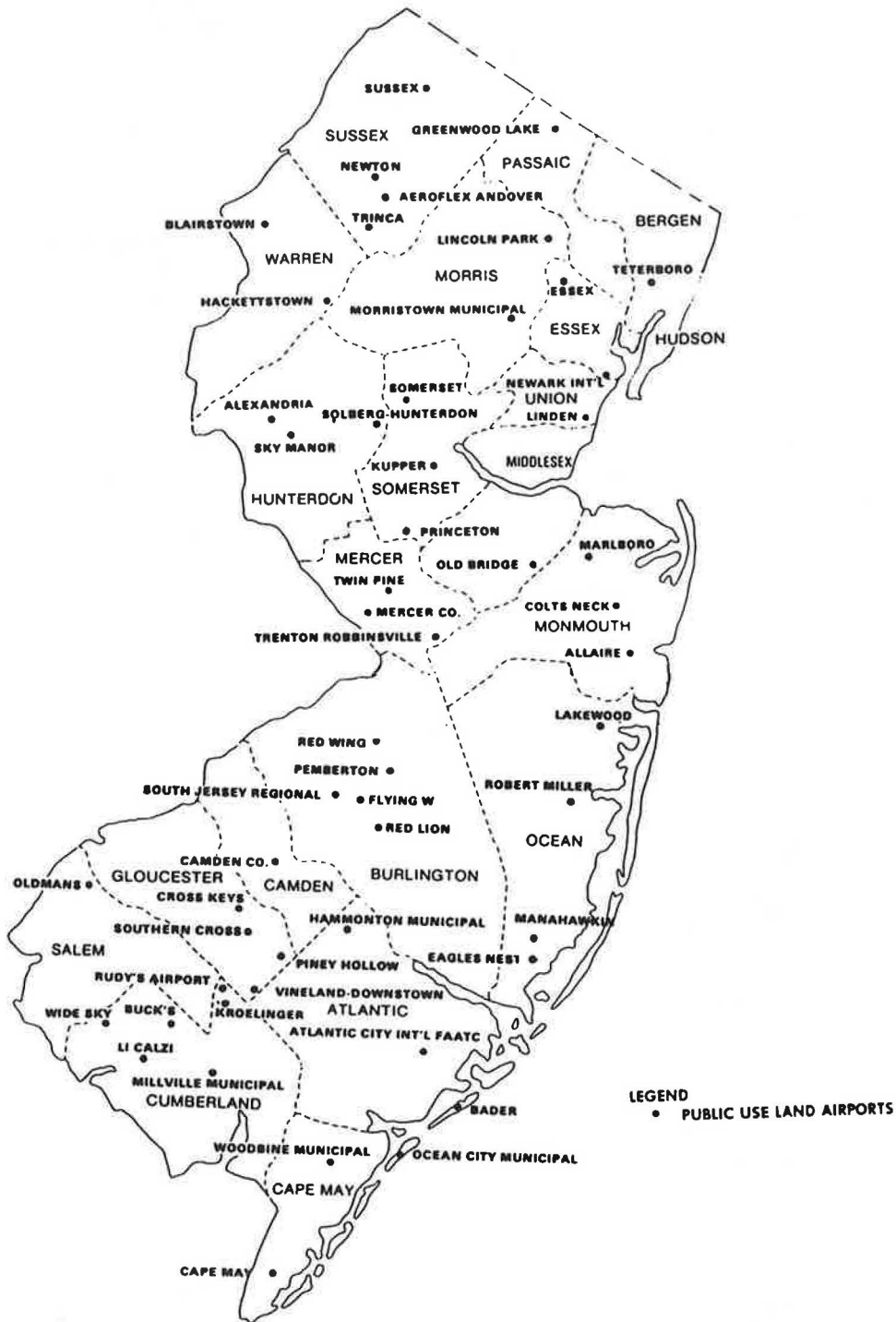


FIGURE 1 New Jersey public use land airports (17).



The number of public use airports in New Jersey has been declining at a significant rate in the past 25 years, as indicated in Table 2. A total of 23 public use airports, or almost one-third of the public use airports in New Jersey, closed between 1965 and 1990. As indicated in Table 2, there was a sharp increase in the number of airport closings between 1985 and 1990. The majority of the airport closings were in the rapidly suburbanizing counties in northern and southern New Jersey, namely, Atlantic, Burlington, Gloucester, Hunterdon, Morris, and Monmouth.

The loss of general aviation airfields in suburbanizing areas is not limited to New Jersey, although New Jersey, as the most densely populated state in the nation, is feeling the effects more than less-populated states (23). Suburban Connecticut and the Washington, D.C., suburbs are other areas where this trend has been identified (24, 25).

Meanwhile, general aviation operations in New Jersey are increasing or are projected to increase as the major metropolitan airports of New York and Philadelphia experience continued congestion. The New Jersey Department of Transportation projects that at least 13 airports will be near or above capacity by 2010 (26).

#### State Aviation Regulations and Policies

**Air Safety and Hazardous Zoning Act** The Air Safety and Hazardous Zoning Act of 1983 is the most significant piece of state zoning legislation that affects New Jersey airports.

In 1985, regulations of the act became effective that established "minimum standards for the control of airport and aeronautical hazards, and standards for land use adjacent to airports" (27). The regulations apply to nearly all state-licensed public use airports, and municipalities are required to adopt the rules into their zoning ordinances and master plans.

Originally, the regulations stipulated that airport hazard areas composed of two different subzones be delineated around airports. Within the hazard areas the only land uses permitted were industrial, commercial, open space, agricultural, transportation, and airport uses. Expressly prohibited uses included residential dwelling units, planned unit developments and multifamily dwellings, hospitals, schools, above-ground flammable or toxic gas storage, landfills or other uses that attract birds, and above-grade major utility lines.

The act was amended in 1989. A new zone known as the "clear zone" was created within the hazard zone (Figure 2). The revised regulations permitted low-density residential development (with a minimum lot size of 3 acres) within the hazard zone but outside the clear zone. The revised regulations also classified all preexisting residential structures as conforming land uses, where they had previously been classified by the act as nonconforming uses. The act also specifies that airports must be classified as permitted uses in local zoning ordinances.

The primary purpose of the Air Safety and Hazardous Zoning Act is hazard zoning, but the act has the secondary benefit of directing land uses that are noise compatible. However, the 1989 amendments to the act weaken its effectiveness by allowing residential uses near airport runways.

**State Aviation System Plan** New Jersey recently prepared the first comprehensive reexamination of the State Aviation System Plan since 1975. The new plan recognizes the importance of smaller airports as part of the overall system. The plan notes that presently "except for a few airports which are part of the federal system, each New Jersey airport is a self-contained unit and little thought or action had been given to serving as a system to meet the growing needs of the State" (26).

The plan establishes a hierarchy of airports by level of importance. Thirty-one airfields were identified as New Jer-

TABLE 2 PUBLIC USE AIRPORTS IN NEW JERSEY, 1965-1990\*  
(18-22)

County	1965	1975	1980	1985	1990	Net Loss 1965-90
Atlantic	5	5	5	4	3	-2
Bergen	1	1	1	1	1	--
Burlington	8	6	5	6	5	-3
Camden	1	1	1	1	1	--
Cape May	3	3	3	3	3	--
Cumberland	7	7	7	6	6	-1
Essex	2	2	2	2	2	--
Gloucester	6	6	6	7	4	-2
Hudson	--	--	--	--	--	--
Hunterdon	5	4	4	4	3	-2
Mercer	3	3	3	3	3	--
Middlesex	4	2	1	1	1	-3
Monmouth	5	4	3	3	2	-3
Morris	5	5	4	4	2	-3
Ocean	4	4	4	4	4	--
Passaic	2	1	1	1	1	-1
Salem	1	1	1	1	1	--
Somerset	4	4	4	3	3	-1
Sussex	6	6	4	4	4	-2
Union	1	1	1	1	1	--
Warren	2	2	2	2	2	--
<b>TOTAL</b>	<b>75</b>	<b>68</b>	<b>62</b>	<b>61</b>	<b>52</b>	<b>-23</b>

NOTES:

\* Excludes public-use seaplane bases.

--: none

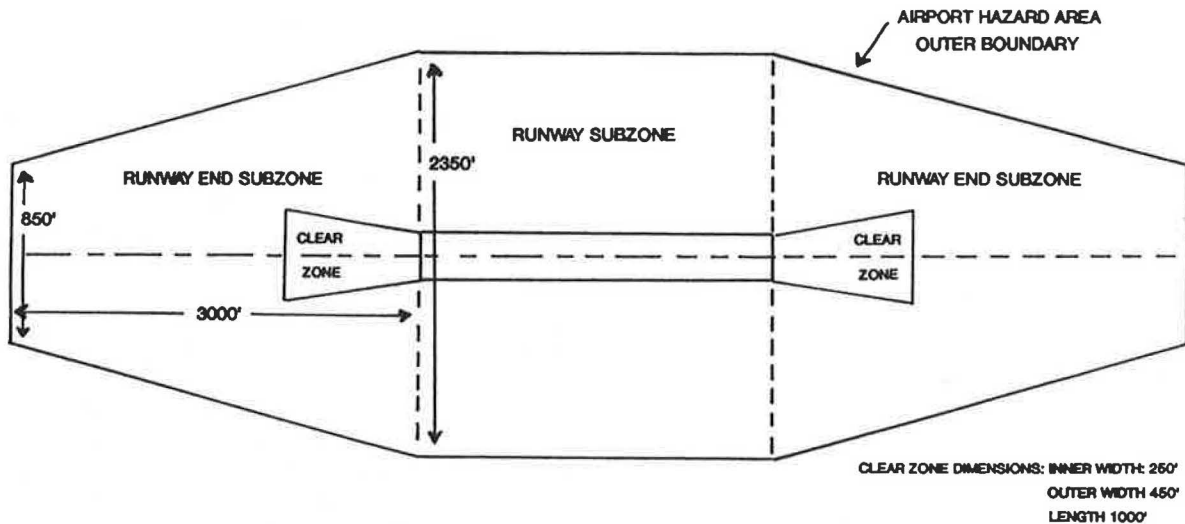


FIGURE 2 Runway end subzones and clear zones of an airport hazard area (27).

sey's "most important" airports, known as the core system. Of the 31 airports, 17 are privately owned. The plan recognizes that there is a significant threat that additional privately owned airports will be lost. It notes that "as a last resort, purchase should be considered to ensure the survival of this critical element of the aviation system" (26). However, the state has estimated the cost of purchasing all 17 "threatened" airports at almost \$100 million. Given fiscal realities, public purchase of general aviation airports in New Jersey is unlikely.

#### *Planning for Noise Compatibility in New Jersey*

The Air Safety and Hazardous Zoning Act was not specifically developed to address aircraft noise impact. The State Aviation System Plan is a guidance document developed by the New Jersey Department of Transportation and has no legal power. Local governments in New Jersey are still primarily responsible for implementing airport land use compatibility strategies and techniques. Present state legislation does not require local governments to plan for noise compatibility or consider the future expansion of an airport. Thus, there are instances in which municipalities permit local pressures and issues to take precedence over land use compatibility planning. Other municipalities actively pursue land use compatibility strategies. The following cases illustrate this point.

Whereas there are a number of effective land use strategies to mitigate aircraft noise impacts, it is the responsibility of a municipality in New Jersey to pursue these policies. A local government may use its planning and zoning powers to negatively affect the economic viability of an airport.

Princeton Airport is a general aviation airport in a rapidly developing area of central New Jersey. In 1990, the township council imposed a number of restrictions on the airport, including land use controls, due to noise complaints from residents of an area just west of the airport (28). The township rezoned lands west of the airport from nonresidential to single family residential development on 1-acre lots (29). The township rezoned the airport from a permitted use to a conditional

use, requiring the airport proprietor to meet more stringent regulations and file additional submissions when seeking expansion or development. This, in addition to operating restrictions, caused the airport owner to declare that the economic viability and future of the airport were threatened by local actions (29).

Local governments in New Jersey, using planning and zoning powers, can significantly affect the economic viability of a general aviation airport. However, progressive land use compatibility planning can also enhance the economic viability of an airport while ensuring compatible uses in the airport community environment. This is the case in Alexandria Township, New Jersey, which is located in western New Jersey and is largely rural.

Municipal zoning regulations in Alexandria Township permit noise-compatible development in the airport vicinity while permitting uses that enhance an airport's economic viability. There are two general aviation airports in Alexandria Township, Sky Manor Airport and Alexandria Airport.

In 1987 the township enacted zoning in compliance with the Air Safety and Hazardous Zoning Act (30). Three types of zones were established surrounding both airports (both within and outside the hazard zone): Airport Business-1, Airport Business-2, and Airport Residential Airpark. The purpose of each zone is to encourage uses "related to or compatible with or convenient for airport operations" (30). The business zones permit aviation, agricultural, commercial, business, recreational, and institutional uses, whereas the residential airpark zone permits these uses in addition to a residential airpark. A residential airpark is another term for an airport residential subdivision.

In the Alexandria Township case, the municipality recognized the airport as an asset and used its planning powers to zone for land use compatibility.

In summary, New Jersey municipalities have primarily relied on master plans and zoning to accomplish land use compatibility planning. Until 1985, municipalities had the sole responsibility to plan for airport land use compatibility. With the adoption of the Air Safety and Hazardous Zoning Act,

the state took a more active role in height and hazard zoning. However, municipalities still have significant planning and land use powers that can directly affect the economic viability and thus the future of airports, as indicated in Montgomery and Alexandria townships.

The primary planning tools for land use compatibility planning available to and used by New Jersey municipalities are master plans and zoning. There are presently no active land banking programs for airports in the state. Some airports purchase easements or acquire land, mostly to comply with FAR Part 77 regulations concerning obstacle clearance. There is presently no statewide legislation to permit TDR in New Jersey, although a pilot program is active in Burlington County. TDR could, however, be a useful technique for New Jersey planners. TDR could be used to transfer development rights from noise-affected areas or clear zones to less adversely affected areas.

One result of the ineffectiveness of local control of airport land use compatibility planning is that pilots using New Jersey's airports have suffered. Besides having fewer airports to choose from, pilots must contend with an array of published noise abatement operating restrictions at more than one-third of all airports (17). These operating restrictions include preferential runway use and specialized approach and departure procedures.

### Lessons from New Jersey

General aviation airports in many parts of the United States are being "squeezed" by encroaching incompatible development. Land use compatibility planning is primarily a local function. Can the public welfare be adequately protected from the adverse effects of aircraft noise while a cohesive system of airports is maintained? Land use compatibility planning is the key to ensuring this relationship. Indications are, however, that local control of a function that protects a regional and national asset is not working successfully as the number of general aviation airports continues to decline.

The factors hampering effective local control of incompatible land uses are largely political:

- Local governments and the public do not see the cause and effect of poor land use compatibility planning around airports.
- Many communities do not recognize the airport as an economic asset.
- General aviation airports in particular are not recognized as an important component of the state or national system of airports.
- A local governments's desire for ratables often takes precedence over good land use planning.

The results of ineffective land use planning in the airport environs have been felt in New Jersey and will be felt in other states. The effect is the continued loss of general aviation airfields, which will undermine FAA's goal of maintaining an "efficient and integrated system of public use airports to meet the needs of civil aviation" (15). More areas will be cut off from the national air transportation system.

### STRATEGIES AND POLICIES FOR IMPROVING LAND USE COMPATIBILITY PLANNING

General aviation airports today face threats to their survival from several fronts. Many airports are threatened with nuisance litigation from existing airport neighbors while facing the prospect of additional noise complaints from encroaching suburban sprawl. What options exist to protect the general aviation airport system while permitting noise-compatible development in the airport environs? What strategies could be implemented? Does the role of government in the land use planning process need to change? These issues are explored and strategies offered in the following.

To plan the airport environs in a noise-compatible manner will require a multifaceted approach. Recommendations include (a) enactment of legislation establishing the right of an airport to exist as a nuisance, a concept similar to "right-to-farm" laws protecting agricultural uses in many states; (b) involvement of state governments more directly in noise-compatibility planning by requiring zoning controls, such as acoustic clustering, to ensure compatible development of noise-sensitive residential uses; and (c) greater involvement of the federal government in providing funding for noise compatibility planning and requiring mandatory FAR Part 150-type planning for core general aviation airports, such as those identified in the NPIAS.

### The "Right To Fly"

The airport owner is responsible for the impacts of aircraft noise on surrounding property owners. The adverse impact of aircraft noise that infringes on the use and enjoyment of a person's property may be deemed a nuisance. The encroachment of suburbanization in the vicinity of many airports makes it increasingly difficult for airports to function and operate due to incompatibility with and opposition from new suburban neighbors.

The situation is not unique to airport uses. Farmers, too, have experienced the negative impacts of suburbanization. However, in many states, the preservation of farmland and the protection of farming operations have been greatly enhanced by the enactment of right-to-farm legislation. Right-to-farm laws are an attempt to protect farmers from liability claims and nuisance suits where suburban sprawl has encroached on farming operations. This concept has application parallel to the protection of general aviation airports. A parallel to the right to farm, the right to fly, as it could be known, can become the basis by which airports are recognized as regional and national assets. The legislation would also shift some of the burden of protecting the public from aircraft noise impacts from the airport owner (who has no direct control over off-airport impacts) to local governments and surrounding property owners. The shift may have the secondary effect of encouraging the development of noise-compatibility planning and zoning on the municipal level and more noise-sensitive site planning from property developers.

Right-to-fly legislation would provide airports with a basic "right to exist." Under New Jersey's Right to Farm Act, municipal regulation of farms is preempted and a rebuttable



presumption is created whereby normal agricultural operations are not public or private nuisances (31). Similar legislation should be considered for airports. Some of the other provisions of right-to-farm ordinances that could also be applicable to a right-to-fly ordinance are

- A declaration that normal airport operations do not constitute a nuisance if begun before a complaining neighbor moved in,
- A notice provision requiring sellers and real estate agents to inform prospective home buyers that an airport is close by and that noise may accompany normal operations, and
- The creation of an arbitration committee to mediate disputes between an airport owner and residents (32).

### Acoustic Clustering

Acoustic clustering is a planning concept that could be used as a zoning technique to permit residential development designed in a noise-compatible manner. Cluster development refers to a form of design that concentrates buildings in specific areas on the site to allow the remaining area to be used for open space, preservation of environmentally sensitive lands, or common recreation facilities (6). Cluster residential subdivisions have been successfully designed and built to achieve the aforementioned goals.

Acoustic clustering refers to the site-specific clustering of residences away from adversely noise-affected areas. The initial step in the development of a cluster plan would be a noise impact analysis that would result in the establishment of noise contours. Established noise assessment criteria such as those in FAR 150 could be used to establish a noise limit [e.g., 65 dB(A)] within which residential development would be prohibited. Outside of the noise limit contour, clustered residential development would be permitted, preferably as far from the noise impact zone as practical.

Whereas acoustic clustering offers the opportunity to plan residential uses in a noise-compatible manner, the technique also offers benefits to a developer or property owner. For example, clustering maintains the gross density of a tract, although the net density in developed areas is no higher than in a standard "x" acre lot subdivision. The developer also benefits by clustering through reduced infrastructure costs resulting from shorter streets and utility lines.

TDR can be used in connection with acoustic clustering of residences in cases where entire tracts of land lie within a noise-affected zone. Using TDR, development rights from properties within a noise zone could be transferred and clustered in areas outside noise-affected areas. This would preserve the development rights of property owners within noise impact zones, thereby addressing the taking issue.

Acoustic clustering in the airport environs has potential for applicability in New Jersey as an extension of the Air Safety and Hazardous Zoning Act. The act could include a provision mandating acoustic clustering and using, for example, FAR Part 150 as a guide.

Right-to-fly legislation could be a critical element in recognizing airports as an important local, regional, and national

asset. Acoustic clustering is a zoning control that would accommodate residential development in the airport vicinity in a noise-compatible manner. The former would involve legislation on the state level; the latter would be a local zoning and site plan concern, although it could be mandated by the state government. The federal government also has a larger role to play in airport land use compatibility planning.

FAR Part 150 provisions should be made mandatory for airports identified in the NPIAS and those identified as core airports in state airport master plans. FAR Part 150 contains the elements necessary to develop a comprehensive noise compatibility plan. However, the Part 150 definition of airports eligible for noise compatibility planning funds should be expanded to all privately owned, public use airfields, not just privately owned reliever airports. FAA must also develop noise standards and controls for general aviation aircraft.

Mandatory FAR Part 150 planning would better ensure land use compatibility between the airport and its environs. A higher level of government should play more than an advisory role in ensuring the protection and preservation of an important national asset. Only in this way will FAA be able to carry out its responsibility of maintaining the nation's airport system to meet projected traffic demands in the 1990s and beyond (33).

### CONCLUSIONS

This research has examined the characteristics, advantages, and disadvantages of land use controls to mitigate aircraft noise. In addition, the analysis focused on how effectively land use controls function given legal limitations, the roles and responsibilities of various levels of government, and political and practical realities using New Jersey as a case study. Particular attention was paid to public use general aviation airports, which play an important role in the national system of airports.

There is no one land use planning policy or control to ensure that noise-compatible planning in the airport environs will be totally effective in mitigating the impacts of aircraft noise. A commitment is required at various levels of government to establish general aviation airports as a regional and national asset to be preserved. The protection offered by right-to-fly laws, borrowed from analogous regulations in the agricultural sector, in addition to creative use of available zoning and other land use controls (specifically acoustic clustering) can effectively lessen the impacts of aircraft noise while protecting the economic viability of general aviation airports.

Given the increased reliance of Americans on air transportation, it is imperative that the preservation of a functioning and integrated network of airports be maintained and recognized as an important national and local asset. Airport land use compatibility planning is an important technique to preserve a functioning and economically viable network of general aviation airports as well as to ensure the development and maintenance of compatible land uses that are not adversely affected by aircraft noise. It may be appropriate for the federal government and state governments to take an increased role in land use planning around America's airports.

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