
LAND USE COMPATIBILITY AND AIRPORTS

PREFACE

The development of land uses that are not compatible with airports and aircraft noise is a growing concern across the country. In addition to aircraft noise, there are other issues, such as safety and other environmental impacts to land uses around airports which need to be considered when addressing the overall issue of land use compatibility. Although several federal programs include noise standards or guidelines as part of their funding-eligibility and performance criteria, the primary responsibility for integrating airport considerations into the local land use planning process rests with local governments. The objectives of compatible land use planning are to encourage land uses that are generally considered to be incompatible with airports (such as residential, schools, and churches) to locate away from airports and to encourage land uses that are more compatible (such as industrial and commercial uses) to locate around airports. The FAA has been actively supporting programs to minimize noise impacts. These include phase out of noise aircraft, supporting airport noise compatibility programs, funding of mitigation measures in environmental studies.

Interest has been expressed in having the federal government play a much stronger role in airport-related land use compatibility planning. Although the federal government cannot dictate local land use policies, it can play a role in facilitating the coordination between airports, local, county, and regional planning agencies to ensure that compatible land use planning occurs around our nation's airports.

The Federal Aviation Administration's (FAA) Southern Region Airports Division Office has received requests from airport personnel and local governments to provide guidance on how to establish and maintain compatible land uses around airports. The Southern Region Airports Division Office is responsible for planning, building, expanding, and improving airports; finding solutions to airport

congestion; supporting noise-compatibility and noise-reduction programs; minimizing adverse environmental impacts; and ensuring safety and regulatory compliance in the states of Alabama, Georgia, Mississippi, Kentucky, North Carolina, South Carolina, Tennessee, Florida, the U.S. Virgin Islands, and Puerto Rico.

In response to these requests, the FAA Southern Reigon, established, in 1998, a ***Compatible Land Use Planning Task Force***. The Task Force was charged with identifying how to better coordinate the airport master planning process (and related environmental plans) with the local comprehensive land use planning process. The Task Force determined that a resource guide to assist local governments and airports in identifying and implementing appropriate compatible land use tools (such as, airport overlay zones and avigation easements) would be the best way to prevent or slow down the proliferation of incompatible land uses around airports.

This guide, developed by the Task Force, is provided as a resource to local planners, governments, and other interested parties and should not be construed as FAA regulations or official agency policy. The case studies contained within this guide are included as examples to illustrate specific techniques and strategies of how and where some of the compatible land use tools across the country have been applied and implemented. Inclusion of these examples does not in any way represent official endorsement by the FAA. In some instances, approved Part 150 Noise Compatibility Program measures and Noise Exposure Maps have been included as examples for discussion purposes only.

The Task Force consists of representatives from airport planning staffs, airport planning consultants, city/county planning departments, state aviation departments, and the FAA Regional Environmental Program Manager.

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EXECUTIVE SUMMARY

The objective of aviation-related land use planning is to guide incompatible land uses away from the airport environs and to encourage compatible land uses to locate around airport facilities.

This compatible land use guide has been prepared for airport managers, local land use planners, developers, and elected or appointed public officials. Its purpose is to provide information on FAA programs and sources of support and to promote an understanding of land use compatibility planning issues around airports that could result in improved compatibility in the airport environs.

While not the only compatibility issue, aircraft noise has been the primary driver of airport land use compatibility conflicts. Since the introduction of turbo jet aircraft in the late 1950s, there has been a constant technical effort to reduce aircraft noise emissions. Although there has been significant reduction in aircraft engine noise, little more can be expected in the field of noise-reduction technology. Consequently the focus must now be on airport-specific noise and land use compatibility planning.

This guide identifies a wide variety of possible land use control methods as they relate to compatible land use planning efforts. This guide also recognizes that state and local governments are responsible for land use planning, zoning and regulation, and presents options or tools that can assist in establishing and maintaining compatible land uses around airports. To assist in those efforts, the Federal Aviation Administration (FAA), local airport sponsors, and state aviation agencies have expended significant funds related to airport planning and land use compatibility planning in the United States. These efforts have taken the form of Airport Master Plans, Noise Compatibility Studies, and land acquisition and sound insulation programs. There are also other land use issues that are of

concern at general aviation facilities. These are also reviewed and discussed in this guide.

Roles and Responsibilities

There are many entities involved in implementing or supporting actions directed toward improved land use compatibility around airports. These entities include the FAA, airlines, cargo carriers, commercial and general aviation airports, state and local governments, system users, and the community at-large. Knowing the interwoven roles and responsibilities for land use compatibility planning and implementation is important to helping understand the responsibilities placed on each entity and individual involved.

Legislation and Regulations Relating to Aircraft Noise and Compatible Land Use Planning

With the advent of jet aircraft and increasing aircraft operations at the nation's airports, it was recognized that aircraft noise could become a major constraint on further development of the commercial aviation network. To address the issues of aircraft noise and land use compatibility, legislation and regulation over the past three decades has focused on:

1. Providing assistance to airport operators to prepare and carry out noise-compatibility programs.
2. Providing funding for noise compatibility planning and projects.
3. Requiring airport operators to ensure that actions are taken to establish and maintain compatible land uses around airports.
4. Establishing a National Noise Policy that phases out noisier (Stage 1 and Stage 2) aircraft while phasing in quieter (Phase 3) aircraft according to a specified time frame.
5. Establishing a commitment by the federal government to fully consider the environmental effects (including noise) of a proposed action such as a new runway or a major runway extension.
6. Establishing mitigation measures, which minimize impacts to water, wetlands, and endangered species and protect the historical and cultural environment.

Funding Sources

There are two primary federal funding sources for compatible land use planning projects: the Airport Improvement Program (AIP) and the Passenger Facility Charge (PFC). Some additional funding sources may also exist at the state and local levels.

Airport and Local Land Use Planning Process

Airport Planning

Airport Planning in the United States is performed at several levels. These planning processes (typically referred to as System Planning) are performed at the national, state, regional, and local levels.

Airport Master Planning

The Airport Master Plan is a document that details the long-term development of an airport. The basic purpose of an Airport Master Plan is to set out a plan for future development designed to meet projected needs given community, environmental, and political considerations. An Airport Master Plan is also a tool to ensure that aviation planning among federal, state, regional and local agencies is coordinated.

Airport Master Planning and Comprehensive Land Use Plans

Aviation is an element of a region's transportation system therefore, the goals of airport development should be established in the framework of an area's comprehensive plan. The Master Plan is a published document, approved through a public hearing process by the governmental agency or authority that owns or operates the airport. The Airport Master Plan should be coordinated with local jurisdictions surrounding the airport to ensure that future airport development plans are taken into consideration in each jurisdiction's local comprehensive land use plan. Local land use planners and airport planners should use it to evaluate new development within an airport's environs.

Aircraft Noise Compatibility Planning

Aircraft noise has been an issue at almost every airport over the last four decades. Technology has improved aircraft performance capabilities and reduced noise emitted by aircraft engines. Continued progress in achieving aircraft noise and land use compatibility is now focused at the airport specific level. One of the best mechanisms available to address aircraft noise compatibility planning is the Federal Aviation Regulation (FAR) Part 150 Noise Compatibility Program.

The FAR Part 150 Program was established under the Aviation Safety and Noise Abatement Act of 1979 and allows airport operators to voluntarily submit noise exposure maps and noise compatibility programs to the FAA for review and approval. A noise compatibility program sets forth the measures that an airport operator "has taken" or "has proposed" for the reduction of existing incompatible land uses and the prevention of additional incompatible land uses within the area covered by noise exposure maps. Typically recommended noise abatement measures fall into three categories:

1. Operational measures such as changes in runway use or changes in flight-track location.
2. Preventive measures such as compatible land use zoning or noise overlay zoning within off-airport noise exposure areas.
3. Remedial measures such as purchase of property or sound insulation of residential property that is exposed to significant aircraft noise.

Local Land Use Planning

Historically land use plans (comprehensive plans) prepared by local governments have only minimally recognized the implications of planning for airports and off-site, airport-related development. Local land use planning, as a method of determining appropriate (and inappropriate) use of properties around airports should be an integral part of the land use policy and regulatory tools used by airports and local land use planners. Very often such land use planning coordination is hampered by the fact that airport facilities can be surrounded by a multitude of individual local governmental jurisdictions, each with their own comprehensive planning process.

Coordination and Implementation of Airport and Local Land Use Planning

Coordination during the early stages of Airport Master Planning and local land use planning is extremely critical for ensuring some level of land use compatibility. This coordination must occur before the creation, adoption, and implementation of both airport and local land use plans. Such coordination requires open dialogue and, at the least, some type of basic understanding of each other's planning processes.

Compatible Land Use Tools and Their Potential Applications

There are many land use planning and regulatory tools available to local governmental organizations. Among them are:

Comprehensive Plans

The preparation and adoption of a comprehensive plan is a critical and effective part of the process of ensuring land use compatibility around airport facilities.

Zoning Regulations

The use of zoning to control development around airport facilities has realized varied degrees of success. If put in place early enough, however, zoning can be an effective tool to help eliminate or reduce land uses that are not compatible with airports.

Subdivision Regulation

Subdivision regulations are usually prepared, adopted and enforced through the actions of a local legislative body and/or a local planning commission.

Subdivision plat review procedures provide an opportunity for jurisdictions to determine how and if a proposed subdivision design could contribute to the incompatibility of noise exposure in the airport environs.

Building Codes

While generally concerned with the functional or structural aspects of buildings or structures, some building codes have special requirements for properties located in high noise exposure areas.

Housing Codes

Housing standards usually relate to the minimum that a home would have to meet in order to be decent, safe, and sanitary. To some extent, and in combination with building codes and performance standards, housing codes may serve as a basis for noise impacts to residential occupants.

Capital Improvement Programming

A capital improvement program is another tool used to assist local governments in realizing the goals, objectives, and recommendations of an adopted comprehensive plan. This programming tool could be used in a cooperative manner to encourage or discourage certain types of land development around airport facilities.

Official Map Regulations

Adoption of map regulations in support of comprehensive plans and capital improvement programs permits these maps to show the location and extent of existing and proposed public facilities and needs. A potential application of such map regulations would be to encourage compatible development in an area designated for a runway in an airport's Master Plan.

Infrastructure Extensions

Provision or extension of basic infrastructure elements such as water, sewer, and roadways can significantly affect the extent and direction of growth and development. Used in conjunction with comprehensive plans and Airport Master Plans can allow for land uses to take place in areas that are compatible with aviation facilities.

Growth Policies

Some communities are developing comprehensive plans using the concept of controlling growth in specific areas. Identification of airports, surrounding affected areas, and Master Plan concepts, as part of growth policies planning is critical for successful growth policies planning.

Transferable Development Rights (TDR) and Purchase of Development Rights (PDR)

Both TDR and PDR involve the relocation of development rights (through transfer or purchase) from one location to another. Either mechanism has the potential to allow airports to either avoid incompatible development or promote compatible development in specific noise-impacted areas.

State Airport Zoning Commission Regulations

State statutes addressing aviation and airports are varied. Planners from all disciplines should be familiar with the laws in their respective states.

Negotiation/Mediation

The negotiation or mediation technique can be an important tool when employed to address land use compatibility conflicts or disputes associated with airport facilities.

Public Education and Awareness Programs

Airports or local planning agencies that expect a reasonable chance of success in their planning efforts must provide for public education and awareness in the planning process.

Information Dissemination

Dissemination of information is a one-way flow of a desired message or philosophy. The type of audience may range from a very narrow one to the community at-large. Among the information dissemination opportunities are brochures, newsletters, paid advertising, newspaper inserts, and Internet Web pages.

Information Exchange

Information exchange is a two-way flow of information. Once the information is disseminated, a dialogue occurs that may be used to enhance the education process and ultimately improve land use compatibility planning and to determine the public's attitude toward or acceptance of the disseminated message. Among the information exchange opportunities are public workshops, public advisory committees, radio/T.V. talk shows, and speaking engagements.

Conclusion

Airport and community planning processes are intertwined. To that extent, the material contained in this guidebook are focused on communication and cooperation, and directed toward the establishment of those common goals that are necessary for the development of compatible land use programs.

I. INTRODUCTION

A. Purpose of This Guide

To assist local units of government and land use planners who have an airport within their jurisdiction (or are affected by the impacts of airport/aircraft operations within their jurisdictions), the FAA Southern Region has pooled the resources of FAA environmental planners; airport planning consultants; state, regional, and local planners; and airport owners to prepare this guide for airport land use compatibility planning. This guide should assist airport managers and planners, local land use planners, developers, and elected and appointed public officials in promoting an understanding of land use compatibility planning issues around airports and in implementing the tools presented.

This guide identifies the importance of airport land use compatibility planning, summarizes the issues involved in achieving compatibility, presents a variety of methods which have been used to attain land use compatibility, and describes the responsibilities involved in implementing land use compatibility measures. It is particularly important to provide this guide for the management of smaller airports that do not have planning staffs. It is also important for every airport manager to understand land use compatibility issues and land use regulations. The guide also provides an overview of airport planning and development so that local land use planners and their elected officials can understand the airport planning process.

Finally, the guide not only presents a discussion of land use compatibility issues, but it also identifies opportunities for coordination of both the airport planning and land use planning processes. It is critical that these two planning processes be integrated/coordinated as much as possible.

Four key issues have been identified for evaluating the types of land uses to be considered compatible around airports:

- The impact of aircraft noise and noise compatibility planning;
- The potential for airspace conflicts from tall structures in the vicinity of an airport;
- The possibility of electronic interference with aviation navigation aids; and
- The potential for interaction between aircraft and wildlife attractants.

A more detailed presentation for each of these factors is provided throughout the remainder of this guide.

B. FAA Actions Related to Land Use Planning

While the FAA can provide assistance and funding to encourage compatible land development around airports, it has no regulatory authority for controlling land uses to protect airport capacity. The FAA recognizes that state and local governments are responsible for land use planning, zoning, and regulation including that necessary to provide land use compatibility with airport operations.

However, pursuant to the Federal Airport and Airway Development Act, as a condition precedent to approval of an FAA-funded airport development project, the airport sponsor must provide the FAA with written assurances that “...appropriate action, including the adoption of zoning laws have been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the airport to activities and purposes compatible with normal airport operations including landing and takeoff of aircraft....”

FAA has required the phasing out of noisy Stage 1 and Stage 2 aircraft consequently, the aviation industry has spent substantial monies to meet this requirement. To assist in the compatible land use efforts, the FAA, local airport sponsors, and state aviation agencies have expended significant funds related to airport planning and off-airport noise and land use compatibility planning throughout the United States. Airport master plans have been prepared to identify the near-term and long-range projections for airport activity and the development necessary to meet these activity demands. In addition, noise and land use studies

(FAR Part 150 studies) have been conducted to evaluate ways to minimize the impacts of aircraft noise, and the FAA and airport sponsors have financed major land acquisition and sound insulation programs for noise compatibility purposes. Information concerning the content and methods of implementation of airport master plans and noise compatibility studies and their applicability to off-airport land use planning is covered later in this guide.

C. Importance of Compatible Land Use Planning around Airports

Airports provide significant employment and economic benefits to communities through the movement of people and goods, promotion of tourism and trade, stimulation of business development, and the opportunity for a wide variety of jobs. The flying public and local communities do not readily discern the huge size and scale of economic development that airports provide and stimulate. According to the Airports Council International (ACI), in 1997 more than 1.2 billion people traveled on U.S. air carriers, regional, and commuter airlines through U.S. airports creating more than 5.8 million direct and indirect jobs. The total economic activity from these air carrier airport activities and jobs was nearly \$380 billion.

General aviation airports, those airports without commercial service, also are an important component of the national economy, providing services that commercial service airports cannot or do not provide. In fact, 80 percent of all general aviation aircraft are used for business purposes. A 1995 report entitled “The Economic Impact of Civil Aviation on the U.S. Economy Update ’93,” prepared for the FAA, indicated the following: “The economic role of local and regional general aviation airports, includes the production and sale of general aviation aircraft, avionics and associated equipment and the provision of support services such as flight schools, aircraft maintenance and fixed base operators. In 1993, the annual economic activity to the U. S. economy from general aviation airports was estimated to be over \$18.5 billion.”

Land use decisions that conflict with aviation activity and airport facilities can result in undue constraints being placed on an airport. In order to enable this sector of the economy to continue to expand, to provide for a wide variety of job

opportunities for local citizens, and to meet the needs of the traveling public, it is vitally important that airports operate in an environment that maximizes the compatibility of the airport with off-airport development. Thus, this guide has been prepared to provide the tools necessary for all involved to work together to protect this valuable resource, as well as to promote land use compatibility around airports.

II. ROLES AND RESPONSIBILITIES

This section describes the general roles and responsibilities of those involved in implementing actions to enhance airport and off-airport land use compatibility. The roles and responsibilities listed here are not intended to be all-inclusive but are identified to present the key roles and responsibilities of these entities related to compatible land use planning.

A. Federal Aviation Administration (FAA)

The FAA is responsible for the development of guidance related to federal laws and regulations affecting the aviation industry. This guidance is provided through the establishment of Federal Aviation Regulations (FARs), FAA Orders, and FAA Advisory Circulars (ACs). The FAA also distributes funds to support the development of master plans, noise and land use studies, and environmental studies for airport development projects (which directly relate to the compatibility between the airport and aircraft activity with the local community), and the expansion and safe operation of airports and related aviation facilities.

The FAA is also responsible for the utilization of airspace and control of aircraft flight through its air traffic control facilities; is responsible for the implementation of flight standards (airworthiness of aircraft and noise emissions of aircraft, for example); is responsible for navigation aids and other facilities necessary to provide a safe and efficient air system and is responsible for making sure that airports that receive federal funding are in compliance with grant assurances.

B. Airlines, Cargo Carriers, and General Aviation

In terms of land use compatibility, the airlines and air cargo carriers are required to replace or retrofit aircraft to meet the latest noise requirements. The pilots of all aircraft types, including general aviation aircraft, are responsible for operating their aircraft according to noise abatement procedures established at an airport and within the local airspace.

C. Airport Proprietor/Airport Management

Airport owners and operators are responsible for the development of information to support the compatibility effort. This support includes the preparation of master plans, noise compatibility and land use studies, community involvement programs, and the interaction with local planners and elected officials related to land use compatibility. Airport management is also responsible for the establishment of controls to reduce noise impacts, the development of on-airport facilities in a manner which reduces the interaction with wildlife, and the dissemination of information related to the growth of the airport and its relationship to the local economy.

D. Local Government and Elected Officials

Local land use planners and elected officials are responsible for local land use zoning and control. These entities and individuals are responsible for preparation of comprehensive plans, and reviewing and implementing zoning and land use regulations in a manner that considers the effects related to local airport facilities and aviation activity. These responsibilities include paying particular attention to noise impact mitigation, tall structure location, landfill development, and wildlife interaction with aviation activity in addition to other infrastructure interface considerations.

E. Passengers and Shippers

Passengers and shippers, through ticket and air bill taxes, generate the funds for aviation development and land use compatibility considerations. Portions of these taxes are directly allocated for noise control and planning activities, while others are allocated to the safe and efficient use of the airspace and development of aviation facilities. In addition, passenger facility charges (PFCs) at some airports are also used to fund similar activities at the airports where they are received.

F. Citizens

There is a wide variety of citizens interested in airports and aviation, including those who travel through airports (whether on commercial carriers or general aviation); those who work at airports (whether directly for the airport or indirectly for an aviation-related business); those who are affected by tourism and industry (the airport being the entry and exit point for passengers and cargo); those who have property interests in the vicinity of an airport; and those who are impacted by airport and aircraft activity (particularly aircraft noise). These interests represent a wide variety of viewpoints regarding the role and effect of aviation in the community. The overall role of the citizenry is to understand the issues involving aviation in their community, to protect the benefits of aviation in their community, and to minimize the adverse consequences that can result from aviation activity in their community.

G. Summary

It is important to understand the roles and responsibilities for land use compatibility planning and implementation and the requirements that have been placed on each entity and individual involved. More important, however, is the knowledge that these roles and responsibilities must be interwoven for successful land use compatibility planning to occur.

III. LEGISLATION AND FEDERAL REGULATIONS RELATING TO COMPATIBLE LAND USE PLANNING

In the early 1960s with the advent of jet aircraft, the aircraft noise issue became increasingly apparent. The issue was soon magnified by the rapidly increasing number of aircraft operations in the latter part of the decade. Due to its adverse effect on people, aircraft noise was recognized as a major constraint on the further development of the aviation network, threatening to limit the construction and expansion of airports and access to them. By the mid-1970s, approximately seven million people nationwide were exposed to what is considered a significant level of aircraft noise.

Subsequently, aircraft engine manufacturers and the federal government both initiated extensive research into quieting jet engines. In 1969, Congress gave the FAA the responsibility to regulate aircraft design and equipment for noise-reduction purposes. The FAA then embarked upon a long-term program of controlling aircraft noise at its source. A regulation published in 1969 established noise standards for turbojet aircraft of new design effective December 1, 1969. An amendment to these regulations in 1973 extended the same standards to all new aircraft of older design.

On October 21, 1976, President Ford directed the FAA to publish its noise compliance rule not later than January 1, 1977. Consequently, the U.S. Department of Transportation (DOT) and FAA issued an Aviation Noise Abatement Policy on November 18, 1976. This policy established a general policy on noise control plans and proprietary use restrictions.

In addition to the various federal laws and processes described herein, the following sections include other airport-related regulations that should be considered in local land use planning decisions.

The following paragraphs describe, in detail, the federal legislation and other airport-related regulations that affect airport land use compatibility planning.

A. Aviation Safety and Noise Abatement Act of 1979

In 1979, Congress passed the Aviation Safety and Noise Abatement (ASNA) Act. The Act provides assistance to airport owners to prepare and carry out noise compatibility programs to ensure continued safety in aviation, and for other purposes.

The Aviation Safety and Noise Abatement Act of 1979 required the following actions be taken:

- Establishment of a single system of measuring noise, for which there is a highly reliable relationship between projected noise exposure and surveyed reactions of people to noise, to be uniformly applied in measuring the noise at airports and the areas surrounding airports;
- Establishment of a single system for determining exposure of individuals to noise which results from the operations of an airport and which includes, but is not limited to, noise intensity, duration, frequency, and time of occurrence; and
- Identification of land uses which are normally compatible with various exposures of individuals to noise.

Section 103 of the Act authorized the Secretary of the DOT to make grants for airport noise compatibility planning to minimize noise impacts on communities in and around airports. According to the ASNA, a noise compatibility program identifies measures that an airport owner has taken or has proposed for the reduction of existing incompatible land uses, and the prevention of additional incompatible land uses within the area covered by noise exposure maps.

B. Federal Aviation Regulation Part 150 Noise Compatibility Program

In 1981, the FAA initiated a program (“Part 150”) to fund airport noise compatibility planning and projects. This program provides financial assistance to airport owners to assess noise impacts and to identify and carry out noise-reduction measures.

FAR Part 150 Airport Noise Compatibility Planning was required by the Aviation Safety and Noise Abatement Act of 1979 (ASNA). It was adopted as an interim rule in February 1981. FAR Part 150 establishes requirements for airport owners who choose to submit noise exposure maps and develop noise compatibility planning programs to the FAA for review and approval.

Revisions to Part 150 Airport Noise Compatibility Planning were adopted on December 13, 1984, and became effective on January 18, 1985. Revisions to Part 150 were based, in part, on comments invited and received following passage of the interim rule. As required by the Act, revisions to the regulations established a single system of measuring aircraft noise and a single system for determining the exposure of individuals to noise in the vicinity of airports. The regulations as revised also established a standardized airport noise compatibility planning program including:

- Voluntary development and submission to the FAA of noise exposure maps (NEMs) and noise compatibility programs (NCPs) by airport owners;
- Standard noise measurement methodologies and units;
- Identification of land uses that are normally compatible (or incompatible) with various levels of aircraft noise around airports; and
- The procedures and criteria for preparation and submission of NEMs and NCPs.

The Final Rule included language that stated that Part 150 regulations apply to any “public use airport” as defined by Section 502 (17) of the Airport and Airway

Improvement Act of 1982 (described later in this section). It also noted that although Part 150 specifies requirements that must be met when submitting NEMs and airport NCPs to the FAA, the submission of these maps and programs is completely voluntary. ASNA does not allow the federal government to interfere with or override local government zoning, subdivision building, and health authority.

The program actually got off to a slow start in the late 1980s because many community residents were afraid that once their properties were identified on the maps as being within an airport's noise contours, their property values would decline. However, this perception has changed throughout the 1990s. The FAA continues to work in partnership with airport owners and airport communities in developing and updating FAR Part 150 NCPs. More than 200 airports nationwide participate in the FAA's airport noise compatibility planning program. Since 1981, the FAA has distributed to airports participating in the program more than \$1.2 billion in federal funding to identify and reduce the impact of aircraft noise on local communities. Currently 55 percent of all large, medium, and small hub airports located in the southeast region of the United States have approved NCPs. (The FAR Part 150 Noise Compatibility Program is discussed in detail in Section VI.)

C. Airport and Airway Improvement Act of 1982

On May 13, 1946, President Truman signed the Federal Airport Act of 1946. This Act established a federal airport grants-in-aid program known as the Federal Aid to Airports Program (FAAP). The Act's goal was to promote the development of a civil system of airports nationwide. Funds were appropriated from the general fund of the U.S. Treasury. The Airport and Airway Development Act (AADA) replaced the FAAP in 1970.

As part of the Airport and Airway Development Act, the Secretary of Transportation is authorized to make project grants for airport planning and development to maintain a safe and efficient nationwide system of public-use airports. Upon acceptance of federal funding, an airport owner becomes obligated to operate and maintain the airport to certain standards and comply with several specific assurances and obligations contained in grant agreements. One of the

assurances with which an airport owner must comply involves the establishment and maintenance of compatible land uses around airports. This assurance requires the airport owner to restrict the use of land adjacent to or in the immediate vicinity of the airport to the extent reasonable activities and purposes compatible with normal airport operations, including landings and takeoffs of aircraft.

In 1982, the AADA was replaced by the Airport and Airway Improvement Act (AAIA) of 1982.

In addition to the above assurances there are several other assurances of the Act relating to planning, land use plan consistency, public participation, and safety, including:

Assurance 6: Consistency with Local Plans – A finding of consistency or inconsistency with local plans based upon the results of the intergovernmental review process is required at the time of application.

Assurance 7: Consideration of Local Interests – The non-airport sponsor certifies that fair consideration has been given to the interests of local communities. This does not require the sponsor to receive concurrence from all local communities, only that during project development their interests have been fairly considered in reaching decisions relative to the project.

Assurance 13: Operation and Maintenance – Applies to federally assisted noise compatibility project items and requires a sponsor to operate and maintain certain noise project items.

Assurance 20: Hazard Removal and Mitigation –When funds are allocated for developing new runways, runway safety areas, or to improve existing runways, the airport sponsor must own, acquire, or agree to acquire adequate property interest.

Assurance 29: Airport Layout Plan – Each project for airport development must provide for updating the airport layout plan unless otherwise authorized by the Administrator of the FAA. By this assurance, the airport sponsor (owner/operator) agrees to keep the ALP current at all times.

D. Airport Noise and Capacity Act of 1990 (National Noise Policy)

On November 5, 1990, Congress passed the Airport Noise and Capacity Act (ANCA). This act required the establishment of a National Noise Policy. The emphasis for establishing a National Noise Policy came about due to the magnitude of noise complaints from the public. The opposition to aircraft noise by the public is one of the major obstacles to expanding and increasing capacity at our nation's airports. Resolution of the noise debate is one of the most important issues facing the aviation industry. The lack of a National Noise Policy had created conflict between the airlines, the airport owners, and the communities they serve.

A critical part of the National Noise Policy set by Congress was the requirement to eliminate Stage 2 aircraft operating in the contiguous United States. Aircraft are rated or classified on the level of noise they emit while taking off and landing. Stage 1 aircraft are the noisiest aircraft, such as the original Boeing 707 and Douglas DC-8. Congress banned Stage 1 aircraft in 1987. Stage 2 aircraft include the older Boeing 727, 737, 747 and the McDonnell-Douglas DC-9 and DC-10 (see **Exhibit III-1** depicting Stage 2 jet noise "footprints"). The quietest aircraft are the Stage 3 aircraft, which include the new Boeing 737, 747, 757, and 767, McDonnell-Douglas MD-80 and MD-11, and the European Airbus (see **Exhibit III-2** depicting Stage 3 jet noise "footprints").

The Airport Noise and Capacity Act of 1990 specifically states that after December 31, 1999, no person may operate a civil turbojet airplane weighing more than 75,000 pounds in the contiguous United States unless that airplane meets Stage 3 noise levels. The Act also required that a schedule of phased-in compliance be established. Most of the major U.S. airlines have been replacing the older Stage 2 aircraft with the newer Stage 3 aircraft or retrofitting Stage 2 aircraft to meet Stage 3 aircraft requirements. As of September 1998, Stage 3 airplanes constituted approximately 80 percent of the combined domestic and foreign fleets of large turbojet airplanes operating to and from U.S. airports.

E. Other Applicable Federal Laws and Processes

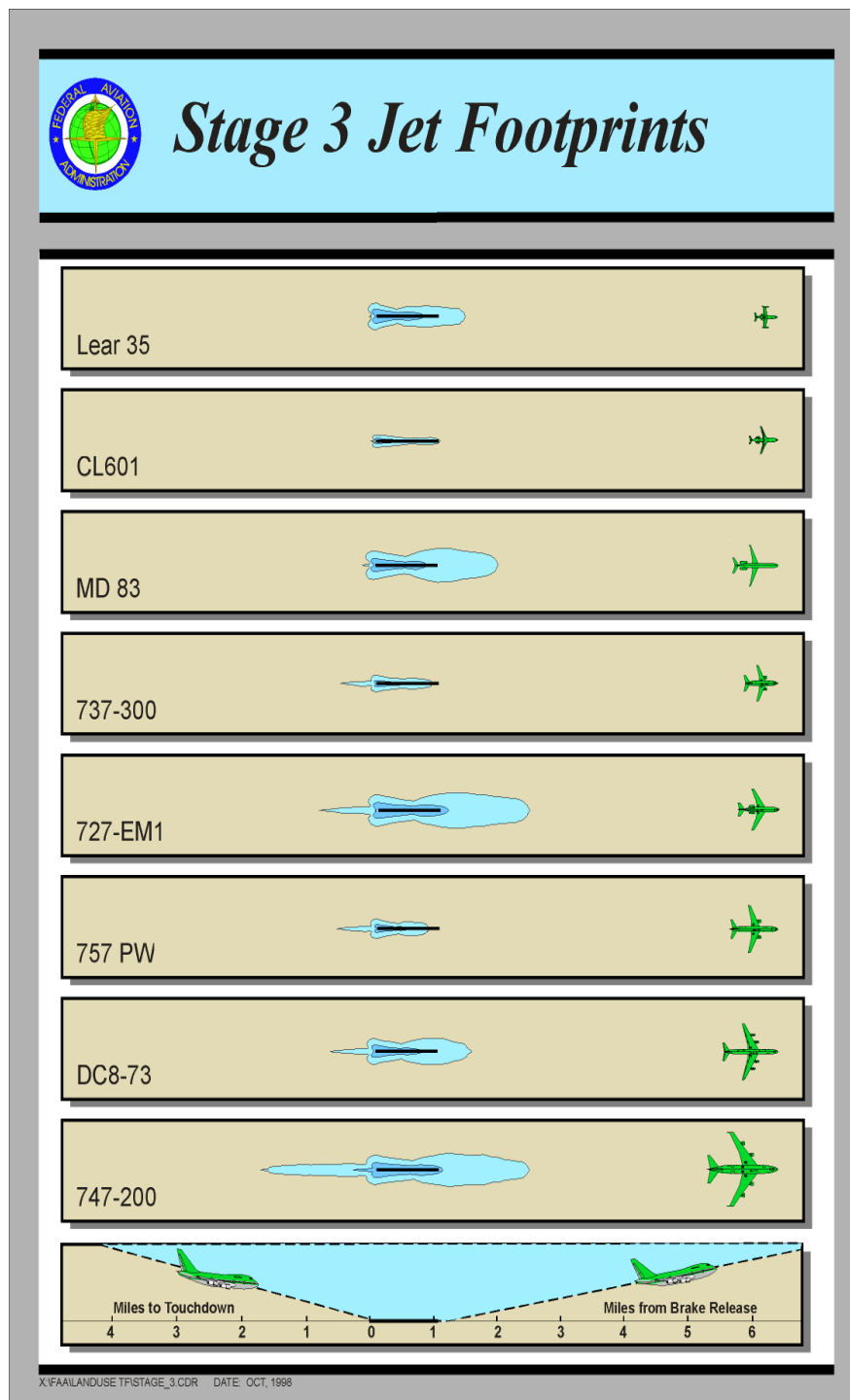
There are several other applicable federal laws and processes that affect land use compatibility planning at and around airports:

National Environmental Policy Act (NEPA) of 1969

This Act established the fundamental commitment of the federal government to fully consider the effects of a proposed action on the human environment. It also set the basic requirements for the contents of a “detailed statement” (of impact) to be prepared for “major federal actions.” The Council on Environmental Quality (CEQ), which was created by NEPA, has developed regulations for the implementation of NEPA, and each federal agency has developed guidelines for the application of this national policy to its specific programs. NEPA applies to every federal approval process. In terms of aviation, this would include, but not be limited to, such actions as approval of an Airport Layout Plan (ALP) revision, construction of a new runway, or a major runway extension.

III. Legislation and Federal Regulations Relating to Compatible Land Use Planning





NEPA is the basic national charter for protection of the environment. NEPA declares it a national policy to “encourage productive and enjoyable harmony between man and the environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; and to enrich the understanding of the ecological systems and natural resources important to the Nation.” The profound impacts of man’s activities “on the interrelations of all components of the natural environment” are recognized (including urbanization, population growth, industrial expansion, and resource exploitation). The Act specifically declares that “governments, and other public and private organizations, use all practicable means and measures... to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.”

Federal agencies are required to “utilize a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences and environmental design arts in planning and decision-making...” They are also to ensure that “unquantified environmental amenities and values may be given appropriate consideration in decision making along with economic and technical consideration.”

In land use planning, NEPA comes into play when an airport sponsor proposes a project or action that requires federal approval. All actions proposed by an airport sponsor are reviewed to determine whether there are environmental impacts that may result from the action being implemented and if these impacts are significant.

Environmental Assessments (EAs) and Environmental Impact Statements (EISs)

The primary purpose of an Environmental Assessment (EA) or Environmental Impact Statement (EIS) is to ensure that the policies and goals defined in NEPA are incorporated into the ongoing programs and actions of the federal government, in this case the FAA. An EIS/EA is to provide the full and fair disclosure of significant environmental impacts and serves to inform decision-

makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts or enhance the quality of the human environment. An EIS is more than a disclosure document; it is to be used by federal officials in conjunction with other relevant material to plan actions and make decisions.

NEPA requires that a detailed statement be prepared for every recommendation or proposal for major federal actions which may significantly affect the quality of the human environment. The FAA normally prepares EISs for approval and construction of major projects; for changes in projects that substantially increase size, capacity, or incorporate additional purposes; and for major changes in the operation and/or maintenance of completed projects. EAs are normally prepared for all other FAA actions except for certain minor and/or routine actions that are categorically excluded from NEPA documentation. A Finding of No Significant Impact (FONSI) is prepared by the FAA to accompany an EA when it is determined that an EIS will not be prepared.

An EIS/EA process may result in land use programs that are similar to land use programs resulting from FAR Part 150 Studies, which are discussed in detail in Section VI. In addition, EIS/EAs must consider the broader land use, social, and socioeconomic fabric of the communities surrounding an airport.

Section 404 (b) (1) of the Clean Water Act of 1977

This Act provides for protection of waters (and wetlands) of the United States by ensuring that alternatives to avoid and minimize impacts have been considered. The U.S. Army Corps of Engineers (ACOE) administers the Act with assistance from the U.S. Environmental Protection Agency (EPA). Airport development projects can often involve impacts to wetlands.

Section 401 of the Clean Water Act

This Act ensures that any activity that may result in a discharge of a pollutant into waters of the United States be evaluated for its effects upon water quality and compliance with federal and state effluent limitations and water quality standard requirements of the Act. The Act is administered by the individual states through their Department of Environmental Protection (DEP) or Department of Natural Resources (DNR). Storm water run-off is a concern at airports due to the type of activities (such as refueling and deicing) and the amount of impervious surfaces at an airport.

The Endangered Species Act of 1973

This Act ensures that proposed projects do not jeopardize the continued existence of, or result in the destruction of any designated critical habitat for, threatened or endangered species and is administered by the U.S. Fish and Wildlife Service. Endangered and threatened species often find habitat in and around airports attractive, and therefore, could pose a concern for developing airport projects in those areas.

National Historic Preservation Act of 1969

The National Historic Preservation Act (NHPA) established preservation as a national policy and directs the federal government to provide leadership in preserving, restoring, and maintaining the historic and cultural environment of the Nation. The Act authorizes the Secretary of the Interior to expand and maintain a national register of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture, referred to as the National Register.

Homes or properties that are to be acquired or altered by a proposed airport development project (such as in the case of sound insulation) as part of a land use management program are subject to review and coordination under Section 106 of this Act.

The FAA or its sponsor airports must prepare historic preservation plans for projects under its jurisdiction that discuss survey and evaluation strategies, costs, and schedules, and that establish management objectives for historic properties.

The Clean Air Act Amendments of 1990

In 1970, the Clean Air Act (CAA) was signed into law, and was amended in 1990. The Act is administered by the U.S. EPA and establishes national air quality standards. Aircraft emissions do not significantly contribute to air pollution, however, large commercial airports attract a lot of automobiles which are major contributors to carbon monoxide/ozone.

F. Airport-Related Regulations Relating to Compatible Land Use Planning

The following paragraphs describe, in detail, other airport-related regulations that affect airport land use compatibility planning.

FAA Advisory Circular 150/5200-33, Hazardous Wildlife Attractants on or Near Airports

The unwanted interaction between aircraft and wildlife is a situation that needs to be avoided. Bird strikes during flight and the interaction of terrestrial and avian species with aircraft on the ground is a hazard to aviation. FAA Advisory Circular (AC) 150/5200-33, Hazardous Wildlife Attractants on or Near Airports, provides guidance on locating certain land uses having the potential to attract hazardous wildlife to or in the vicinity of public-use airports such as sanitary landfills and wetland mitigation areas. Specifically the AC identifies land uses of concern in proximity to airports including, wetlands, ponds, stormwater retention facilities, and other similar uses for they offer excellent habitat for avian wildlife. In addition, the location of landfills within the proximity of an airport is also considered a hazard due to its likelihood to attract flocks of birds.

As part of this guide, it is strongly recommended that no new sanitary landfill or wetland mitigation projects should be sited within 10,000 feet of an active air carrier runway end or within 5,000 feet of an active general aviation runway end. The standards, practices, and suggestions contained in this AC are recommended by the FAA for use by the operators and sponsors of all public-use airports. In addition, the standards, practices, and suggestions contained in this AC are recommended by the FAA as guidance for land use planners, operators, and developers of projects, facilities, and activities on or near airports.

Wetlands Mitigation Banking

The concept of wetlands mitigation banking and how the FAA and airport sponsors can use this newly accepted mitigation strategy to more efficiently meet Section 404 permit requirements and environmental responsibilities, including land use planning, is gaining wider acceptance. These programs provide opportunities for the FAA, airports, and local communities and planners to develop common-use wetlands mitigation sites away from airports that have the potential to provide broader public benefits such as public parks, recreation, wildlife refuge, and education areas.

Federal Aviation Regulation Part 77

The construction of tall structures – including buildings, construction cranes, and cell towers – in the vicinity of an airport can be hazardous to the navigation of airplanes. The FAA, through FAR Part 77, established a method of identifying surfaces that should be free from penetration by obstructions in order to maintain sufficient airspace around airports. FAR Part 77, in effect, identifies the maximum height at which a structure would be considered an obstacle at any given point around an airport. The extent of the off-airport coverage needing to be evaluated for tall structure impacts can extend miles from an airport facility.

Tall structure impacts have historically involved the height of buildings and the height of cranes used in construction. However, with the influx of radio antennae and, most recently, towers to support wireless telecommunications and digital television, the need for careful review of siting such facilities has increased. The

location of tall structures within local airspace can significantly affect the ability of FAA's Air Traffic Control to route aircraft into and out of an airport and can also reduce an airport's capacity. This guide presents the criteria for evaluating potential obstructions and summarizes the general processes involved in the review and approval of the location of tall structures around airports.

The FAA airspace process serves several essential notification and coordination functions, beyond simply ensuring that the approaches to an airport are not obstructed by the construction of objects or the construction of other runways. Each person proposing any type of construction or alteration under the provisions of FAR Part 77 is required to notify the FAA by completing FAA Form 7460-1, Notice of Proposed Construction of Alteration. The completed form should be sent to the Air Traffic Division of the FAA regional office having jurisdiction over the area where the construction or alterations would be located.

Aviation electronic navigation aids (such as radar facilities, and instrument landing systems) are necessary to provide for the safe movement of aircraft. Although many of the navigation systems are located on the airport, some systems (or portions of systems) must be located off airport property. Such electronic systems (whether located on-airport or off) have the potential of being interfered with if non-aviation related electronic sources are placed in proximity or if structures are constructed which could block the navigation aid signals. Where off-airport electronic navigation facilities occur, any development proposed to be located near these facilities needs to be reviewed by the FAA to determine if any interference to the use of the navigation aid would occur. In addition, the placement of lights (high mast lighting and stadium lights, for example) near an airport can be a visual distraction to pilots approaching an airport facility. The process that airports and local governments can follow to ensure that potential impacts related to electronic or visual navigation are avoided is included in this guide.

AC 70/7460-2J, Proposed Construction or Alteration of Objects that May Affect the Navigable Airspace

The FAA Form 7460-1 and the accompanying information in a 7460 Notice of Proposed Construction or Alteration package should be sent to the FAA Airports Division for all proposed construction or temporary construction cranes on any Federally Obligated Airport or to the FAA Air Traffic Division for any construction off an airport that meets the notice criteria listed below (see FAR Part 77, Section 77.13-Notice Criteria).

A 7460 form is required for the following reasons:

- 1) So that hazards to aviation are minimized,
- 2) To serve as notification to pilots (NOTAMS) of potential airspace hazards,
- 3) For marking and lighting of structures,
- 4) To depict obstacles on aeronautical charts, and
- 5) To coordinate radio transmissions between the FAA and FCC.

Construction activities at or near airports must be reported via FAA Form 7460-1 at least 30 days before proposed construction or application for building permit, in any of the following situations:

- Construction/alteration including construction cranes more than 200 feet in height above the ground level at its site.
- Construction/alteration including construction cranes of greater height than an imaginary surface extending outward and upward at one of the following slopes:
 - 100-to-1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of each airport (public-use or military) with at least one runway more than 3,200 feet in actual length, excluding heliports.
 - 50-to-1 for a horizontal distance of 10,000 feet from the nearest point of the nearest runway of each airport (public use or military) with its longest runway no more than 3,200 feet in actual length, excluding heliports.

- 25-to-1 for a horizontal distance of 5,000 feet from the nearest point of the nearest landing and take-off area of each heliport (public use or military).
- Highways, railroads, or other traverseway for mobile objects of a height which, if adjusted upward 17 feet for interstate highways, 15 feet for public roadways, 10 feet (or the height of the highest mobile object that would normally traverse the road, whichever is greater) for private roads, 23 feet for a railroad, and for a waterway or any other traverseway not previously mentioned, an amount equal to the height of the highest mobile object that would normally traverse it, would exceed a standard of the previous paragraphs.
- When requested by the FAA, construction/alteration that would be in an instrument approach area.
- Any construction on public or military airports. If runways or taxiways to be constructed are already shown on an approved Airport Layout Plan (ALP) and no changes are required, the 7460-1 does not need to be submitted. Temporary cranes or other construction equipment over 20 feet in height require submittal of the 7460-1.

The FAA will conduct an aeronautical study and issue a determination to the proponent of the construction/alteration which is also forwarded to the airport operator if determined to be a hazard. A determination does not relieve the proponent of responsibility for compliance with any other local law, ordinances, or regulation, or state or other federal regulations. When evaluating proposals, the FAA will also examine the use of cranes, derricks, and other construction equipment that is used to accomplish the proposal. If construction information is not available at the time the 7460 proposal is submitted, further aeronautical study for the height of construction equipment is necessary.

Because the FAA has no land use control powers, it is important that local planners are aware of the various, critical safety considerations when siting developments around airports.

IV. FUNDING SOURCES FOR COMPATIBLE LAND USE PLANNING

A. Federal Funding Sources

There are two primary sources of federal funding for compatible land use planning projects: the Airport Improvement Program and the Passenger Facility Charge Program, both of which are described below.

Airport Improvement Program (AIP)

This program's primary objective is to help develop public-use airports to meet the current projected growth of civil aviation. Federal aid in the form of grants is funded with the user-supported aviation Trust Fund. The Trust Fund's revenue is generated by several aviation user taxes on items such as airline tickets, airfreight, and aviation fuel.

Eligibility to receive funds under the AIP is contingent upon the type of sponsor and the type of activity for which funds are sought. The different types of sponsor, who are eligible for funds, include:

Planning Agencies

A planning agency means any agency designated by the FAA Administrator which is authorized by the laws of the state or states or political subdivisions concerned to engage in areawide planning for the areas in which the grant assistance is to be used. There are, therefore, two levels of planning agencies:

IV. Funding Sources for Compatible Land Use Planning

- ***State Level:*** Typical state agencies that are authorized by state law to engage in state airport system planning usually include planning offices, aeronautics commissions, and departments of transportation.
- ***Regional/Metropolitan Level:*** Typical planning agencies which are authorized by state or local laws to engage in regional or metropolitan area airport system planning include Metropolitan Planning Organization (MPOs), Councils of Governments (COGs), Regional Planning Commissions (RPCs) and other similarly organized agencies.

Public Agencies Owning Airports

A public agency is defined as a state, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, the Government of the Northern Mariana Islands, the Trust Territory of the Pacific Islands, and Guam or any agency of them; a municipality or other political subdivisions or a tax-supported organization; or an Indian tribe or pueblo. Public agencies owning airports are eligible to receive grants for airport master planning, noise compatibility planning, and noise program implementation projects and airport development projects.

Public Agencies Not Owning Airports

Public agencies not owning airports are eligible for master planning (including site selection) grants for new airports, acquisition of existing airports, and noise program implementation projects if such projects are included in the noise compatibility program prepared by the local airport sponsor and not disapproved by the FAA.

Private Airport Owners/Operators

A private owner may be an individual, partnership, or corporation that owns or operates a reliever airport or an airport that receives scheduled passenger service of aircraft that annually enplane 2,500 or more passengers. A privately-owned/operated airport is eligible for funding for airport development projects, airport master planning, and noise compatibility planning and noise program implementation projects.

Airport owners can submit preapplications for federal aid and subsequently be issued grants for planning, development, noise planning, paving, lighting, land acquisition, noise compatibility projects such as sound insulation of homes and acquisition of noise-impacted properties, and the purchase of certain safety-related equipment, after meeting the following requirements:

1. The project sponsorship requirements.
2. The project is reasonably consistent with the plans of planning agencies for the development of the area in which the airport is located.
3. Sufficient funds are available for that portion of the project not paid for by the federal government.
4. The project will be completed without undue delay.
5. The airport location is included in the current version of the National Plan of Integrated Airport System (NPIAS). (See Section V, page V-1, for a discussion of the NPIAS.)
6. The project involves more than \$25,000 in AIP funds unless, in the judgment of the FAA it would be in the best interest of the federal government to award a grant of a lesser amount.

Upon acceptance of federal assistance, an airport owner becomes obligated to operate and maintain the airport to certain standards. Acceptance of federal funds requires airport owners to comply with assurances and obligations contained in the grant agreements. One of the assurances with which an airport owner must comply involves compatible land use. This assurance requires the airport owner to take appropriate action, including the adoption of zoning laws to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of

the airport to activities and purposes compatible with normal airport operations, including the landing and take-off of aircraft.

AIP grants have been issued directly to non-airport sponsors, such as cities and counties, for noise mitigation projects that involved sound insulation. The cities of El Segundo and Inglewood, California, which are located near the Los Angeles International Airport received federal funding to implement noise-mitigation projects which were specifically identified and approved in Part 150 Noise Compatibility Studies.

The cities of San Bruno, Pacifica, and Daly and San Mateo County, California, located near the San Francisco International Airport have also received federal funds to implement sound-insulation projects.

In addition to receiving federal funds for sound insulation projects, cities such as Inglewood and Ontario, California, have used federal funds to acquire properties that were not compatible with the airport to convert them into more compatible land uses.

Passenger Facility Charges (PFCs)

The Aviation Safety and Capacity Expansion Act of 1990 grants a commercial service airport the authority to impose a passenger facility charge (PFC) to assist in financing airport capital development upon approval of the Secretary of Transportation. Approval for an airport to impose a PFC does not require the airport sponsor to comply with those assurances and obligations contained in AIP grant agreements.

The purposes of this financing mechanism are to:

- Preserve or enhance the capacity, safety, or security of the national transportation system.
- Reduce noise impacts resulting from an airport that is part of the system.

- Furnish opportunities for enhanced competition between or among air carriers.

PFCs may be used for airport noise compatibility measures such as sound insulation that are eligible for federal financial assistance, even if the measures have not been approved as part of a formal Part 150 Noise Compatibility Program.

B. Other Funding Sources

There are other funding sources available for compatible land use planning that local municipalities and airports may want to consider investigating. Many airport proprietors and state aviation agencies are capable of financing various compatible land use projects.

V. AIRPORT AND LOCAL LAND USE PLANNING PROCESSES

A. Airport Planning

Airport planning in the United States is performed at several levels. Local planning for airport growth cannot be accomplished without consideration of national, state, and regional needs. Limited state and federal funding of airport projects within the national aviation system necessitates prioritization of projects in terms of their impact and importance to the aviation system. In addition, airports are interconnected, because what happens at an individual airport may affect other airports within the system so that coordination of national, state, and local development plans may be required. A brief discussion of various levels of airport planning is provided in this section.

The National Plan of Integrated Airport Systems (NPIAS) is a 10-year plan, which is published biennially by the FAA. The NPIAS lists the public use airports and their developments considered to be in the national interest and eligible for financial assistance for airport planning and development under the Airport and Airway Improvement Act of 1982.

Statewide integrated airport system planning identifies the general location and characteristics of new airports and the general expansion needs of existing airports to meet statewide air transportation goals. State transportation or aviation planning agencies perform this planning with regional and local input.

Regional metropolitan integrated airport systems planning identifies airport needs for large regional metropolitan areas and is prepared by regional/metropolitan

planning agencies. Needs are stated in general terms and incorporated into statewide system plans.

The operators of individual airports prepare airport master plans, usually with the assistance of aviation planning consultants. These plans detail the specific long-range plans of the individual airport within the framework of statewide and regional/metropolitan system plans and for review by the FAA.

B. Airport Master Planning

This section defines and discusses airport master planning, its purposes, the process, and provides an overview of the elements of a typical airport master plan.

What is an Airport Master Plan?

The Airport Master Plan is a document that details the long-term development of an airport. The plan includes the information, analyses, and resulting decisions and policies guiding the future development of an airport, typically over a 20-year planning period. To meet future demands, the need for facilities on the public side and airfield side of an airport must be detailed in advance, based on an established approach for determining need and possible impacts to the community, with a plan for implementation and funding.

Master planning is an ongoing process. An original master plan is required as part of the site selection of a new airport. As use of an airport grows and changes, updates to the original master plan are required to document significant changes in policies or development needs. Through the preparation of a master plan, justification can be established, alternatives reviewed, public comment received, and a policy set for the future so that subsequent land use decisions can be compared against an established plan.

Preparation of an airport master plan is outlined in FAA Advisory Circular (AC) 150/5070-6, *Airport Master Plans*, dated June 1985. State transportation or aviation offices may also provide master plan guidelines to assist airport owners within a given state.

What is the Purpose of an Airport Master Plan?

The basic purpose of an airport master plan is to set out a plan for future development designed to meet projected needs, given community, environmental, and political considerations. The airport manager uses the master plan in decision-making to evaluate future development proposals against the anticipated need. The airport manager; federal and state agencies; and local, regional, and state planners use the plan to evaluate off-site development for potential impacts to future airport development plans. Other objectives of the master planning process include:

- Providing the documentation and analyses to support the reasonableness of the proposed master plan development.
- Presenting future airport development plans for public comment and input.
- Documenting policies and proposed development for use in policy setting, land use compatibility considerations, and debt incurrence.
- Depicting graphically the future airport development and anticipated land uses in the vicinity of the airport.
- Establishing a realistic schedule based on demand and funding availability for implementation of development, including the five-year capital improvement program.
- Establishing the framework for future planning efforts by providing key conditions for monitoring.

Elements of an Airport Master Plan

Although each airport and community that an airport serves are unique, there are standard elements of any airport master planning process. These elements are briefly described in the following paragraphs.

Inventory of Existing Facilities and Airspace – This initial step in the airport master planning process identifies and establishes a database of existing airport facilities, and reviews information about the airport service area, the surrounding communities, and the existing airspace and navigational aids. An historical review of aeronautical activity, development of facilities, and community issues is also included. This inventory of facilities and services establishes a base against which to compare future development.

Forecasts of Anticipated Growth in Activity – Historical information regarding the numbers of operations (take-offs and landings), passengers, based aircraft, and cargo tonnage moved; socioeconomic data; national trends affecting airport growth; and other information are collected for consideration in preparing aviation demand forecasts. The forecast years are typically in five-year increments with a planning horizon of 20 years. The forecasts needed include enplanements, local and itinerant operations, based aircraft, cargo and mail tonnage, and peak-hour characteristics for passengers and operations. Based on the type of airport being studied, forecasts of international and domestic passengers and projections of air carrier and commuter operations may also be required.

Demand/Capacity Analysis – The capacity of various airport facilities discussed in the facility inventory is compared to the future demand for these facilities as supported by the aviation demand forecasts. Airside capacity is determined and compared with aircraft demand forecasts to determine the need for and timing of new runways, runway extensions, taxiways, or additional navigational aids that will increase capacity. Airspace capacity is also examined based on projected aircraft fleet mix, the proposed runway configuration, the locations of other airports in the area, and the types of operations (instrument approaches and visual approaches).

Terminal area capacity needs are determined for terminal areas and gates, curbside, and public and employee automobile parking. Surface access capacity for surface roads into and out of the airport, including terminal areas, cargo areas, and general aviation facilities, must be reviewed to determine what future capacity is available in the roadway system. Demand for other facilities on the airport, such as fuel farms, cargo areas, maintenance areas, and general aviation facilities is also determined. Lastly, revenue-producing non-aviation uses, such as industrial parks, and hotels, may also be reviewed. The need for any of these facilities is balanced against the availability of land to meet future airport needs and consideration of what is the highest and best use of available land. In addition, the timing of the improvements must be considered based on need and available funding.

Alternatives –Because options frequently exist as to how to serve the future needs of an airport’s service area, an analysis of alternatives that can meet the projected growth while achieving community goals is conducted as a critical part of the master planning process. The alternatives analysis results in a recommendation for the most reasonable development approach that maintains an acceptable mix of airport-related land uses, considers airspace and environmental concerns, and remains responsive to community concerns.

Environmental Analysis – Existing and potential environmental impacts, and any possible mitigation of adverse environmental impacts, must be considered during the master planning process. This portion of the master plan, while not to the detail required in an environmental assessment or environmental impact statement as outlined by the National Environmental Policy Act (NEPA), should provide an overview of environmental issues and potential mitigation to be considered with the implementation of the selected airport development plan.

Plan Implementation – A schedule for development and review of available funding is required—with the selection of a preferred alternative for airport development. The financial feasibility of the implementation of the master plan development must be considered, including both capital and ongoing operating costs. Five-, 10-, and 20-year development plans are provided with a more

detailed look at the shorter-term (five-year) projects to be included in the airport capital improvement program.

Airport Layout Plan (ALP) – The existing conditions and the future developments proposed in the airport master plan are graphically depicted in the Airport Layout Plan (ALP) as described in AC150/5300-13, *Airport Design*, Appendix 7, “Airport Layout Plan Components and Preparation.” The ALP is a reference document for use by airport staff, the public, local municipalities having jurisdiction around an airport, and the FAA. It is the one element of the airport master planning effort that must be reviewed and approved by the FAA, although it is frequently conditionally approved subject to receiving environmental determinations on proposed airport projects, such as a new runway.

The ALP is an important planning document for the FAA. To evaluate proposed developments around an airport that may pose a hazard to navigation, the FAA uses the ALP. The FAA also uses the ALP for coordinating other airports’ development plans to avoid airspace conflicts. In addition, the ALP is a record of how FAA design criteria are being met and what criteria must be met for proposed improvements.

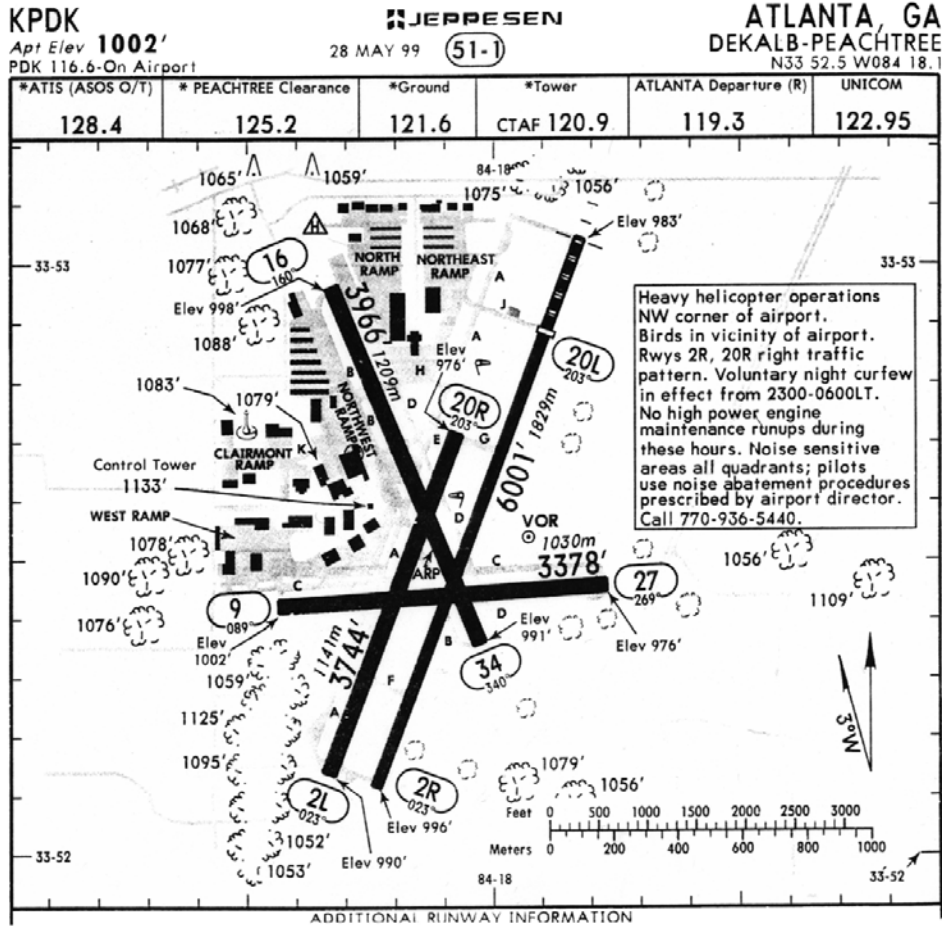
A typical ALP set includes the existing and proposed airport layout plans, airspace drawings, inner approach surface drawings, terminal area drawings, existing and proposed land use drawings, and the airport property map. These elements are briefly described in the following paragraphs:

- ***Airport Layout Plan Drawing*** – This drawing includes the existing and proposed layout of the airport, wind coverage table and wind rose, data tables, building tables, and a list of any approved or proposed modifications to FAA design standards. (**Exhibit V-1** depicts an airport layout plan drawing for DeKalb-Peachtree Airport.)
- ***Airport, Airspace Drawing*** – The FAR Part 77 surfaces are shown on this drawing, including plan views, and approach profile details of the existing and ultimate runway approaches and any penetrations with the dispositions of these obstructions.

- ***Inner-Portion of the Approach Surface Drawing*** – Existing and ultimate plan and profile views of the inner portion of the approach to each runway end out to a 100-foot height are provided on this drawing. In addition, an obstruction table is provided that identifies the approach surface penetration and the proposed disposition of the obstructions.
- ***Terminal Area Drawing*** – This drawing is a larger scale plan view of the aprons, buildings, hangars, parking, and other facilities within the terminal area. This drawing may not be required for small airports where the ALP is at a scale that is large enough to provide these details.
- ***Land Use Drawing*** – The information depicted on this drawing includes the existing and recommended use of all land within the ultimate airport boundary and in the vicinity of the airport.
- ***Airport Property Map*** – This drawing identifies the various tracts of land within the airport boundary and lists how the tracts were acquired. Avigation easement areas outside the airport boundary should also be depicted.

Public Coordination – Public input is very important to the airport planning process. For large or controversial master planning efforts, a task force or committee may be formed by the airport sponsor to provide input during the development of the planning document. The task force can include airport users; tenants; local, state, and federal government agencies; community groups; and private citizens.

V. Airport and Local Land Use Planning Processes



Public meetings or workshops could also be conducted at key points in the development of the master plan. These workshops allow the public, affected local municipalities, and community groups to provide critical input so that potential impacts can be identified and possibly avoided or minimized.

How Are Master Plans and Land Use Compatibility Planning Related?

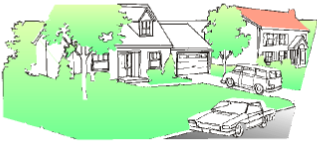


The airport master planning process provides a means to promote land use compatibility around an airport. Incompatible land uses around an airport can affect the safe and efficient operation of aircraft. Incompatible land uses can include wildlife-attracting land uses such as wetlands and landfills, cell towers and antennae transmitting signals that interfere with radio transmissions and/or navigational aids, lights that may be disorienting to a pilot, and tall structures including towers and construction cranes that may impact an airport's airspace.

Within an airport's noise impact areas, residential and public facilities such as schools, churches, public health facilities, and concert halls are sensitive to high noise levels and can affect the development of the airport. To assist in the assessment of noise compatibility/incompatibility in the airport environs, a land use compatibility table has been developed (see **Exhibit V-2**). Designations in this table, however, do not constitute a federal determination that any use of the land covered by this program is acceptable or unacceptable under federal, state, or local law. The responsibility for determining the acceptable and permissible land uses remain with the local authorities.

The land uses shown on Exhibit V-2 are land uses that are compatible with airport operations. Most commercial and industrial uses, especially those associated with the airport, are good neighbors to airports. Land uses where the airport creates the demand, such as motels, restaurants, warehouses, shipping agencies, aircraft-related industries, and industries that benefit from the access to an airport, are compatible land uses.



Land Use Noise Sensitivity Matrix

		55-65 DNL	65-75 DNL	75+ DNL
 Residential	1-2 Family	Yellow	Red	Red
	Multi-Family	Yellow	Red	Red
	Mobile Homes	Yellow	Red	Red
	Dorms, etc.	Yellow	Red	Red
 Institutional	Churches	Yellow	Red	Red
	Schools	Yellow	Red	Red
	Hospitals	Yellow	Red	Red
	Nursing Homes	Yellow	Red	Red
	Libraries	Yellow	Red	Red
 Recreational	Sports/Play	Yellow	Yellow	Red
	Arts/Instructional	Yellow	Red	Red
	Camping	Yellow	Yellow	Red
Commercial	All Uses	Yellow	Yellow	Yellow
Industrial	All Uses	Yellow	Yellow	Yellow
Agricultural	All Uses	Yellow	Yellow	Yellow

PER FAR PART 150	COMPATIBLE	Yellow
	INCOMPATIBLE	Red

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Other uses that may be compatible with airports are large parks, conservatory areas, and other open spaces. These land uses are created for public purposes and are opportunities for local government bodies to provide facilities that serve another public purpose to protect airport operations. Forestry service, landscape services, golf courses, and some extractive industries such as mining and excavations are also compatible with airports.

Agriculture is another land use that is compatible with airport operations as long as the use is not a wildlife attractant. Agricultural use of land near an airport permits the owner of the property to efficiently use land while providing an additional benefit to the community for airport protection.

C. Airport Master Planning and Comprehensive Land Use Plans

The master plan is a published document approved by the governmental agency or authority that owns/operates the airport through a public hearing process. The airport master plan should be incorporated into local comprehensive land use plans and used by local land use planners and airport planners to evaluate new development within the airport environs.

Integration of airport master plans and comprehensive land use plans begins during the development of the master plan. Local municipalities within and surrounding the airport boundaries must be contacted to collect demographic data and information on existing land uses in and around airports. The local comprehensive land use plans are also reviewed to determine what types of land uses are planned for the future. Additionally, zoning ordinances should be reviewed to determine what uses are currently permitted around the airport and if there have been any recent changes in zoning. It is important that local land use planners become involved in the review and development plans of the airport's master planning process by providing input on future airport development plans and what potential impacts these plans may have on communities around the airport. Any conflicts or inconsistencies between airport development plans and the local comprehensive plans should be noted in the airport master plan.

The information on future airport expansion and development contained in the airport's master plan should be incorporated in the development of

comprehensive land use plans or their subsequent updates or amendments to ensure land use compatibility in and around airports. During the development of such plans, formal coordination and consultation with the airport staff should occur so that the airport's future plans for expansion can be taken into consideration. Local land use planners should review the airport's master plan to determine how future airport projects could affect existing and projected future land uses around airports.

Other opportunities for coordination and communication between the airport and local planning agencies include the FAA Noise Compatibility planning process (discussed in detail in the next section). These studies provide opportunities for input from the aviation users, local municipalities, communities, private citizens, and the airport on recommended operational measures and land use control measures that could minimize or prohibit the development or continuation of incompatible land uses.

Lastly, the airport master plan is also a tool to ensure that planning among federal, state, regional, and local agencies are coordinated. The incorporation and review of these plans provide for the orderly development of air transportation while protecting the public health, safety, and welfare.

The legal structure of airport ownership will determine its power to regulate or influence land uses around the airport. Municipalities or counties with this regulatory authority need to be made aware of existing and long-term airport development plans and the importance of minimizing incompatible land uses. An airport master plan is a published document to make all the affected agencies aware of existing and long-term airport development plans, and how they can be compatibly integrated into the larger community. The master plan is of major importance to local communities within which, or near where, such facilities are located. Because air travel is a major means of travel for most people as well as the transporting of goods and materials, it is extremely important that airport planners and local land use planners work together toward cooperative land use planning efforts.

D. Aircraft Noise Compatibility Planning

Aircraft noise has created an impact on surrounding land uses since the beginning of aviation, but in the late 1950s it became a major issue with the introduction of turbojet aircraft. Over the last four decades, the number of aircraft operations (particularly jet operations) has increased significantly in response to public demands to expand national air passenger and cargo service. As aviation activity increased, so did the areas of noise exposure. It became apparent that aircraft noise impacts needed to be addressed and the most effective method of reducing aircraft noise impacts was at the source – reducing noise emitted by aircraft engines and improving aircraft climb capabilities.

Over the years, technology advancements have led to the development of new generations of aircraft with substantially reduced noise levels. These advancements, combined with federal legislation to phase-out noisier aircraft weighing 75,000 pounds or greater, have resulted in a quieter aircraft fleet operating throughout the United States. By 2000, or shortly thereafter, all large commercial passenger and cargo aircraft will meet the more stringent federally mandated noise control standards. This noise-reduction technology has also spread to the general aviation industry with new general aviation aircraft entering the fleet being much quieter than those of the past. The positive result has been the continued reduction of areas of high noise exposure around our nation's airports. Research is currently underway to develop Stage 4 noise control standards resulting in further reductions in aircraft noise levels.

To continue to progress in achieving aircraft noise and land use compatibility, the focus must include not only now a national perspective of noise control at the source, to airport-specific noise and land use compatibility planning. This planning involves the local airport's evaluation of aircraft operational procedural changes which could be developed to reduce noise exposure and local government's establishment of effective land use controls within high noise exposure areas. To be effective, the implementation of an aircraft noise control and land use compatibility plan requires close coordination and cooperation between the local airport, the FAA, and state and local entities.

When developing noise compatibility plans, it is helpful for all involved parties to have an understanding of the various noise control measures that have been recommended at other airports throughout the United States and how those

measures were implemented. This understanding can serve as a basis for considering the applicability and ultimate selection and implementation of noise controls as they relate to specific airports. However, measures right for the environs around one airport may not be right at another. Thus, this guide does not recommend specific controls for implementation but, instead, identifies a wide variety of possible noise control methods related to aircraft flight procedures and land use controls, which could be applied for specific airport conditions.

This discussion of FAR Part 150 Noise Compatibility Programs is designed to provide an understanding of the federal process available to airport owners to mitigate the impacts of aircraft noise on surrounding communities. Through this process, airport owners work with the FAA, airport tenants and users, local and regional planning agencies, local units of government, and other interested parties to identify mitigation measures which can be implemented through airport operations, air traffic control measures, and land use planning and regulatory actions. Participation in this program is voluntary for the airport owner.

When an airport owner conducts a Part 150 Noise Compatibility Program planning study, it is advisable to consider a threshold of annual aircraft activity at the airport must be met. This threshold is defined in FAA Order 5050.4A, *Airport Environmental Handbook, October 8, 1985*, paragraph 47 (e)(1):

No noise analysis is needed for proposals involving Design Group I and II airplanes on utility (reference Advisory Circular 150/5300 4B) or transport (reference Advisory Circular 150/5300 12) type airports whose forecast operations in the period covered by the environmental assessment do not exceed 90,000 annual propeller operations or 700 annual jet operations. These numbers of propeller aircraft operations result in cumulative noise levels not exceeding 60 Day/Night Level (DNL¹) more than 5,500 feet from start of takeoff roll or 65 DNL on the runway itself. Jet operations of 700 or less do not produce a 60 DNL contour using this method. Note that the Cessna Citation 500, the Gates Learjet 35A, and any

¹

The noise emanating from airport operations rises, falls, and even ceases throughout the day. Various noise descriptors or metrics have been developed to reflect how people are affected by the time-varying noise exposure levels resulting from aircraft operations. The Day-Night Average Sound Level (DNL) metric is currently the standard noise descriptor specified by the Federal government for transportation noise sources. FAA Order 1050.1D, *Policies and Procedures for Considering Environmental Impacts*, and Order 5050.4A, *Airport Environmental Handbook*, require the use of the DNL noise metric in evaluating noise exposure in environmental assessments of Federal actions. Part 150 of the Federal Aviation Regulations (FAR) specifies the use of DNL in noise compatibility studies.

The DNL metric employs the equivalent sound level (Leq), a single numerical noise rating which, over a given period of time, would represent the same noise energy as the time-varying sound level. The DNL metric was derived to account for the greater annoyance caused by sound intrusion at night. It augments the equivalent sound level occurring between 10:00 p.m. and 7:00 a.m. by 10 dB before being combined with the equivalent sound level for the period 7:00 a.m. to 10:00 p.m. The DNL provides a numerical description of the weighted 24-hour cumulative noise energy level using the A-weighted decibel scale, typically over a period of a year. The method of weighting the frequency spectrum, the A-weighted scale, was adopted by the FAA to describe environmental noise because it most closely mimics the receptivity of the human ear.

other jet aircraft producing equivalent or less levels of noise are quieter than many propeller aircraft under 12,500 pounds and therefore may be counted as propeller aircraft rather than jet aircraft.

Generally, when annual operations are below 90,000 propeller operations or below 700 jet operations, the cumulative noise levels of greater than 65 DNL typically would remain within the airport's property line. When this condition occurs, airports often find that conducting a Part 150 study does not provide any appreciable benefit to the community. In cases where the annual aircraft operations are greater than those levels listed above, a Part 150 study may be effective.

One product of a Part 150 Noise Compatibility Program is the noise compatibility plan (NCP) which recommends land use management measures to be implemented by local jurisdictions. During the conduct of a Part 150 Study, each jurisdiction is encouraged to adopt relevant parts of the NCP as an element of their comprehensive plan, or to incorporate NCP recommendations as planning guidelines if a comprehensive plan is to be adopted in the future. Including the recommended land use management measures in a comprehensive plan supports the need for land use compatibility with aircraft operations and the airport. The comprehensive plan is the tool that provides policy makers, land use regulators, developers, airport owners, and the general public with the plan and policies to guide and direct new development or re-development opportunities.

What is A Part 150 Study?

Part 150 is the abbreviated name for the Airport Noise Compatibility Planning process outlined in Part 150 of the Federal Aviation Regulations (FARs) (see **Exhibit V-2**).² The Part 150 Program was established under the Aviation Safety and Noise Abatement Act of 1979 (ASNA) and allows airport owners to voluntarily submit noise exposure maps and noise compatibility programs to the FAA for review and approval.³

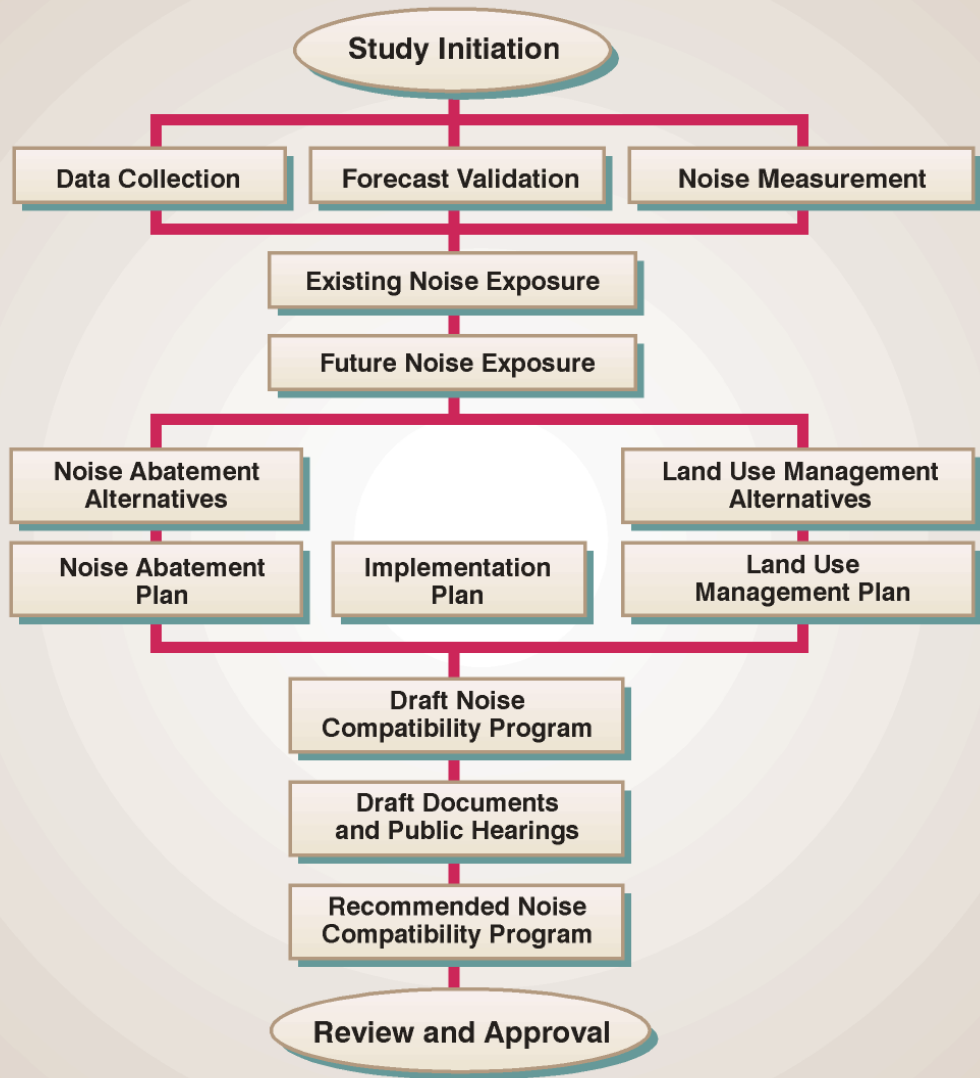
² 14 CFR Part 150, hereinafter referred to as Part 150 or the Part 150 Program.

³ Aviation Safety and Noise Abatement Act of 1979: 49 U.S.C. 47501 through 47509, hereinafter referred to as ASNA.

V. Airport and Local Land Use Planning Processes



Part 150 Process



Landrum & Brown Team

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According to the ASNA, a noise compatibility program sets forth the measures that an airport owner “has taken” or “has proposed” for the reduction of existing incompatible land uses and the prevention of additional incompatible land uses within the area covered by noise exposure maps. **(Exhibit V-3)** shows the land use categories which are considered to be compatible/incompatible with aircraft noise levels between 55-65 DNL, 65-75 DNL, and 75 DNL and greater.)

The need for airport noise compatibility planning is an outgrowth of the explosive growth of commercial jet aviation in the 1960s. This was followed in the late 1960s by the growing public awareness of environmental quality and the passage of the National Environmental Policy Act (NEPA). Since that time, aircraft noise has become the single most important barrier to the expansion of airport capacity around the country. Part 150 provides for a standardized planning process that is supported by federal funding for implementation of Part 150 programs.

The ASNA was designed to encourage strong concepts of local initiative and to allow for flexibility. The preparation and submission of noise exposure maps and noise compatibility programs is strictly voluntary and left to the discretion of local airport owners. Airport owners also may choose to submit noise exposure maps without preparing and submitting a noise compatibility program. The types of measures that airport owners may include in a noise compatibility program are not limited by the ASNA, allowing airport owners a lot of flexibility to submit a broad array of measures – including innovative measures – that respond to local needs and circumstances.

The general goals and objectives addressed by a Part 150 Noise Compatibility Study include:

- Reduce the existing and projected noise levels over existing noise-sensitive land uses, where feasible.
- Reduce the number of new noise-sensitive developments near the airport.
- Provide mitigation alternatives that are sensitive to the needs of the community and its stability.
- Maintain consistency with local land use planning policies.
- Mitigate impacts in accordance with federal guidelines, where feasible.

What is the Purpose for Conducting a Part 150?

The purpose for conducting a Part 150 Study at an airport is to develop a balanced, cost-effective, voluntary plan for reducing current noise impacts from an airport's operations, where practical, and to limit additional noise impacts in the future. In some cases, it may not make sense for an airport to conduct a Part 150 Study. Those airports that are completely surrounded by high-density residential development and other incompatible land uses may want to consider modification of existing air traffic operational procedures. Modification of these measures can be evaluated and implemented without preparing a Part 150 Study. The land use measures that are normally recommended in a Part 150 Study would not be effective in reducing or eliminating incompatible land uses around the airport. Also, the level and extent of development sometimes is so high that measures such as sound-proofing or property acquisition are not feasible due to a lack of funding at both the federal and local levels.

On the other hand, an airport that is located in an area where there is still vacant or undeveloped land, may have the opportunity to establish compatible land uses around the airport. Preparing a Part 150 Study in this case could be instrumental in identifying and implementing land use controls which would promote and establish compatible land uses in the vicinity of the airport.

A Part 150 Study is comprised of six major steps:

- 1) **Identify Noise and Land Use Issues and Problems** – The first step of the Part 150 Study is the systematic identification of issues and problems concerning airport/aircraft noise and local land use planning efforts. This information is usually provided by airport staff, members of the airport’s public and technical advisory committees, local planners, and other interested parties.⁴ This process plays a vital role in alerting the consultants/airport owners/FAA to any unique noise impacts, on- and off-airport planning issues, community concerns, and/or airport user issues.

- 2) **Define Current (Existing) and Future (Five-Year) Noise Exposure** – The second step of the Part 150 Study is to define the levels of noise exposure around the airport, which includes both the existing conditions and forecasts for the future or at a minimum a five-year planning period. The existing conditions noise exposure is based on the airport’s current operating procedures without additional efforts to abate noise. Within the area of noise exposure, the number of residents (population) and noise-sensitive land uses (housing units, schools, churches, nursing homes, hospitals, and libraries) are identified within the 65 DNL or greater noise contour.⁵ (**Exhibit V-4** illustrates how noise contours are generated through the use of the Integrated Noise Model.) The noise metric used in the development of the noise exposure contours is the Day-Night Average Sound Level (DNL) the derivation of which is depicted on **Exhibit V-5**.

⁴ A Planning Advisory Committee (PAC) is usually formed for the purposes of a Part 150 Study to provide a forum in which consensus or general agreement can be sought on the recommended actions proposed in the NCP. (The PAC is generally concerned with overflight issues and recommendations to amend local land use controls.) The PAC is typically composed of citizen representatives from local interest groups and neighborhoods; representatives of local, regional, state, and Federal agencies; and the local business community. In consort with the PAC, a Technical Advisory Committee (TAC) is typically also formed. The TAC is composed of the FAA, the Air Traffic Control Tower (ATCT), airline/cargo operators, airport users and tenants, county planning agencies, and airport staff. The TAC acts as a non-voting advisory body to the airport’s consultants and airport staff on matters pertaining to technical analysis used in formulating NCP noise abatement recommendations.

⁵ Aircraft-related noise exposure is defined through use of noise contours prepared using the Integrated Noise Model (INM) Version 5.01a which is the Federal Aviation Administration (FAA) approved model. (See Exhibit 4.)



How Noise Contours are Generated

User Inputs

Inputs	Source
● Airport Information	▶ ALP, ANMS
● Aircraft Flight Tracks	▶ ANMS
● Fleet Mix	▶ ANMS, Tower, Airport Records, OAG
● Number of Operations	▶ ANMS, Tower, Airport Records, OAG
● Runway Utilization	▶ ANMS
● Time of Day	▶ ANMS
● Aircraft Climb Profiles	▶ ANMS, INM
● Departure Trip Length	▶ ANMS

Integrated Noise Model (INM)

INM Provided Information

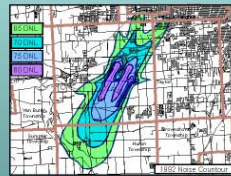
- Aircraft Noise Levels
- Aircraft Performance Data



Types of Aircraft Noise Considered within INM

- Arrival
- Departure
- Flyover
- Reverse Thrust (Braking)

Output



Noise Contours

STATEMENT OF JOB DATA - Operations Only and DEL, CWR
Daily and Weekly Total-Calendar or 2-Block Periods
as of 10/15/1998 10:00:00 AM

TYPE	CLASS	OPERATIONS	DEL	CWR
1	13000	2400	400	200
2	12000	2400	400	200
3	11000	2400	400	200
4	10000	2400	400	200
5	9000	2400	400	200
6	8000	2400	400	200
7	7000	2400	400	200
8	6000	2400	400	200
9	5000	2400	400	200
10	4000	2400	400	200
11	3000	2400	400	200
12	2000	2400	400	200
13	1000	2400	400	200
14	500	2400	400	200
15	200	2400	400	200
16	100	2400	400	200
17	50	2400	400	200
18	25	2400	400	200
19	12.5	2400	400	200
20	6.25	2400	400	200

Tabular Reports



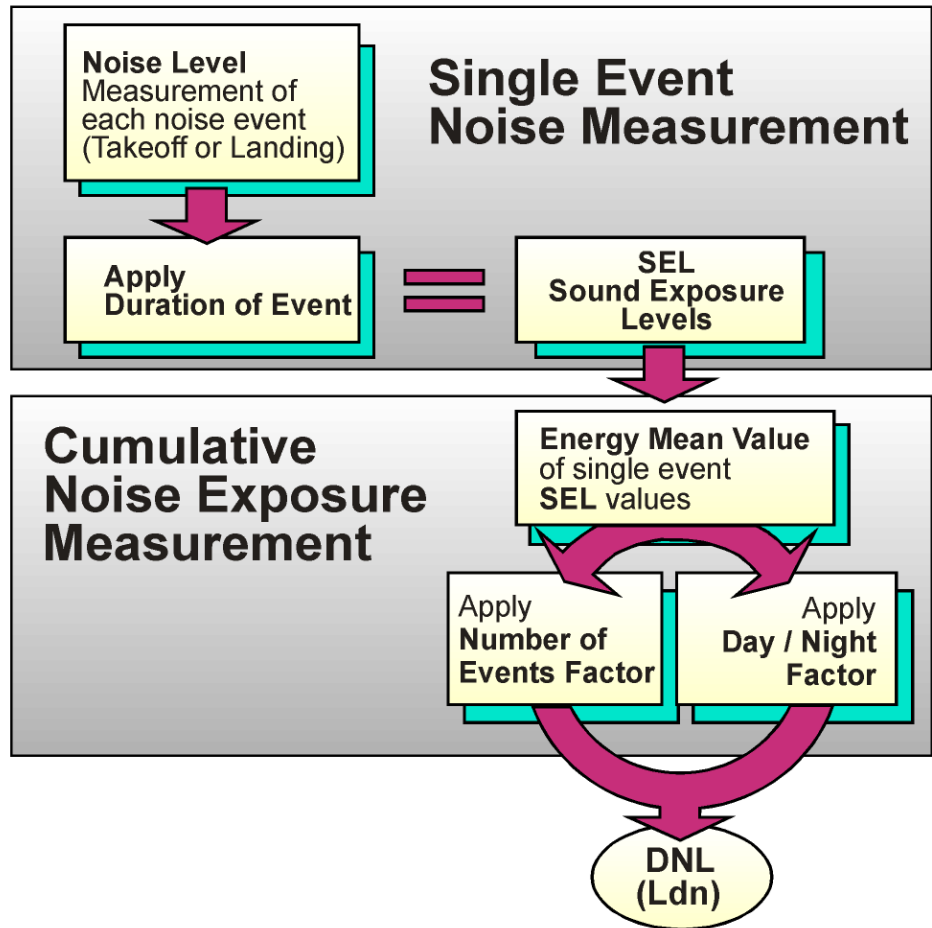
Grid Point Analysis



Landrum & Brown



What is DNL (Ldn)?



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Landrum & Brown Team

DNL is the required metric of the FAA and is the recognized industry standard. The products of this step are the Noise Exposure Maps (NEMs): the Existing Conditions NEM and the Future (Five-Year) NEM.

- 3) ***Evaluate Alternative Measures*** – Step three is the evaluation of all feasible options to abate noise and manage the encroachment of incompatible land uses within the airport environs. Measures evaluated are those typically suggested by the planning and technical advisory committees, the public, the airport sponsor, and the airport’s consultants. Each measure is evaluated for its effectiveness in reducing noise, as well as its cost, safety, and implementability.

- 4) ***Develop a Noise Compatibility Plan*** – The fourth step in the Part 150 process is the development of a noise compatibility plan. This plan consists of an optimum combination of preferred noise abatement and land use management measures, as well as a plan for the implementation of these measures.⁶ For planning purposes, the implementation plan also includes the estimated cost to the airport sponsor, the FAA, airport users, and the local units of government, for each of the recommended measures.

- 5) ***Obtain Necessary FAA Approval*** – Step five is the submission of the completed Part 150 Noise Compatibility Program to the FAA for review and approval. The criteria for the approval or disapproval of measures submitted in a Part 150 program are set forth in the ASNA which stipulates that a noise compatibility program will be federally approved if:
 - The program measures do not create an undue burden on interstate or foreign commerce;
 - The program measures are reasonably consistent with the goal of reducing existing incompatible land uses and preventing the introduction of additional incompatible land uses; and
 - The program provides for updating the program in the future through the submission of a revised noise exposure map.
 - Is not unjustly discriminatory.

⁶ The land use management measures consist of both remedial (corrective measures which are typically sound insulation or acquisition) and preventive measures (land use controls which typically amend or update the local zoning ordinance, comprehensive plan, subdivision regulations, and building code).

- Does not derogate safety or adversely affect the safe and efficient use of airspace.
- To the extent practicable, meets both local and national needs of the national air transportation system, considering tradeoffs between economic benefits derived from the airport and the noise impacts.
- Can be implemented in a manner consistent with all of the powers and duties of the Administrator of the FAA.

Failure of the FAA to approve or disapprove a noise compatibility program within 180 days, except for measures relating to flight procedures, is deemed to be an approval under the ASNA.⁷ The ASNA also sets forth the criteria under which grants may be made to carry out noise compatibility projects, consistent with the ASNA's overall deference to local initiative and flexibility.

- 6) ***Develop an Implementation and Monitoring Plan*** – The sixth, and final, step is the development of techniques to monitor the implementation efforts. This process is internal to the airport and could include tracking the progress of the grants applications and funding received, or the implementation status of each recommended measure (such as, how many home-owners have elected to participate in sound insulation, how many homes have been insulated, the number of properties acquired, and the population relocated).

Typical Recommendations Contained in a Noise Compatibility Plan

The typical recommendations resulting from conducting a Part 150 Study can be categorized in two basic areas: *operational noise abatement* and *land use management* measures.

Operational noise abatement measures address aircraft and airport noise at its source and are recommended by the airport sponsor. The FAA's Air Traffic Division evaluates recommended operational noise abatement measures to determine whether they can be implemented safely and if implementation would result in potential environmental impacts. Operational noise abatement measures include:

⁷ FAA approval or disapproval is provided in a written Record of Approval (ROA) to the airport sponsor within the 180-day period.

- **Changes in runway or flight track use** - measures that vary runway or flight track usage (for example, increased/decreased use of a crosswind runway).
- **Changes in flight track location** - measures that relocate aircraft from existing to constructed flight tracks over less populated areas or along corridors that provide greater operating efficiency.
- **Modifications to aircraft performance** - measures that modify the aircraft flight profile (including airspeed, altitude, and power).
- **Improvements or modifications to airport facilities** – measures that require construction-related efforts on the airfield (for example, ground run-up enclosures, blast fences, and berms).

Land use management measures include *preventive* (land use controls) and *remedial* (corrective) techniques. Preventive land use management techniques seek to prevent the introduction of additional noise-sensitive land uses within existing and future airport noise contours. These measures must be implemented by the local jurisdictions. In some cases, the airport sponsor can only recommend that such measures be included in planning and regulatory documents. However, in other cases, the airport sponsor does have legal authority or an active role in influencing changes in land use that are compatible with airports.

Preventive measures (land use controls) include:

- **Compatible Use Zoning** - commercial, industrial, or farmland zoning.
- **Zoning Changes, Residential Density** - large-lot zoning, planned development, multi-family zoning.
- **Noise Overlay Zoning** - special regulations within high-noise areas.
- **Transfer of Development Rights** - zoning framework to authorize private sale of development rights to encourage sparse development in high-noise areas.
- **Environmental Zoning** - environmental protection zoning to support airport land use compatibility (such as, floodplains).
- **Subdivision Regulation Changes** - requires dedication of noise/aviation easements, plat notes.
- **Building Code Changes** - requires sound insulation materials in new construction.
- **Dedicated Noise/Aviation Easements** - requires development permits.

- ***Fair Disclosure Regulations*** - requires seller to notify buyer of aircraft noise.
- ***Comprehensive Planning*** - policies supporting land use compatibility; can involve specific land use plans and policies to guide rezoning, variances, conditional uses, and public projects.
- ***Capital Improvement Programming*** - public investments which support airport land use compatibility.

Remedial (corrective) land use management techniques seek to remedy existing and projected future unavoidable noise impacts in existing areas of incompatible land use. Remedial (corrective) measures include:

- ***Guaranteed Purchase (Fee Simple)*** - outright purchase of property with the intent of removing incompatible use by demolition of structure.
- ***Development Rights Purchase*** - purchase of rights to develop property.
- ***Land Banking*** - acquisition of vacant land for long-term airport facility needs.
- ***Redevelopment*** - acquisition and redevelopment of property.
- ***Purchase Assurance*** - airport acts as buyer of last resort, sound-insulates house, sells property, retains easement.
- ***Sales Assistance*** - airport sound-insulates house, guarantees that the property owner will receive the appraised value (or some increment thereof, regardless of final sales value that is negotiated with a buyer), retains easement.
- ***Sound Attenuation*** - sound insulation of homes, noise-sensitive institutions, retains easement.
- ***Noise/Avigation Easement Purchase*** - purchase of easement only.

Part 150 and Preventive Noise Mitigation Measures (Land Use Controls)

In establishing the airport noise compatibility planning program, which became embodied in FAR Part 150, the ASNA did not change the legal authority of state and local governments to control the uses of land within their jurisdictions. Public controls on the use of land are commonly exercised by zoning. Zoning is a power reserved to the states under the U.S. Constitution. It is an exercise of the police powers of the states that designates the uses permitted on each parcel of land.

This power is usually delegated in state enabling legislation to local levels of government.

Many local land use control authorities (municipalities, counties, etc.) have not adopted zoning ordinances or other controls to prevent incompatible development (primarily residential) within the noise impact areas of airports. An airport's noise impact area, identified within noise contours on a noise exposure map, may extend over a number of different local jurisdictions that individually control land uses. For example, at six airports recently studied, noise contours overlaid portions of anywhere from 2 to 22 different jurisdictions.⁸

The Evaluation of Preventive Measures Implementation

While airport owners have included measures in noise compatibility programs submitted under Part 150 to prevent the development of new incompatible land uses through zoning and other controls under the authorities of appropriate local jurisdictions, success in implementing these measures has been mixed. A study performed under contract to the FAA, completed in January 1994, evaluated 16 airports having approved Part 150 programs for the implementation of land use control measures. This study found that of the 16 airports, six locations had implemented the recommended zoning measures, seven locations had not implemented the recommended zoning measures, and three were in the process of implementation.

Another independent survey looked at 28 airports, 17 of which have FAA-approved Part 150 programs in place. This study found that nine had implemented noise overlay zoning, six had implemented compatible land use zoning, and eight had implemented compatible building code regulations.⁹ When attempting to manage the encroachment of new incompatible land uses near airports, the primary roadblock to implementation seems to be when the airport sponsor's jurisdiction is different than the surrounding jurisdictions where the development is occurring. This is consistent with observations by the FAA and with a previous General Accounting Office report which observed that "the ability of airport owners to solve their noise problems is limited by their lack of control over the

⁸ Charlotte/Douglas International: two jurisdictions (1997); Indianapolis International: three jurisdictions (1998); Rickenbacker International (Columbus, OH): six jurisdictions (1997); Los Angeles International (CA): four jurisdictions (1998); Chicago Midway (IL): eight jurisdictions (1998); and Chicago O'Hare (IL): 22 jurisdictions (1998). Source: Landrum & Brown, 1998.

⁹ Source: Landrum & Brown, May, 1998, *Chicago Midway Airport Noise Abatement Programs at Large Air Carrier Airports*.

land surrounding the airports and the operator's dependence on local communities and states to cooperate in implementing land use control measures," such as zoning for compatible uses.¹⁰

Why Are Preventive Measures Not Implemented?

The FAA's January 1994 study explored factors that contribute to the failure to implement land use controls for noise mitigation purposes. A major factor is the multiplicity of jurisdictions with land use control authority within airport noise impact areas. The greater the number of different jurisdictions, the greater the probability that at least some of them will not implement controls. In some locations, local land use control jurisdictions and airport owners have not developed cooperative relationships. The absence of a cooperative relationship impedes appropriate land use compatibility planning. Further, some local jurisdictions are not fully aware of the effects of aircraft noise and of the desirability of land use controls. Frequent changes in local government administration's can also have an impact on compatible land uses being established around airports. These conditions could be improved through greater efforts by all involved parties to communicate and inform each other about the nature of aviation noise and of the effective preventive and remedial actions available to local jurisdictions to ensure long-term compatible land uses in and around airports.

Some jurisdictions do not perceive land use controls as a priority because the amount of vacant land available for incompatible development within the airport noise impact area is small, perhaps constituting only minor development on dispersed vacant lots, or because the current demand for residential construction near the airport is low to nonexistent. In such areas, land use control changes are not considered to have the ability to change substantially the number of residents affected by noise because development trends are generally market driven. Jurisdictions may also give consideration of aircraft noise impacts a low priority compared to the economic advantages of developing more residential land or the need for additional housing stock within a community. A zoning change from residential to industrial or commercial may not make economic sense to the local

10

[4910 - 13] Department of Transportation, Federal Aviation Administration, 14 CFR Part 150 [Docket No. 28149], *Final Policy on Part 150 Approval of Noise Mitigation Measures: Effect on the Use of Federal Grants for Noise Mitigation Projects*, Action: Notice of Final Policy. Issued in Washington, DC, on March 27, 1998.

jurisdiction if little demand exists for this type of development. Therefore, a zoning change is viewed as limiting development opportunities and diminishing the opportunities for tax revenues.

In some cases, zoning for compatible land use has met with organized public opposition by property owners arguing that the proposed zoning is a threat to private property rights, and that they deserve monetary compensation for any potential property devaluation. Further, basic zoning doctrine demands that the individual land parcels be left with viable economic value, that is, that they be zoned for a use for which there is reasonable demand and economic return. Otherwise, the courts may determine a zoning change for compatibility to be a “taking” of private property for public use under the Fifth Amendment to the U.S. Constitution, requiring just compensation.

One or more of the factors hindering effective land use controls may be of sufficient importance to preclude some jurisdictions from following through on the land use recommendations of an airport’s Part 150 noise compatibility program. When either an airport sponsor’s or a non-airport sponsor’s jurisdiction allows additional incompatible development within the airport’s noise impact area, it can result in noise problems for the people who move into the area. This can, in turn, result in noise problems for the airport owner in the form of inverse condemnation or noise nuisance lawsuits, public opposition to proposals by the airport owner to expand the airport’s capacity, and local political pressure for airport operational and capacity limitations to reduce noise. Some airport owners have taken the position that they will not provide any financial assistance to mitigate aviation noise for new incompatible development. Other airport owners have determined that it is a practical necessity for them to include at least some new residential areas within their noise assistance programs to mitigate noise impacts that they were unable to prevent in the first place. Over a relatively short period of time, the distinctions blur between what is “new” and what is “existing” residential development with respect to airport noise issues.

FAA Policy Concerning Mitigation – (Effective October 1, 1998)

Prior to October 1, 1998, airport owners could include new incompatible land uses, as well as existing incompatible land uses, within their Part 150 noise compatibility programs and recommend that remedial (corrective) noise mitigation measures – usually either property acquisition or sound insulation – be applied to both situations. These measures have been considered to qualify for approval by the FAA under 49 USC 47504 and 14 CFR Part 150. The Part 150 approval enables noise-mitigation measures to be considered for federal funding under the AIP, although it does not guarantee that federal funds will be provided.

Effective October 1, 1998, the FAA will approve under Part 150 only remedial noise mitigation measures for “existing incompatible” development and only preventive noise mitigation measures in areas of “potential new” incompatible development.¹¹ As of the same date, the ability to use AIP grants to carry out such measures was affected to the extent that such remedial measures may not be approved under Part 150. This policy is not retroactive and does not affect Part 150 approvals made before the effective date (October 1, 1998) of the policy or AIP funding consistent with previous approvals. PFC funding will only be affected to the extent that an airport owner chooses to rely on an approved Part 150 program for FAA’s approval to use PFC funds.

“Potential new” incompatible land uses could include:

- Areas currently undergoing residential or other incompatible construction;
- Areas zoned for residential or other incompatible development where construction has not begun; and
- Areas currently compatible but in danger of being developed incompatibly within the timeframe covered by the airport's noise compatibility program.

The purpose of distinguishing between “existing” and “potential new” incompatible development is for airport owners to restrict their consideration of remedial noise mitigation measures to existing incompatible development and to focus preventive noise mitigation measures on potentially new incompatible development.

11

[4910-13] Department of Transportation, Federal Aviation Administration, 14 CFR Part 150 [Docket No. 28149], *Final Policy on Part 150 Approval of Noise Mitigation Measures: Effect on the Use of Federal Grants for Noise Mitigation Projects*, ACTION: Notice of Final Policy. Issued in Washington, DC, on March 27, 1998, John R. Hancock, Acting Assistant Administrator for Policy Planning, and International Aviation.

The most commonly used remedial (corrective) noise mitigation measures are land acquisition and relocation, sound insulation, easement acquisition, purchase assurance, and transaction assistance. The most commonly used preventive (land use controls) noise mitigation measures are comprehensive planning, zoning, subdivision regulations, acquisition of easements or development rights to restrict incompatible development, revised building codes for sound insulation, and real estate disclosure. Acquisition of vacant land may also be a preventive noise mitigation measure with supporting evidence in the airport owner's Part 150 submission. The Part 150 submission must show that acquisition is necessary to prevent new incompatible development, because incompatible development on the vacant land is highly likely and local land use controls will not prevent such development. Often, combinations of these measures are applied to ensure the maximum compatibility.

Airport owners can continue to apply the most commonly used noise-mitigation measures in their noise compatibility programs. Local flexibility to recommend other measures, including innovative measures, under Part 150 would be retained. However, all noise mitigation measures applied to existing incompatible development must clearly be remedial and serve the goal of reducing existing incompatible land uses. Similarly, all noise-mitigation measures applied to potential new incompatible development must clearly be preventive and serve the goal of preventing the introduction of additional incompatible land uses.

Any future FAA determinations issued under Part 150 will be consistent with this policy. The FAA's approval of remedial noise mitigation measures will be limited to existing incompatible development. The FAA's approval of preventive noise mitigation measures will be applied to potential new incompatible development.

The FAA recognizes that there will be undefined areas, which will have to be addressed on a case-by-case basis within these policy guidelines. For example, minor development on vacant lots within an existing residential neighborhood, which clearly is not extensive new incompatible development, may for practical purposes need to be treated with the same remedial measure applied to the rest of the neighborhood. Another example would be a remedial situation in which noise from an airport's operation has significantly increased, resulting in new areas that were compatible with initial conditions becoming incompatible. Airport owners must provide adequate justification in their Part 150 submittals for such exceptions to the policy guidelines.

Funding

The FAA is authorized, but not obligated, to fund Part 150-approved projects via the Airport Improvement Program (AIP) to carry out measures in a noise compatibility program that are not disapproved by the FAA. Such projects also may be funded with local PFC revenue upon the FAA's approval of an application filed by a public agency that owns or operates a commercial service airport, although the use of PFC revenue for such projects does not require an approved noise compatibility program under Part 150. It should be noted that AIP (as well as PFC) funds can continue to be used for projects approved as mitigation measures in an FAA environmental document for airport development. The Final Policy does not affect funding for such projects.

The use of federal AIP funds for noise projects must have Part 150 approval; that is, remedial projects for existing incompatible development and preventive projects for potential new incompatible development when Part 150 approval is a prerequisite for the use of AIP funds. This funding is the consequence of the new Final Policy, which will not permit the approval of remedial mitigation measures for new incompatible development in a Part 150 program.

The Policy will not affect AIP funding for those few types of noise projects, such as the sound insulation of schools and health care facilities, that are eligible for AIP funds without an approved Part 150 program. Additionally, after review and consideration of comments noting that Part 150 approval is not a requirement for using PFC funds, FAA has determined that this policy does not affect the use of PFC funds for noise projects. It would only affect PFC funding to the extent that an airport owner chooses to rely solely on an approved Part 150 program to obtain approval to use PFC funds. That is the airport owner's choice.

The use of the Part 150 program and AIP funds dependent on Part 150 program approval to remedy new incompatible development within the noise contours of an airport after the effective date (October 1, 1998) is precluded. By precluding this option while simultaneously emphasizing the array of preventive noise mitigation measures that may be applied to potential new incompatible development, it is the intent of the FAA to focus airport owners and local governments more clearly on maximizing federal programs to prevent incompatible development around airports, rather than attempting to mitigate noise impacts to such development after the fact.

AIP funding may be available to assist airport owners in addressing prospective new incompatible development that is not being successfully controlled by local jurisdictions, so long as the airport's methods are designed to prevent the incompatible development rather than to mitigate it after development has occurred. This should result in a more cost-effective use of available funds because remedial noise mitigation measures generally cost more for a given unit than preventive measures.

E. Local Land Use Planning

Major metropolitan airports and general aviation airports are of significant importance in any region. The airport usually is a major land user, a significant traffic generator, a major economic center, and a significant employment center. However, it is also usually considered a “NIMBY” (“Not In My Backyard”) type of use. Most citizens want an airport reasonably close for convenience and for the economic benefits it offers, but they don't want it next door (or in “my backyard”). Despite all of its regional benefits, an airport is usually perceived as a noise-creator, a traffic-generator, a potential air traffic hazard, or an air quality concern.

Airports have positive impacts on a community particularly in terms of economic benefits. However, they also can be perceived as having negative impacts on communities. There is great concern on behalf of local governments and their communities on how and where airports are located, plans for expansion of them and how they can be integrated into the larger community with little or no impacts. It is extremely important, as air travel becomes constantly more popular as a preferred alternative for transporting people, goods, and materials, that airport planners and local land use planners work together toward cooperative land use planning efforts.

For many years, and even today, most land use plans (comprehensive plans) prepared by local governments have only minimally recognized the implications of planning for airports and off-site airport related development. In fact, local land use planning as a method of determining appropriate and inappropriate use of properties in and around airports should be an integral and important part of the whole package of land use policy and regulatory tools used by both airport and

local land use planners. Preparation and adoption of local land use plans should serve as the beginning point, setting policy for the following activation of local land use regulatory tools, such as zoning, subdivision regulations, building codes, and aviation easements. This guide includes a few examples of planning studies and negotiations that have recognized this importance and have attempted to foresee how such planning should be integrated – but these examples are unfortunately few in number.

This section of the guide offers some recommendations regarding how local land use planning and land regulatory tools can be used effectively in an attempt to mitigate some of the obvious contentions which are inherent in connection with airport master planning and local land use planning.

An important fact to recognize, as attempts are made to coordinate local land use planning and airport master planning, is that very often such coordination is significantly hampered by the fact that such airport facilities are very often surrounded by, and/or have affect on, numerous individual local government jurisdictions. Each of these jurisdictions normally has final authority to adopt and enforce its own local land regulatory tools. Thus, coordination not only becomes a concern between airport planners and local land use planners, but as well between local land use planners and local elected officials from a variety of jurisdictions.

Land Use Patterns around General Aviation Airports

Although, as noted, most of the foregoing is applicable to both major commercial service airports and general aviation (GA) airports, some additional comments about land use patterns that are specific to GA airports are important to include herein.

Economic Contribution

GA airports provide an indispensable link to regional, state, and national transportation systems. This transportation link contributes to local and regional economies that in turn promote and sustain the GA airports. In 1993, the annual economic activity from GA airports contributed an estimated \$18.5 million to the

national economy (“The Economic Impact of Civil Aviation on the U.S. Economy Update ’93,” prepared for the FAA and Lockheed Martin, by Wilbur Smith Associates, April 1995). In addition to the economic benefits contributed by GA airports, other vital GA activities include emergency medical flights, police and fire support, search and rescue operations, traffic reporting, and agricultural and environmental management operations.

Changing Role in the Economy

During the nation’s airport construction boom of the 1950s and 1960s, most GA airports were constructed with runway lengths of 3,000 to 4,000 feet. The airports were located away from communities, and were generally surrounded by agricultural or industrial land uses. The primary users of the new GA airports, during this period, were recreational flyers.

There were few corporate users at the time. Within the past two decades, however, the role of the GA airport has changed. As evidenced by the increased use of corporate aircraft, GA airports have been transformed from serving weekend flyers to serving as an economic generator for local, regional, and state economies.

GA airports provide a needed service to corporations as they move people and goods through the country and within regions. Realizing the increased time and costs associated with many metropolitan airports, corporate flight operations are using GA airports located in suburban and rural areas. To accommodate the increased frequency by corporate aircraft, the GA airport sponsor is often faced with a need to extend the runway length, or enlarge the ramp and tie-down areas. Moreover, increased frequency of aircraft flights often increases the associated noise impacts to airport neighbors. This expanded role for the GA airport has created land use conflicts within many of our nation's communities.

Incompatible Land Uses

Incompatible land uses around GA airports jeopardize the safety and efficiency of flying activities, and the quality of life of the community's residents.

Incompatible airport land uses include residential development, schools,

community centers and libraries, hospitals, and buildings used for religious services and tall structures, smoke and electrical signal generators landfills and other bird/wildlife attractants.

New housing demands generated by increased population are one of the contributing factors to incompatible land uses around both commercial service and general aviation airports. Communities are often confronted with the need and desire to expand their tax base by increasing residential and business development.

Residential development, particularly high-density development, is not compatible with airport operations due to aircraft noise impacts and for safety reasons. In some cases, the airport sponsor has not purchased or protected sufficient lands around the airport to prohibit the encroachment of incompatible land uses. Conversely, incompatibility may occur because an airport project has expanded in proximity of an existing residential neighborhood. The 3,500-foot runway, constructed in 1960, is now too short to accommodate larger, corporate aircraft: aircraft that are essential to the operation of nearby businesses.

For the community airport to meet the current and future needs of the general aviation airport and thereby continue contributing to the local and regional economies, it is the airport sponsor's responsibility to acquire sufficient land for airport expansion.

The siting of tall towers and other height hazards around an airport also creates an incompatible land use, as discussed in Section III. Towers in the airport airspace can endanger the safety of flight activity, the flying public, and people and property on the ground. The current proliferation of tall telecommunications towers will likely be followed by the rush of telecommunications companies to site digital towers. Siting towers in industrial parks, which are normally compatible uses with airports, tends to complicate the land use compatibility issue.

Sponsor Commitment

The airport sponsor is responsible to the extent reasonable for ensuring that land uses around the airport are compatible with existing and future airport operations. When the airport sponsor is a city and or county government, the government also is responsible for promoting the general welfare of its citizens, which includes the

health and safety of all residents. There are approximately 7,650 publicly owned GA airports in the country, which means there are probably as many local communities and airport owners confronted with the need to balance development pressures while maintaining a safe airport environment. An airport sponsor should initiate coordination efforts with surrounding communities to ensure that existing and future airport development is compatible with the land use plan for the area.

Land Use Controls at General Aviation Airports

Some land use control tools work better at large airports, whereas other tools may be better suited for use at smaller or medium-sized airports. In most instances, the tools described in this section have been successfully implemented at both air carrier and GA airports. A land use compatibility tool that often does not work well at small GA airports, however, is an airport noise compatibility plan generated with noise exposure contours.

FAA Order 5050.4A, Airport Environmental handbook, states in part that “no noise analysis is needed . . . at airports whose forecast operations . . . do not exceed 90,000 annual propeller operations or 700 annual jet operations.” Aircraft noise analyses generally have shown that airports with 700 annual jet operations or 90,000 annual propeller operations do not produce noise exposure contours at significant levels.

For an airport to generate 700 annual jet operations, a jet airplane would land and depart nearly every day during a one-year period. For an airport to generate 90,000 annual propeller operations, a propeller aircraft would land and depart nearly 125 times a day, every day for one year. Although many large GA airports generate this level of activity, most small and medium-sized GA airports do not. Therefore, many GA airport owners are faced with the challenge of ensuring land use compatibility without the benefit of using aircraft noise exposure contours to establish compatibility.

In the absence of aircraft noise exposure contours, airport owners can define Airport Impact Zones and identify appropriate land use zoning for each impact zone. Currently, the California Department of Transportation, Division of Aeronautics and the Washington State Department of Transportation, Aviation

Division provide technical assistance to the GA airports in their respective states to implement Airport Impact Zones as a land use compatibility tool. The specific areas, both on and off airport property, that are included in the impact zones are based on aircraft incident investigation data provided by the National Transportation Safety Board (NTSB).

Exhibit V-6, Airport Impact Zones, defines the dimensions and locations of each zone. Airport Impact Zones would be added or modified based on individual airport conditions and future development projections. Typical Airport Impact Zones include:

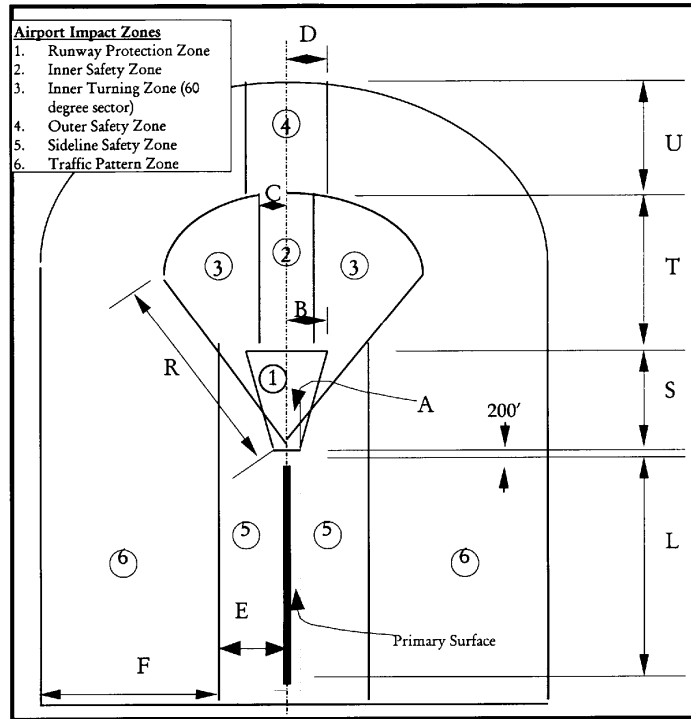
- Airport Impact Zone 1 – Runway Protection Zone
- Airport Impact Zone 2 – Inner Safety Zone
- Airport Impact Zone 3 – Inner Turning Zone (60-degree sector)
- Airport Impact Zone 4 – Outer Safety Zone
- Airport Impact Zone 5 – Sideline Safety Zone
- Airport Impact Zone 6 – Traffic Pattern Zone

The local land use planner, the airport representative, and in some cases, an aviation consulting firm or state aviation personnel, should work together to identify the Airport Impact Zones and establish the appropriate zoning. In locations where the Airport Impact Zones are within multiple jurisdictions, representatives from each jurisdiction would be involved in the planning and implementation process. Appropriate land use zoning would be established to ensure compatibility of land uses and development densities around the airport. Zoning also would control the construction of tall structures in the airport's airspace, electronic interference with the airport's navigation aids, and wildlife attractants around the airport.

Recommended land uses and densities of land development are different depending on the particular Airport Impact Zone. For example, the recommended land use in Zones 1, 2 and 5 would prohibit residential development and allow low-density (less than five people per acre) industrial development. Recommended land uses in Zones 3 and 4 would range from zero to low-density residential development and industrial development ranging from 25 to 40 people per acre. Recommended land uses in Airport Impact Zone 6 would allow low-

density residential development and industrial development accommodating fewer than 100 people per acre.

Airport Impact Zones



Airport Impact Zone Dimension (in Feet)

Dimension	Runway Length Category (L)		
	Runway less than 4,000	Runway 4,000 to 5,999	Runway 6,000 or more
A	125	250	500
B	225	505	875
C	225	500	500
D	225	500	500
E	500	1,000	1,000
F	4,000	5,000	5,000
R (60° Sector)	2,500	4,500	5,000
S	1,000	1,700	2,500
T	1,500	2,800	2,500
U	2,500	3,000	5,000

Data Source: NTSB accident investigations 1984-1991.
 Illustration Source: Hodges and Shutt, Institute of Transportation Studies,

V. Airport and Local Land Use Planning Processes

V. Airport and Local Land Use Planning Processes

Once zoning is adopted for Airport Impact Zones, proposals for development in the impact zones would be evaluated by the jurisdictional bodies responsible for land use around the airport.

VI. COORDINATION AND IMPLEMENTATION OF AIRPORT AND LOCAL LAND USE PLANNING

Application and enforcement of land regulatory tools is the final stage of the planning and implementation process, when specific regulations are written and enforced. Variations from such regulatory tools are often only resolved before local legislative bodies, local planning commissions, boards of adjustments, or the courts. All of these processes take time and cost money. Clearly, the early "planning" stages of both airport master planning and local land use planning are extremely critical for ensuring some level of land use compatibility before creation, adoption, and enforcement of such regulatory tools as are described in the following sections of this guide.

It is important to reiterate that the early planning stage must include adequate opportunity for public input. Whether mandated or not, public awareness and public opinion must be sought. People in the community need to be appraised of planning for airport construction/expansion and general land use planning for their communities so that they may make informed personal and total community-related decisions.

Local land use planners and airport master planners need to work together to facilitate such public awareness and opportunity for input. Coordinated public meetings are a sensible way to solicit public input, whenever possible. Timing of seeking public input might be complicated, because it is likely that any local land use planning updates will not automatically coincide with FAR Part 150 hearings, for example. Scheduled meetings over annual periods, between representatives of the airport and local land use planners, should allow cooperation by possibly

using public meetings being held by airport planners or by local land use planners to solicit input from each other, as well as from the general public.

One of the most significant problems that might be encountered is a major decision on the part of airport planners to make critical changes in the short-term part of the 20-year master plan due to some unforeseen change in airport or local community activity or directions. For example, a decision to plan for construction of new runways in different directions than anticipated by the airport's 20-year master plan could have a significant effect on the long- and short-term plans adopted by the local community(ies) which did not anticipate such changes and may run contrary to the local land use plan's recommendations regarding compatible versus incompatible land uses. Or, the local government may be faced with proposals for what they consider very desirable new land development not anticipated by the comprehensive plan. They may be concerned politically and otherwise about the significant value such development may bring to the region but which might not be in conformity with coordinated airport planning. What does either party do when such issues arise?

A practical and useful approach for achieving airport land use compatibility and avoiding conflicts is to form an Airport Advisory Committee (ACC). The ACC should include representatives from the airport/aviation interests and citizen groups. The ACC should meet periodically to review proposed airport development projects and local compatible land use plans.

VII. COMPATIBLE LAND USE TOOLS AND THEIR POTENTIAL APPLICATIONS

The following are brief descriptions of some local land use planning and regulatory tools available for use by most local governments. Potentials for their application in conjunction with airport master planning to affect compatibility are also offered.

A. Comprehensive Plans

Whether required, or simply permitted by state statutes, the preparation and adoption of a comprehensive plan is a critical and effective part of the process of ensuring land use compatibility in and around airports and should be the first step in developing policies/bases for follow-up land regulatory tools.¹² The plan can provide policy-makers, airport owners, land use regulators, developers, and the general citizenry with an understanding of the magnitude of the land use conflict problems and relevant solutions. In some instances, where development has not yet substantially occurred around an airport, the potential exists for the comprehensive land use plan to provide direction to new development. In areas where development has already been allowed to occur close to airport property, or where airport expansions have resulted in originally unforeseen potential conflicts with adjacent and surrounding properties, the plan can provide recommendations for how to mitigate such conflicts.

¹²

Some state statutes mandate that comprehensive plans be prepared by all local governments. Some state statutes require that comprehensive plans be prepared only if the local government wants to adopt and enforce land regulatory tools. Other state laws contain no specific planning-related requirements and each individual local government applies home-rule policies. The result of the two latter processes can be sporadic land use planning and land regulatory measures. At the same time this local land use planning process is taking place, airport planners need to be sharing information about future airport master planning recommendations. Earlier sections of this guide note that the normal planning horizon for airport master plans is 20- years. Locally prepared comprehensive plans normally also have a twenty year horizon. Comparing what airport planners view as future capacities, direction of runways (resulting noise implications) and other on-site facility needs can help significantly as local land use planners are considering adjacent and surrounding future land use patterns.

VII. Compatible Land Use Tools and Their Potential Applications

The land use planning element of the comprehensive plan is a very important step in recognizing and analyzing some of the issues of concern in and around airports.

Through establishment of an "existing" land use map, specific properties around the airport can be inventoried, analyzed, and classified. An existing land use map should be created (see Existing Land Use Map Sample, **Exhibit VII-1**), to depict how on-site and off-site properties are currently being used. Depending on the extent of the inventory, some measure of building/property condition may also be inventoried and classified (at some later stage in the planning/mitigation process, a review of the assessor's or property valuation administrator's records may also be obtained to discern current assessed values of all properties involved).

Existing noise exposure contours can then be overlaid onto the existing land use map and other related informational mapping, to discern the degree of noise exposure of properties in and around an airport (see, Existing Land Use Map with Existing Noise Contours Sample, **Exhibit VII-2**). Availability of a mature GIS (Geographic Information System) which contains all planimetric and topographic (hypsography) information, property (cadesteral) information, vegetation cover, and location of all telecommunication/other towers, will allow review and analysis of these many disparate pieces of important information which will be important as land use compatibility alternatives are studied. Otherwise such information will have to be collected and analyzed by hand, a much more time-consuming, but doable process.

VII. Compatible Land Use Tools and Their Potential Applications

VII. Compatible Land Use Tools and Their Potential Applications

Insert **Exhibit VII-2:** Existing Land Use Map with
Existing Noise Contours Sample

VII. Compatible Land Use Tools and Their Potential Applications

A variety of methods is used in performing the local comprehensive planning process – with most recent approaches including a significant public input element. Importantly, the issues of airport and local land use compatibility planning need to be the subject of public awareness efforts in order to receive meaningful public input. Initial and continuing dialogue between airport planners, local land use planning officials, and the public is extremely important.

The comprehensive planning process can then provide short- and long-range policy recommendations regarding how the land areas in and around an airport should be developed, redeveloped, or maintained (i.e., preserved) in the future. Land use policy resulting from this effort should serve as the basis for development of future land use plan goals and objectives, which suggest and support implementation strategies to execute the land use plan, thus realizing the policy goals adopted by the community.

A Future Land Use Plan map should be developed to graphically represent the recommendations of the land use element of the comprehensive plan.¹³ Current and projected noise exposure mapping should be used as the land use plan is being developed (see Land Use Overlay Zones Map, **V-8**) to assist in making decisions about what types of land use should or should not be considered in various areas, or where the trend of most recent development should be redirected or should continue to be encouraged. It is critical to note that the land use plan (and the land use plan maps) should not stand alone; they must be supported by narrative and whatever graphic representations are needed to explain the supporting rationale for recommendations of the plan. The comprehensive plan will normally also contain recommendations regarding various infrastructure issues, other community facilities, housing, and various environmental issues, some of which may have little effect on airport and off-airport concerns but are an integral part of the comprehensive plans for the entire community and region.

Because large commercial airports almost always are facilities of regional concern, their impacts will likely involve a multitude of local governments and special districts, inherently making the issues of land regulation control more difficult to coordinate. A high level of coordination is necessary so when local

¹³ Some local governments prepare and adopt "Policy Plans" which often do not contain a Future land Use Plan "Map" instead identifying recommendations as a series of policies. However, in order to reach the point of developing such policies many of the same steps described herein (including preparation of existing and future land use mapping, with noise overlays, etc.) are constructed as part of the planning process.

land regulatory tools are being put in place, the rationale of the need for such measures will already have been established.

With completion of this process, ensuring that public input has been recorded and thoroughly considered, the local government(s) involved can now begin the process of preparing and adopting various land regulatory measures which are intended to realize the recommendations of the comprehensive plan. In the meantime, airport master planning will automatically be affected by federal regulations. Certain types of studies, discussed in greater detail in previous sections of this guide, will be required and also will require additional public input and coordination with local land use planning efforts. For example, the FAA has published guidelines for land use compatibility in FAR Part 150 which identify what land uses are normally considered compatible (for example, agricultural, commercial, and industrial uses) and those that are normally considered incompatible (such as residential areas, schools, and churches).

B. Zoning Regulations

There are many airport areas within jurisdictions in the United States where zoning, as a land use regulatory control tool, is currently being exercised. The use of zoning to control development in and around airport facilities has realized varied degrees of success. However, if put in place early enough - prior to the setting of the development pattern, and certainly before substantial subdivision of properties – zoning can be an effective tool to help eliminate or reduce incompatible development and land uses around airports.

Traditional zoning techniques will not suffice in all cases to control land use around airports. What may be needed is a combination of procedures (such as zoning overlay requirements or performance requirements). A determination needs to be made as to what specifically should be included in particular sections of the zoning ordinance. Some regulations to consider in the zoning ordinance include controls governing permitted uses, conditional uses, height, bulk, and intensity of developments around an airport. Special exceptions and/or performance standards should be addressed. Taking into account specific state statute limits, some procedures to follow when developing a zoning ordinance for regulation of airport property and off-airport properties are as follows.

Zoning Ordinance Development Considerations

The following steps should be taken when considering development of zoning ordinances. This process may be modified depending on whether a new airport is proposed or expansion of an existing airport is being proposed:

- Review all existing regulatory (i.e., land use and zoning) devices in the jurisdiction(s), if any; construct an existing zoning map if one is not available; ensure that the existing zoning ordinance has been properly adopted and recorded.
- Review existing state enabling legislation and case law affecting planning review and approval actions necessary by state agencies. Then consider zoning with emphasis on the affected community(ies).
- Determine if further analysis can be accomplished in-house, or if a consultant(s) may be required (particularly as it applies to existing/new development around the airport).
- Research and study the contemporary approach to land use and/or zoning control currently being employed in similar jurisdictions around the country.
- Consider a variety of land use controls, such as, but not limited to:
 - Airport Noise Overlay Zones
 - Variance Procedures
 - Special Exceptions
 - Performance Standards
- Ensure that airport-related zoning and all other implementation devices (for example, subdivision regulations) are in agreement with the adopted comprehensive plan.
- Allow for adequate review of all airport zoning and development ordinances by legal counsel, appropriate internal agencies and authorities, any affected special districts, and all affected local government entities.

- Develop and implement a citizens' public participation program, replete with appropriate processes and relevant information. This effort should be designed to elicit meaningful responses from the general public regarding the status of land use planning around the airport.
- Refine specific zoning and land use compatibility strategies to ensure that they are as uniquely oriented to the airport development circumstances of the particular jurisdictions.
- Consult with legal counsel to ensure that required due process is followed as the local planning bodies and legislative authorities review and adopt local zoning ordinances.

Traditional Techniques

Typically, traditional zoning ordinances regulate the type of uses which are permitted or conditionally permitted in each zoning district within the community. The height and bulk of buildings and other structures; various area regulations (such as the size of lots and front, side, and rear yard setbacks); and off-street parking and loading requirements are included in these regulations.

A most important concern as the zoning ordinance and official zoning map are being prepared, is that such decisions should be consistent with the adopted comprehensive plan. Decisions should consider that the long-range land use plan is usually based on a 15 to 20-year forecast. The zoning ordinance regulates land development today with an outlook and objective of realizing long-range plan goals. This consideration is most important in the case of land around an airport where land used by airport facilities and the length and direction of runways today may not be the same in the future. Thus, it is important that long-range airport master planning be coordinated with long-range local comprehensive land use planning. Finally, zoning should be used as a tool to connect both regulatory tools.

Airport Noise Overlay Zones

VII. Compatible Land Use Tools and Their Potential Applications

Airport Noise Overlay Zones (ANOV) or districts, are important considerations for regulating land use around airports throughout the United States. The ANOV is a district made part of the local zoning ordinance. The objective of adopting airport overlay zoning is to promote compatible land uses within zones and to provide noise-attenuating distances around airports. The overlay zones are maintained by establishment of noise contours within which there are restrictions on permitted land uses and limits on building (structure) heights. These limits vary with distance from, and orientation with respect to, the airport. It protects the public health, safety, and welfare from the adverse impacts associated with excessive noise. It acknowledges the unique land use impacts of airports, regulates the siting of noise-sensitive uses, ensures that the heights of structures are compatible with airport operations, and complies with FAA regulations regarding noise and height.

Overlay zoning involves creation of special zoning regulations as a means of addressing specific area conditions or needs not generally covered under other sections of the zoning ordinance. For example, airport noise overlay zones can prohibit noise-sensitive land uses near the airport or require dedication of aviation easements and/or non-suit covenants. Such regulations are supplemental to the requirements of the general zoning district. All development and building permits for properties located within an overlay district, would also have to meet all of the requirements of the specific zoning district in which they are located.

Airport Noise Overlay Zoning is an effective way to promote land use compatibility. The boundaries of an airport noise overlay zone (see **Exhibit VII-3**, Sample Proposed Airport Overlay Zoning) are generally based on noise exposure contours. It is advisable to use post-1995, Future Noise Exposure Maps that are periodically updated and amended.

Adoption of zoning regulations must be undertaken to effectuate the airport noise overlay district. A typical outline for these type regulations is as follows:

Division 151: Airport Compatible Use Overlay District

Sec. 7-401 Scope of Regulation

Sec. 7-402 Applicability

Sec. 7-403 Statement of Purpose and Intent

Sec. 7-404 District Boundaries (Basis)

VII. Compatible Land Use Tools and Their Potential Applications

Sec. 7-404 Establishment of Districts (Zones)

A. Runway Protection Zone

B. Airport Noise Zones

1. Restrictions within Noise Zones

2. Safety and Performance Standards

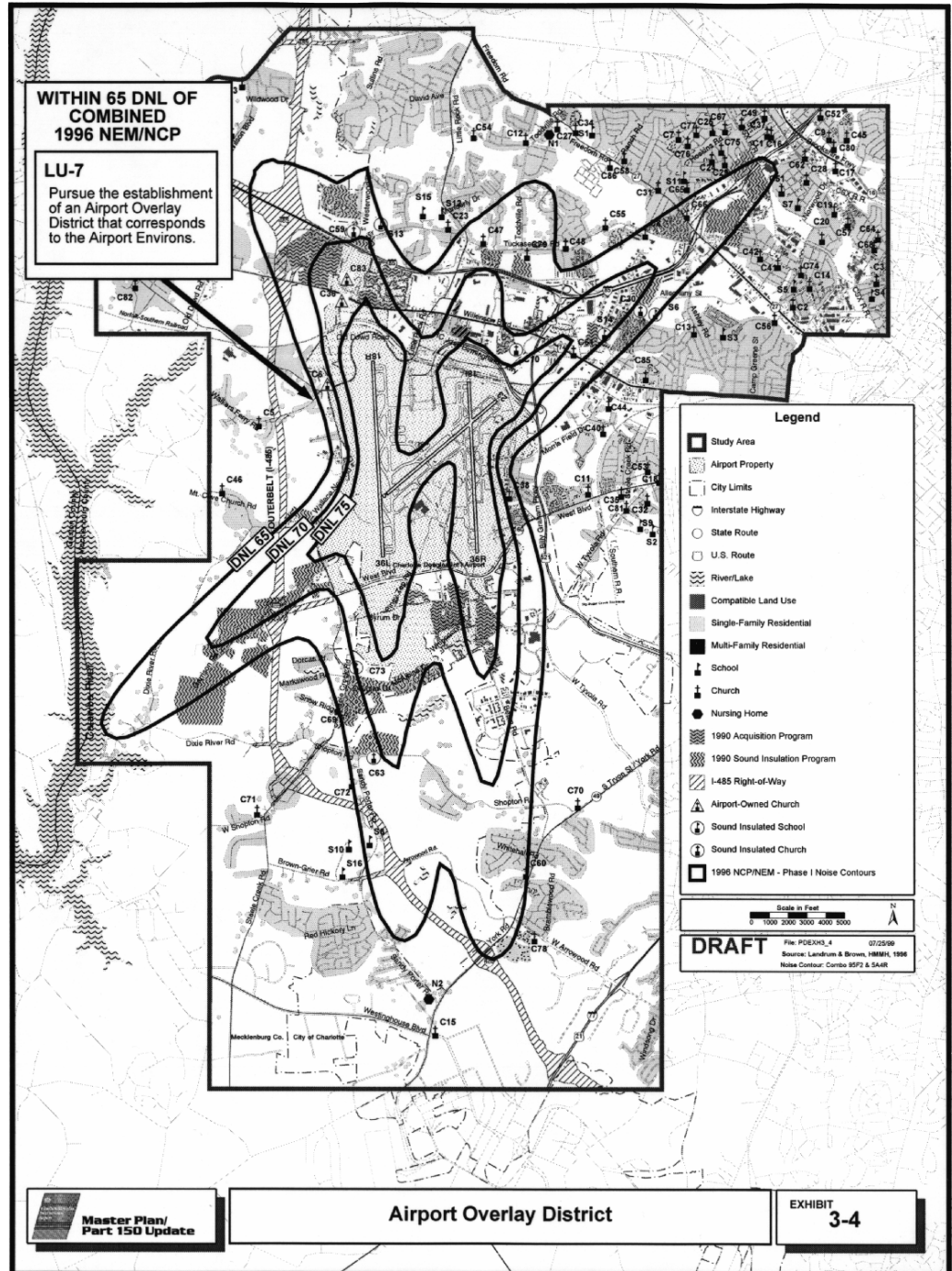
(1) Maximum Number of Persons (per use)

(2) Concentration of Persons per Acre
Standard

(3) Noise Zone Land Use Compatibility

C. Airport Zone Height Limitations

VII. Compatible Land Use Tools and Their Potential Applications



Sec. 7-406 Administration

Sec. 7-407 Permitted Uses

Sec. 7-408 Special Permit Uses

Sec. 7-409 Special Exception Uses

Sec. 7-410 Use Restrictions

Sec. 7-411 Interior Noise Level Standards

Sec. 7-412 Lot Size Requirements

Sec. 7-413 Bulk Regulations

Sec. 7-412 Open Space

Sec. 7-413 Hazard Marking and Lighting

Sec. 7-414 Dimensions of Imaginary Surfaces (Subpart C of the
Fed. Reg. (14 CFR))

Sec. 7-415 Additional Regulations

Variance Procedures

Variations are actions taken on the part of a local jurisdiction to allow for a development proposal, because of practical difficulties, to vary from the strict application or adherence to a provision of the zoning ordinance.

For example, height restrictions on any structure within a defined area around the airport would limit the proposed height of structures to a certain number of feet. Due to extenuating circumstances, a variance may be granted because a "hardship" is claimed by the developer who then may be allowed to exceed the height limitations. Importantly, there should be few, if any, variances justified and approved in the airport noise impact area. Local regulatory jurisdictions should make certain that, by closely reviewing each request for a variance, it is determined that such a deviation to the ordinance is indeed warranted.

A petitioner for a variance must be made to "bear the burden" of showing that a hardship will be suffered, if the strict application of the ordinance to the property is required. Usually, the mere demonstration of a hardship is not enough, and the application must affirmatively show that the public interest will not be endangered by approving a variance.¹⁴ It should be understood that FAA height

¹⁴ Source: National Association of Home Builders, Land Development, Washington, D.C., 1987, 1990

regulations for structures near airports would supersede local variance requirements.

Special Exceptions/Conditional Uses

It is important to understand that state laws involving planning and zoning vary. For example, some states have discarded the term "Special Exception" in favor of the term "Conditional Use," while some states use both with specific varying definitions. For purposes of this description special exceptions/conditional uses are uses which could be allowed in the airport area. These uses are not necessarily similar to all other uses permitted by right in the zoning district, but may be located within the area, under certain conditions.

Such special exception/conditional use requests are normally reviewed and approved/disapproved by the local Board of Adjustments (some state statutes/zoning ordinances refer to this body as the Board of Appeals - it is important to ensure an accurate understanding of state statutes). Some zoning ordinances contain a list of permitted special exceptions/conditional uses and/or some criteria for the Board of Adjustments/Appeals to use as they consider the special exception/conditional use application.

If a community, located near an airport, allows some land use control through the use of special exceptions/conditional uses, that community should make certain that such uses do not create a hazard for the community, the airport, or the user of the subject property.

The board will normally decide each issue on the merits of the application. However, it should be made clear that any such application for a special exception/conditional use should have a specific designation which triggers extraordinary review to allow disapproval of unacceptable uses because of the location of the property in question being near an airport. In addition, for the same reason, appropriate references should be made to other pertinent sections of the zoning ordinance and other applicable regulations that highlight the need to be aware of the special attention to be paid to such requests.

Performance Standards

VII. Compatible Land Use Tools and Their Potential Applications

Some local governments have adopted zoning ordinances based upon a set of performance standards or a combination of traditional zoning techniques and performance standards combined. Instead of the traditional method of listing permitted uses in each zoning district, the performance standards technique incorporates standards defining the amount of noise, vibration, smoke, odor, glare, etc., any given use in the district may emit. The effect of setting such standards is that enforcement of the ordinance reasonably ensures the community will be developed in the fashion desired based upon these criteria, and it is left to the developer of the property to show how the standards will be met.

If a community, located in the vicinity of an airport, has adopted performance standards, cooperative efforts with airport planners could result in such standards being used as a measure of determining the noise level in a given air corridor, for example. FAA policies, discussed elsewhere in this guide, address noise mitigation measures in conjunction with "existing" and "potential new" incompatible development. Early and continuous cooperation between local land use planners and airport planners may make it possible to use performance noise standards, set in the local zoning ordinance, to be developed with a better understanding of the noise standards which must be met by airport planners for compliance with federal regulations.

With knowledge of the limits on noise exposure around the airport, the local government may be able to eliminate or reduce incompatible land development in critical areas around the airport. This elimination or reduction can occur as a result of applying such performance standards in any given zoning district or in areas designated by overlay zoning techniques. In other words, the local land use planner could be able to determine permissible noise levels within any given air corridor, according to the airport master plan and compliance with applicable federal regulations, and ensure that incompatible land uses would not be permitted in these areas.

Related Subdivision Regulation References

Communities that adopt zoning ordinances will usually also adopt subdivision regulations (discussed in the next section). It is important to ensure that appropriate cross-references are made so the regulations of the zoning ordinance are considered and any applicable, related requirements of the subdivision regulations are simultaneously considered, thus eliminating or reducing the potential of inadvertent errors in regulatory decisions. Some communities across the nation have adopted some form of "Development Regulations" which attempt to combine and coordinate all regulatory measures into one document – unfortunately such combined regulations are the exception rather than the rule.

C. Subdivision Regulations

Depending on differing state enabling legislation, subdivision regulations may be prepared, adopted, and enforced through actions of the local legislative body and/or the local planning commission. In Kentucky, for example, all such authority is vested in the local planning commission.

Subdivision regulation (i.e., the division of a lot, tract, or parcel of land into two or more lots, tracts, parcels or other divisions of land for sale or development) works in a similar "regulatory environment" as that of the zoning ordinance when applied around airports.¹⁵ Subdivision plat review procedures provide an opportunity for jurisdictions to determine how a proposed subdivision design could contribute to the incompatibility of noise exposure to residential areas around airports. By making certain that appropriate performance standards (such as controlling the siting of homes relative to noise contour overlays or requiring buffers and open spaces) are provided and recorded on final subdivision plats, proper distances from higher decibel noise exposure levels can be maintained. This is especially important when these performance standards are also made conditions of zoning. In addition, traffic issues around an airport can be reviewed as subdivisions are platted to further protect the health, safety, and welfare of the community. It should be understood that "urban" (and rural) areas grow and expand primarily through the development of new subdivisions and the locating of new structures therein. Thus the subdividing of vacant land, or the re-subdividing of existing tracts, has major influence upon the future area. It establishes street patterns which should exist for many years, and also influences

the type and character of development that will occupy the land. Regulations controlling new subdivisions have been an integral part of comprehensive planning for many years.¹⁵

Subdivision Regulation Development Considerations

The following steps should be taken when considering development of subdivision regulations:

- Review all existing adopted subdivision regulations already in place in all affected communities; identify major variations in requirements, particularly as they apply to residential development.
- Review existing state enabling legislation and case law affecting subdivision regulations with emphasis on application to all affected communities and any review/approval actions necessary by state agencies (such as, water supply, waste water disposal).
- Determine if further and necessary analysis can be accomplished in-house or if a consultant(s) may be required (particularly as it applies to subdivision development around airports).
- Research and study the contemporary approaches to subdivision regulation currently being employed in similar jurisdictions around the country.
- Consult with legal counsel to ensure that required due process is followed as the local planning commission and/or legislative bodies review and adopt subdivision regulations.

Traditional Techniques

¹⁵ "The Subdivision and Site Plan Handbook" Listokin, Walker Center for Urban Policy Research, Rutgers, The State University of New Jersey, 1993.

¹⁶ William H. Claire, AIP, *Fasce, Handbook On Urban Planning*, Van Nostrand Reinhold, Col., 1973, pp. 282 and 283

VII. Compatible Land Use Tools and Their Potential Applications

Subdivision regulations normally contain sections describing procedural requirements, technical requirements for the construction of various items of necessary infrastructure (including streets, water supply facilities, and sanitary and storm-sewerage systems), and sections describing administration and enforcement provisions.

The procedural sections identify the process for submission and action on preliminary and final plats and the recording of final plats. Specific steps of submission are identified and usually include such items as:

- 1) Preapplication Conference;
- 2) Preliminary Plat Submission;
- 3) Grading and/or Erosion and Sedimentation Control Plans;
- 4) Improvement Drawings and Specifications;
- 5) Final Plat Submission; and
- 6) Recording.

The sections addressing technical requirements are inclusive of specific descriptions of what is to be included in preliminary and final plat drawings and attachments; design standards for subdivision layout (such as streets, intersections, easements, lots, blocks, flood protection, and pedestrian ways); and infrastructure improvements (such as stormwater drainage systems, sanitary sewerage systems, water supply facilities, driveways, street lighting, and street signs). This section often will attach standard specifications and construction details for streets, drainage structures, sewage systems, etc.

The sections addressing administration and enforcement will describe costs (fee schedules), how the regulations will be enforced (and by whom), penalties for violations of the regulations, appeals process from the enforcement agent, and appeals from the decision of the adopting body (legislative body/planning commission).

Related Zoning References

Similar comments offered under the heading "Related Subdivision Regulation References," under the discussion of zoning, are applicable under this heading. It is crucial to ensure an understanding of the requirements of local zoning ordinances as the planning commission is reviewing and acting on proposed new subdivision development. Appropriate cross-references should be included to ensure approvals are not granted due to full compliance with subdivision regulation requirements, if some zoning restrictions might be violated which will result in legal problems later as zoning and building permits are sought.

Recording of Restrictive Covenants - Deeds (Avigation Easements)

Officials of airport area communities should know how "restrictive covenants" could be used to provide for the control of land uses in high noise impact areas. Typically, restrictive covenants are "agreements" between private parties (for example, homeowners and homeowners' associations or home buyer and seller) and therefore are enforceable only by the parties involved and remedied in a court of law. Such covenants are "required" to be recorded with deeds and, in some cases, attached to or written on subdivision plats or other development plans that may be required to be recorded through local government ordinances and state courts. The basic disclosure of airport noise situations is handled in some jurisdictions across the country through ordinances that require the seller of a parcel of land to reveal to a purchaser that they are in a "high noise impact zone." Real estate agents should be instructed on these zones and the ordinance requirements.

Often, residents who move into an area may not be aware of an airport's presence or the implications of airport noise. One method of informing the public of an airport's proximity and disclosing the potential for aircraft noise, is to record an "Airport Disclosure Agreement" as well as applicable covenants on subdivision plats and site development plans. The airport disclosure agreement and covenants would require that the owner inform the prospective buyer of the airport's location and noise potential. As a covenant, the subdivision plat would be enforced by private parties just as a contract.

VII. Compatible Land Use Tools and Their Potential Applications

The location of the airport and other relevant land use controls in the airport area would be described in the disclosure agreement and covenants. The covenant also could describe the responsibilities of the airport owner to maintain and enforce a safe environment for airport operations and the public. The airport disclosure agreement would also identify the FAA imaginary surfaces associated with the airport (as well as such controls as aviation easements or noise overlay zones).

A commonly applied deed-restrictive requirement around airports is an "aviation easement" whereby the airport owner/government acquires, through a one-time payment, the right to conduct noise over a property(ies). An easement is a right held by one person to make use of the land of another for a limited purpose. Two general types of easements are possible: easements to allow an entity to cause noise exposure over the land and negative easements to prevent the creation or continuation of unprotected noise-sensitive uses on the property. This easement (covenant) runs with the land and all future owners learn of the easement when they buy the property. The easement is determined by documented noise exposure contours.

Additionally, ownership of such an easement serves as notification that the property is subject to potentially significant aircraft noise. Acquisition of easements does not reduce the noise impacts to people or by and of itself change incompatible land uses to compatible uses. However, the purchase price can and should be dedicated to the sound-proofing and/or use change necessary to achieve compatibility. By way of the easement, the construction and growth of objects that might otherwise penetrate FAA-defined airspace can be controlled.

Easements may be obtained in a number of ways, including purchase, condemnation, and dedication. For each easement acquired, consideration may be given to including a legal description of the noise that may be created over the property, describing classes of uses which may be established or maintained with and without soundproofing, and where applicable, granting an aviation easement. Aviation easements can be purchased when land cannot be acquired. An aviation easement permits the right of flight in the airspace above the subject property. The airport sponsor, through the easement, can obtain the right of flight and related noise from aircraft. The easement covers the airspace between the ground and the elevation that coincides with the height of the approach or

departure surface. Easements can also be transferred by subdivision regulations. As a condition of subdivision approval, the owner of property in a high noise area, or at a location with existing airspace violations, could be required to dedicate to the airport sponsor a noise and aviation easement. The transference is similar to the arrangement for the dedication of street rights-of-way or utility easements.

Easements may also be obtained by condemnation, in a manner similar to full rights condemnation. The cost, while still likely to be less than that of outright acquisition (fee simple) of the land, is likely to be significantly higher than similar rights obtained via negotiation because of the time and court costs involved. Also, the cost of any bad feelings between the parties generated by a condemnation action, while difficult to measure, can be significant.

Construction that is proposed within the aviation easement, depending on the easement language, could also be evaluated by airport officials to determine the potential to penetrate the airport airspace. Communication towers, flag poles, silos, and commercial buildings are structures which would require evaluation before construction. Also controlled in an aviation easement may be natural objects, such as trees, which must be trimmed to a height that would not violate FAA defined airspace.

D. Building Codes

Building Codes are primarily concerned with the functional and structural aspects of buildings/structures. Some states have adopted a statewide uniform building code; others permit each local governing body to adopt their own building code.

Some building codes have special building code requirements for properties located in high noise exposure areas. Property owners are made aware of these requirements through occasional notifications and/or when they apply for building permits. During application for permit issuance, the applicable jurisdiction would identify location of the proposed structure and if the property is located in a noise-impacted area, necessary action would be required ranging from aviation easement consideration to building code sound-insulation or prohibition of construction.

E. Housing Codes

“Unlike building codes which control new structures or the enlargement or alteration of existing structures, the minimum housing standards apply to both new and existing living units.”¹⁷ Housing standards usually include minimum standards for size of sleeping rooms, size of windows, availability of a bathroom and toilets, hot and cold running water, satisfactory heat screens and other protection from insects and rodents, satisfactory disposal of storm water, adequate protection from rain and weather, removal of any unsanitary conditions, and general structural conditions of the unit.

Adoption and enforcement of minimum housing code standards is an important consideration of any jurisdiction in the vicinity of an airport. Such a code is concerned with the health, safety, and welfare of inhabitants who reside in single-, two-, or multi-family units. Code enforcement officials inspect these buildings for code violations and then write the owners, if necessary, to require compliance. It is during these inspections when assessments of airport noise impacts could be determined and proper solutions required.

Building codes, housing codes, and performance standards combined will often serve, in part, as the basis for determining noise impact to occupants.

F. Capital Improvements Programming

A Capital Improvements Program (CIP) is another basic planning tool used to assist in realizing the goals, objectives, and specific recommendations of the adopted comprehensive plan. Normally, such a program will be divided into long- and short-term segments. The long-term CIP lists and prioritizes all public facility improvements recommended in the comprehensive plan for the entire period covered by the plan. The short-term CIP (sometimes referred to as the short-term capital improvements budget) includes those capital improvements (land/facilities) which are programmed to be acquired or constructed within the first five or six years of the planning period covered by the comprehensive plan. This short-term program shows costs of land acquisition (where applicable), necessary capital outlay estimates, projected revenues, and expenditures of the

¹⁷ William H. Clare, *Handbook On Urban Planning*, Van Nostrand Reinhold, Co., New York, NY, 1973, p. 286.

local government(s) involved for the five or six-year period including sources of such revenues for identified capital outlay amounts. Normally, the first year of the short-term capital improvements budget automatically becomes part of the local government(s) operating budget(s). These actions then allow another year to be added to the five or six-year short-term CIP, basically allowing it to be a scheduled, ongoing, annual process.

Depending on the ownership of airport facilities and recommendations of the adopted comprehensive plan, the CIP may be a valuable tool to be used by both airport and local government officials. Combined with the recommendations of the adopted comprehensive plan and the planned extension of basic water and sewer facilities, this programming tool could be used in a cooperative manner to encourage/discourage new compatible/incompatible land development around airport facilities.

In addition, for those states which have adopted Official Map Regulations, this tool could be an even more powerful means of ensuring compatibility as discussed in the following section.

G. Official Map Regulations

Some state enabling laws permit adoption of an "Official Map Regulation" (not to be confused with an "Official Zoning Districts Map"). Adoption of such a regulation is usually predicated on the community having previously adopted a comprehensive plan and a capital improvements program. Common language in such statutes permits this official map to show such items as the location and extent of existing and proposed public streets, watercourses, parks, public schools, and other public facilities needs. Adoption of such a map by the local legislative body is normally permitted only after review and recommendation by the local

VII. Compatible Land Use Tools and Their Potential Applications

planning commission and after conducting a public hearing. The boundaries of only those public facilities (existing or proposed) which are identified as part of the short-term CIP and budget may be identified on the Official Map.

The intended purpose of allowing adoption of an Official Map is to provide authority to the local government to ensure that the value of property within the boundaries of any areas identified on this map will not escalate as a result of new development during the period of the short-term CIP budget. It permits the local government to purchase the land and develop the facility(ies) at the value of the property(ies) at the time of its placement on the Official Map with only normal property value increases. The basic intention of this process is to use taxpayers monies in the most efficient fashion when it is clear that the local government plans to purchase and develop land for some public purpose within the short term (usually identified as five or six years). Such laws will normally contain provisions that allow the local government to ensure fairness in addressing reasonable requests that involve granting building permits for unprofitable land during this five- or six-year period.

The potential for using a combination of the CIP and the Official Map Regulation as a means of identifying land for short-term purchase in areas determined to be airport expansion areas should be considered by the local government(s) involved and by the airport owner, particularly if the airport is publicly owned and operated.

Another potential application could be in a case where an airport's master plan identifies the need for future runways and/or the need for airport property expansions to include other airport-related development, and the long-range community plan, recognizing the airport plan, encourages land uses that are not compatible with the airport in areas expected to be impacted. The community's short-term CIP could include planned public expenditures which are intended to encourage such development in these non-impacted areas. The official map regulation could then be used to identify such planned public directional expenditures (infrastructure extensions) to achieve this objective. The result is that the community and the airport realize goals of both the short- and long-range plans and the taxpaying public benefit by planned expenditures at a lower sales cost than would otherwise be possible. Legal assistance is recommended if this process is considered to ensure that a "taking" is not implied.

H. Infrastructure Extensions

Provision or extension of basic infrastructure elements, such as water supply, waste disposal facilities, and roadways can serve as a major detriment, or conversely, a major generator affecting the extent and direction of growth and development. Obviously, a policy that encourages land to be used in a very low-density and agricultural/rural fashion, by not extending water facilities into such areas, will have the desired effect. On the contrary, extension of basic water service into previously under-served areas will quickly encourage more urban densities and follow-up of extension of sanitary and storm water facilities, and new subdivision and commercial development. Clearly, planned expansion of water and sewerage facilities should be performed in conjunction with long-range land use and transportation planning (the comprehensive plan).

In the case of areas surrounding airport facilities, for example, sound and coordinated land and infrastructure planning can serve as a means of setting development patterns which consider type and intensity of development in light of plans for airport expansions, flight pattern expectations, noise overlay zones, etc. For example, if such basic infrastructure elements are not extended into areas planned for primarily agricultural uses, these areas will not likely develop for any intensive purpose and not pose major problems to airport-related functions. On the contrary, if major water supply and sewerage facilities are extended into these areas because they are planned for industrial development, then controls on height, development intensity, etc. will need to be enforced by one or more of the other land regulatory tools herein described.

The need for a very high degree of cooperation between airport planners, land use planners, water supply agency(ies) and sanitary/storm sewer waste agency(ies) is paramount to the success of this type of planning tool and necessitates a comprehensive plan which incorporates such coordinated planning.

I. Growth Policies

A number of communities across the nation are developing comprehensive plans using the concept of "Urban Growth Boundaries," which attempt to determine where full build-out, or build-out to a given boundary, should be encouraged while simultaneously determining where land development should be maintained in a low-density/rural fashion versus a compact and more urban pattern. The State of Florida, and recently the State of Tennessee, have adopted state planning statutes that contain requirements addressing development dependent on infrastructure availability within limited time periods.

The Tennessee statutes address development issues under three initiatives: "urban growth boundaries," "planned growth areas," and "rural areas." The objectives of these statutes, and similar ones in other parts of the country, are to encourage smart growth and sustainable development concepts that will have the effect of using land for reasonable purposes and preserving our limited resources for future use.

Recognizing that these laws are in existence in at least these two southern region states (and being considered by other states inside and outside the region), it is incumbent on airport planners to ensure they are included as integral partners in mandated community planning. Identification of airport areas and the surrounding affected areas, according to the airport master plan, as part of growth policies planning, will be critical.

Infrastructure extensions will be a major determining factor in such growth management programs. Such planning and implementation requires a very high degree of coordination and cooperation between many diverse parties, including utility companies, city and county elected officials, airport authorities, local planning authorities, various environmental and business-oriented groups, and the general public.

J. Transferable Development Rights (TDR)/Purchase of Development Rights (PDR)

Transfer of Development Rights (TDR) is a relatively new land use and development control technique. It should be considered as another possible planning tool for application on and around airports. Legally, state statutes would have to contain provisions for use of TDR as part of its enabling legislation. A development rights transfer system would have to be adopted by the local government(s), and the comprehensive plan would need to recognize this means of development rights land designation.

The basic concept of TDR is to preserve or retain land in its existing or rural setting in one location by "transferring" the rights to develop the property from a "sending" site to the "receiving" site, where an increase in intensity of use would be permitted.

PDR (Purchase of Development Rights) is another form of this tool in which a local government purchases the property owner's right to develop specific parcels of land for managerial purposes, leaving them all other rights of ownership. The price of the development rights is generally equal to the diminution in the market value of the land resulting from the removal of the development rights, and thus is the difference between the value of the land for agricultural or open space use and its current market value.

TDR could allow airport area jurisdictions to avoid unwanted development in high noise exposure areas or redevelop these areas to less intense use, allowing such limitations to be maintained in perpetuity. The sending property would ideally be rezoned to whatever rights remained on the property. The receiving property might also have to be rezoned so that the type and intensity of use anticipated could be realized. In any case, this process would need close legal scrutiny in light of recent U.S. Supreme Court rulings.

Whatever changes in zoning might be necessary, the changes should conform to the adopted comprehensive plan, which conceivably had anticipated such changes over the time period of the plan. If the proposed changes had not been anticipated

in the plan and therefore were not in conformance, amendments to the plan should be made before making the zoning changes. Thus, losses and gains of development rights would adequately reflect the long-term policy implications (such as land use changes) of the plan.

PDR, or variations of it, could also possibly be used by local governments and airport owners (depending on ownership) to allow continuation of compatible uses and elimination of incompatible uses on specific properties which are within areas where such airport protection techniques need to be applied.

Again, a very high degree of coordination and cooperation between airport owners/planners and local governments/land use planners will be necessary if any of these techniques are to prove useful.

K. State Airport Zoning Commission Regulations

State statutes addressing aviation and airports vary. Both local land use planners and airport planners should be thoroughly familiar with such pertinent statutes. There may be some seemingly contradictory statutes addressing the authority for regulating land development in and around airports. Such potentially questionable language needs to be clarified in order to ensure common understanding and accurate application of state and local laws and regulations. Using Kentucky as an example, **Appendix A** includes critical selected excerpts from the *Kentucky Revised Statutes* as they apply to the creation and functions of an Airport Zoning Commission.

VIII. NEGOTIATION/MEDIATION

The negotiation or mediation technique is an important approach to be employed when addressing land use compatibility conflicts or disputes associated with airports. The purpose of negotiation/mediation is to provide a means by which a local government or community (or another entity) can work with an airport to address difficult situations as an alternative to litigation. This approach can provide clarity for the airport's plans, plan implementation, and other actions that can potentially impact the community.

Typically, airport concerns are technical in nature, and technical people are usually most comfortable working in their fields of special competence. They are often uneasy when faced with a "people problem." Airports are sometimes expanding facilities located in areas where people can be adversely affected by airport operations and encroachment. Susan Carpenter and W.J.D Kennedy, in their book, *Managing Public Disputes* offered ten principles that can help to "focus on productive strategies for resolving differences."¹⁸ These principles are:

- 1) Principle 1: Conflicts Are a Mix of Procedures, Relationships, and Substance.
- 2) Principle 2: To Find a Good Solution, You Have to Understand the Problem.
- 3) Principle 3: Take Time to Plan a Strategy and Follow it Through.
- 4) Principle 4: Progress Demands Positive Working Relationships.
- 5) Principle 5: Negotiation Begins with Constructive Definition of the Problem.
- 6) Principle 6: Parties Should Help Design the Process and Solution.
- 7) Principle 7: Lasting Solutions are Based on Interests, Not Positions.
- 8) Principle 8: The Process Must Be Flexible.
- 9) Principle 9: Think Through What Might Go Wrong.
- 10) Principle 10: Do No Harm.

¹⁸ *Managing Public Disputes*; Jossey-Bass Publishers, San Francisco, 1998; pp.52-65.

Carpenter and Kennedy continue by saying that one must provide the time in negotiation/mediation technique to construct a conflict management program carefully. It was said that to do otherwise is to possibly damage trust among key parties and ultimately destroy working relationships. Therefore, if you cannot devise the program properly “it should not be attempted” at all.¹⁹

Negotiation/mediation technique can resolve airport-related disputes through conflict resolution and collaborative problem-solving. Michael L. Poirier and R. Gregory Bourne suggest including the following basic elements of the pre-negotiation, negotiation, and agreement/implementation processes:²⁰

The basic elements of the pre-negotiation process should include:

- Identify parties with a stake in the airport development dispute.
- Assess the basis of the conflict.
- Select a neutral mediator or facilitator.
- Assess the relationships between the parties.
- Ensure appropriate representation of the parties.
- Facilitate more effective communication.
- Establish an agenda for negotiation.
- Confirm guidelines for the process management.

¹⁹ *Ibid.*

²⁰ Susan G. Robinson, Editor, “Financing Growth: Who Benefits? Who Pays? And How Much?” (1990), Government Finance Officers Association, Chicago, IL. pp. 185-206, Chapter 12: Article, “Resolving Development Disputes Through Conflict Resolution and Collaborative Problem Solving,” by Michael L. Poirier and R. Gregory Bourne.

The basic elements of the negotiation process should include:

- Clarify the issues.
- Jointly assess the existing problems.
- Generate alternatives and develop evaluation criteria.
- Reach agreements in principal.

The basic elements of the agreement/implementation program should include:

- Identify tasks necessary to implement the agreement.
- Establish implementation responsibilities and check posts.
- Specify evaluation and feedback mechanisms.

Elliott and Bourner indicate that “regardless of the scale, techniques that allow for a greater understanding of the issues at conflict, a clearer identification of the underlying interests, improved communication, and greater accommodation of the public good will ultimately provide a better vehicle for resolving the dispute than many traditional or adversarial approaches.”²¹

Airport-related issues can be “barn burning” concerns which are hard to resolve. Interested parties should seek to engage trained negotiators or mediators to assist. Look for these services in the state government or regional planning authorities in your jurisdiction. Also, explore the possibility of local legal professional organizations and their resources.

²¹ *ibid.*

IX. PUBLIC EDUCATION AND AWARENESS PROGRAMS

Airports or local planning agencies that expect a reasonable chance of success in their planning efforts must provide for public education and awareness in the planning process. Both airport and local planning programs (such as master plans, FAR Part 150 studies, and comprehensive plans) include opportunities for public education and awareness. These opportunities include such things as Planning Advisory Committees and Citizens Advisory Committees. The composition of these committees may include elected officials, administrative staff, representatives of public agencies, and citizens. From a functional point of view, these planning and advisory committees should provide an avenue for community input and perspectives as well as feedback to the community. All committee members should solicit information from or provide information to their constituents. Because the opportunities for information exchange may be somewhat limited with these committees, however, both airports and planning agencies may find themselves searching for other forms of information dissemination and exchange.

In order for local land use planners and airport planners to better understand and recognize the critical need for cooperation, serious attempts to integrate some basic cross-over course work at the university level is necessary. Some basic logistical difficulties will certainly arise, because airport master planning and related courses may be offered in various academic school locations (such as schools of engineering, schools of environmental science, schools of aeronautical science, and schools of architecture and planning), but such issues can be overcome with recognition by educators of the important connections which need to be accommodated. The American Collegiate Schools of Planning (ACSP) should be contacted regarding such coordinated academic planning.

In addition, it is important for institutions of continuing education to allow or even encourage airport planners and local land use planners to take advantage of cross-over offerings. New thinking and new technologies being adapted by members of both fields need to be shared so that better communication will occur. The end result of such cooperative efforts will be a higher likelihood that both airport planners and local land use planners will identify many of the same principles for consideration by their respective decision-makers. For example, the American Planning Association is in the process of completing a series of studies addressing the subject of "Growing Smart Airports." These studies are finding that airport planners need to be aware of directions being recommended by the land use planning community so they can enter into meaningful discussion, with a complete understanding the rationale for such directions. Conversely, it is just as important for land use planners to understand new thinking in connection with airport design, the necessary surrounding activity challenges, and the constantly evolving federal regulations within which airport planners must work. Clearly, understanding each other's dynamic thinking as well as the limits within which each planner must work will make cooperation more likely, with more satisfactory results for the communities both interests serve.

Having stated the importance of working together and with the public, the following sections address the real world situations of some of the various regulatory tools available to most land use planners throughout the country. These tools are intended to help cross the bridge from planning for what we want our communities to be in future years, to adoption and enforcement of specific regulatory measures which are intended to help us make day-to-day decisions which will lead toward realization of all the cooperative planning that has been occurring.

The information dissemination and exchange opportunities described in this section do not represent all such opportunities. Others may be created through modifying or combining any of these functions. Most important is the fact that information must be provided to and exchanged with the community if levels of credibility are to be maintained within the planning program.

A. Information Dissemination

Information dissemination is a one way flow of a desired message or philosophy. The type of audience may range from a narrowly targeted audience to the community at large. The following represents a general cross-section of the various types of one-way information dissemination opportunities.

Distribution of Printed Materials

Included in this group are brochures, newsletters, paid advertising, newspaper inserts, and guest or contributory columns to newspapers.

If the message or issues are fairly constant, then brochures could be inventoried and sent to individuals who request specific information or mailed to a targeted group. Brochures provide a constant, standardized base of information or public position on a specific subject.

However, if the message is changing with the issues or the planning program has milestones that need to be publicized, then newsletters or newspaper inserts can be utilized. A zip code sort will allow newsletters to be as target-specific or as general as desired. Newspaper inserts, for example, are as general as the publication circulation.

Contributory guest columns also provide general circulation. Due to the limited amount of space provided, the message must be concise and simple. Also, guest columns do not lend themselves to information that is repetitive in nature.

Use of Audio-Visual Materials

This group is somewhat more limited than printed material in the type of materials and media available. Still there are several distribution methods available.

One opportunity is to produce video message for distribution to public access channels with local cable companies. Press releases with accompanying videotapes can also be used. However, airtime is short, station editing applies, and the message will be displaced by the next day's news. Another type of video is a derivative of the committee structure (explained later under *Information Exchange*). In essence, public committee meetings associated with planning

efforts and planning programs are themselves televised, thereby providing a one-way dissemination of information to the community through public access channels.

Development of an Internet Web Page

Many airports and public planning agencies (or the controlling political body) have web sites. A properly managed web site can utilize all of the printed and audio-visual opportunities mentioned above to make available the appropriate levels of information to interested citizens who have accessing capability. Web pages can also be made interactive, to provide for more of an information exchange, by way of soliciting e-mail or conducting on-line surveys.

B. Information Exchange

Information exchange is a two-way flow of information. The initial flow of information is outward and again contains the desired message or philosophy. Once the information is disseminated, there exists a response mechanism that may be used to determine the public's attitude toward or acceptance of the previously disseminated message.

Workshops and Public Hearings

Both airport and municipal planning agencies, as a vehicle to present status reports or final reports on a planning program, utilize public workshops and hearings. Workshop attendees are urged to provide their opinions or comments on the project in either an oral or written format. Public hearings solicit similar involvement and input, but in a more formal way by receiving either verbal or written testimony on a particular planning project.

Public Advisory Committees

Public advisory committees are sometimes formed to review comment on, or provide input to, planning issues. A flow of information to the committee is, in theory, digested by the committee and also discussed with committee members, neighbors, or constituents. If the committee meetings are televised on a local

public access channel, then the viewing public can also observe the information exchange.

Radio and Television Talk Shows

Local public radio and television stations are usually eager to fill the airwaves with dialogue on significant community issues. If the show has a listener/viewer call-in segment, these shows can be an excellent vehicle for information exchange.

Speaking Engagements

One way to provide for information exchange, on a personal level, is through speaking engagements at various local clubs, social groups, or associations. These groups may include church groups, The Lions Club, civic and homeowners' associations, or local schools. While the message is given to all of the attendees, the personal attention is provided during the post-presentation question and answer period.

Presentations to Public Officials/Agencies

Occasionally a planning agency may wish to present and receive information to elected officials and public administrators. These public officials can then pass on that information and receive feedback from constituents. The targeted officials are invited to attend a presentation or update on a master plan, comprehensive plan, or some other major planning projects. Attendees are provided with updates, status reports, and as much take-home material as possible. This ensures message consistency throughout the political arena.

X. CONCLUSION

The Task Force members, in preparing this guide, drew upon their planning experience in both community and airport environments. Early on in the process of developing the guide, the Task Force recognized that every airport and every community with an airport is different in its geographical size, population, and political composition, and therefore, understood that its efforts could not result in a concise and universal set of recommendations that would fit all communities and all airports. Instead the group combined its cumulative experience and diverse disciplines to develop information and programs, sources of technical and funding support, potential tools and administrative and legal procedures could be used according to a particular situation for achieving compatible airport land uses.

There is one common ingredient, however, that is necessary to achieve compatible land use around airport facilities. That ingredient is *dialogue*. Without dialogue, there can be no consensus, no plan, and no success.

Understanding that airport and community planning processes are intertwined, the examples and recommendations contained herein are not about winning, for winning implies a separation of these planning processes. Rather, the recommendations are about communication and cooperation, directed toward the establishment of common goals that are necessary for the development of compatible land use programs.

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14 CFR (Code of Federal Regulations) Part 150 Airport Noise Compatibility Planning, revised as of January 1, 1994, Federal Aviation Administration, Department of Transportation.

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GLOSSARY

Advisory Circular (AC) – A document published by the Federal Aviation Administration (FAA) giving guidance on aviation issues.

Air Traffic – Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

Air Traffic Control — Control of the airspace by an appropriate authority to promote the safe, orderly and expeditious movement of terminal air traffic.

Aircraft Operation – An aircraft arrival or departure from an airport with FAA airport traffic control service. There are two types of operations: local and itinerant.

Airport — Any public use airport, including heliports, as defined by the Aviation Safety and Noise Abatement Act of 1979 (ASNA), including: (a) Any airport which is used or to be used for public purposes, under the control of a public agency, the landing area of which is publicly owned; (b) any privately owned reliever airport; and (c) any privately owned airport which is determined by the Secretary to enplane annually 2,500 or more passengers and receive scheduled passenger service of aircraft, which is used or to be used for public purposes.

Airport Hazard – Any structure or object of natural growth located on or near the airport, or any use of land near the airport that obstructs the airspace required for the flight of aircraft in landing or taking off, or is otherwise hazardous to such landing and taking off.

Airport Impact Zones –Defined areas on and off airport property that are zoned to ensure airport compatible land uses. Low-activity airports without significant

aircraft noise exposure contours can benefit by identifying and implementing land use controls in Airport Impact Zones. The Impact Zones generally include the runway protection zone, the FAR Part 77 approach surface and the airport traffic pattern.

Airport Improvement Program (AIP) – The AIP is authorized by the Airport and Airway Improvement Act of 1982 (P.L. 97-248, as amended). The Act’s broad objective is to assist in the development of a nationwide system of public-use airports adequate to meet the current and projected growth of civil aviation. The Act provides funding for airport planning and development projects at airports included in the National Plan of Integrated Airport Systems. The Act also authorizes funds for noise compatibility planning and to carry out noise compatibility programs as set forth in the Aviation Safety and Noise Abatement Act of 1979 (P.L. 96-143).

Airport Layout Plan (ALP) – A scaled drawing of existing and proposed land and facilities necessary for the operation and development of the airport. The ALP shows (1) boundaries and proposed additions to areas owned or controlled by the sponsor, (2) the location and nature of existing and proposed airport facilities and structures and (3) the location on the airport of existing and proposed and non-aviation areas and improvements.

Airport Layout Plan Set - Included in the Airport Layout Plan set are six drawings: (1) Airport Layout Drawing (Plan), (2) Airport Airspace Drawing, (3) Inner Portion of the Approach Surface Drawing, (4) Terminal Area Drawing, (5) Land Use Drawing and (6) Airport Property Map. The drawings depict existing and proposed airport facilities, land uses, approach zones and other defined areas of airspace, and environmental features that may influence airport usage and expansion capabilities.

Airport Manager — The person authorized by the airport sponsor to exercise administrative control of the airport.

Airport Master Plan – A planning document, including appropriate documents and drawings, that describes the development of a specific airport from a

physical, economical, social, environmental and political jurisdictional perspective. The airport layout plan drawing is part of the Master Plan.

Airport Noise Compatibility Program - That program, and all revisions thereto, reflected in documents (and revised documents) developed in accordance with Appendix B of this part, including the measures proposed or taken by the airport owner to reduce existing incompatible land uses and to prevent the introduction of additional incompatible land uses within the area.

Airport Operations – The total number of movements in landings (arrivals) plus takeoffs (departures) from an airport.

Airport Owner – Any person or authority having the operational control of an airport as defined in the ASNA Act.

Airport and Airway Improvement Act of 1982 – This Act authorizes the Secretary of Transportation to make project grants for airport planning and development to maintain a safe and efficient nationwide system of public-use airports.

Airport Noise and Capacity Act of 1990 – This act required the establishment of a National Noise Policy and a requirement to eliminate Stage 2 aircraft weighing 75,000 pounds or greater operating in the contiguous United States by the year 2000.

Airport Reference Code (ARC) – The ARC is a FAA coding system used to relate airport design criteria to the operational and physical characteristics of the airplanes intended to operate at the airport.

Airport Sponsor — A public agency or tax-supported organization such as an airport authority, that is authorized to own and operate the airport, to obtain property interests, to obtain funds, and to legally, financially and otherwise able to meet all applicable requirements of current laws and regulations.

Air Traffic Control Tower (ATCT) – The air traffic control facility located on an airport that is responsible for providing air traffic control services to airborne aircraft near the airport and to aircraft operating on the airport movement area.

Airside – That portion of the airport facility where aircraft movements take place, airline operations areas, and areas that directly serve the aircraft, such as taxiway, runway, maintenance and fueling areas.

Airspace — The space lying above the earth or above a certain area of land or water that is necessary to conduct aviation operations.

Ambient Noise – The total amount of noise in a given place and time, which is usually a composite of sounds from varying sources at varying distances.

Approach Surface – A surface defined by FAR Part 77 “Objects Affecting Navigable Airspace,” that is longitudinally centered on the runway centerline and extends outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based on the type of approach available or planned for that runway end.

ASNA Act — The Aviation Safety and Noise Abatement Act of 1979, as amended (49 U.S.C. 2101 et seq.).

Attainment Area – An area in which the federal or state standards for ambient air quality are being achieved.

Average Sound Level — The level in decibels, of the mean square, A-weighted sound pressure during a specified period, with reference to the square of the standard reference sound pressure of 20 micropascals.

Aviation Easement – A grant of a property interest in land over which a right of unobstructed flight in the airspace is established.

Based Aircraft – An aircraft permanently stationed at an airport by agreement between the aircraft owner and the airport management.

Building Codes – Codes, either local or state, that control the functional and structural aspects of buildings and/or structures. Local ordinances typically require proposed buildings to comply with zoning requirements before building

permits can be issued under the building codes.

Commercial Service Airport — A public airport that has at least 2,500 passenger boardings each year and is receiving scheduled passenger aircraft service.

Compatible Land Use — As defined in FAR Part 150: The use of land (e.g., commercial, industrial, agricultural) that is normally compatible with aircraft and airport operations, or sound insulated lands uses (e.g., sound insulated homes, schools, nursing homes, hospitals, libraries) that would otherwise be considered incompatible with aircraft and airport operations. See Table X, *Land Use Compatibility Guidelines – FAR Part 150*, to review the FAA land use compatibility table.

Comprehensive Plan – Similar to a Master Plan, the comprehensive plan is a governmental entity’s official statement of its plans and policies for long-term development. The plan includes maps, graphics and written proposals, which indicate the general location for streets, parks, schools, public buildings, airports and other physical development of the jurisdiction.

Conditional Zoning – The imposition or exaction of conditions or promises upon the grant of zoning by the zoning authority.

Conformity (Air Quality): No department, agency or instrumentality of the federal government shall engage in, support in any way or provide financial assistance for, license, or permit, or approve, any activity which does not conform to a State Implementation Plan (SIP). There are two types of Air Quality Conformity: *General Conformity* and *Transportation Conformity*:

- **General Conformity** - All federal actions (except those involving highways and transit projects) within nonattainment and maintenance areas that result in a net increase in emissions above specified de minimis levels.
- **Transportation Conformity** - Federally funded or approved highway or transit projects; (and regionally significant non-federal highway and transit projects) within nonattainment and maintenance areas.

Day-Night Average Sound Level (DNL) — A noise measure used to describe the average aircraft noise levels over a 24-hour period, typically an average day over the course of a year. DNL considers aircraft operations occurring between the hours of 10 p.m. and 7 a.m. to be ten decibels louder than operations occurring during the daytime to account for increased annoyance when ambient noise levels are lower and residents are sleeping. DNL may be determined for individual locations or expressed in noise contours. The symbol for DNL is Ldn.

Decibel (dB) – Sound is measured by its pressure or energy in terms of decibels. The decibel scale is logarithmic; when the scale increases by ten, the perceived sound is two times as loud.

Enplanement – A passenger boarding of a commercial flight.

Environmental Assessment (EA) – A concise document that assesses the environmental impacts of a proposed federal action. The EA discusses the need for and environmental impacts of the proposed action and alternative actions. An EA should provide sufficient evidence and analysis for a federal determination whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact.

Environmental Impact Statement (EIS) – A document that provides full and fair discussion of the significant environmental impacts that would occur as a result of a proposed project and informs decision makers and the public of the reasonable alternatives that would avoid or minimize adverse impacts.

Euclidean Zoning – A traditional legislative method or device for controlling land use by establishing districts with set boundaries and providing for specific uniform regulations as to type of permitted land use, height, bulk and lot coverage of structure, setback and similar building restrictions. (Reference from 1929 U.S. Supreme Court landmark decision upholding zoning as a means of land use control in “City of Euclid, Ohio v. Ambler Realty”)

Federal Aviation Administration (FAA) – A federal agency charged with regulating air commerce to promote its safety and development, encouraging and

developing civil aviation, air traffic control and air navigation and promoting the development of a national system of airports.

Federal Aviation Regulations (FAR) — Regulations established and administered by the FAA that govern civil aviation and aviation-related activities.

Federal Aviation Regulations Part 77 “Objects Affecting Navigable Airspace” – Part 77 (a) establishes standards for determining obstructions in navigable airspace; (b) defines the requirements for notice to the FAA Administrator of certain proposed construction or alteration; (c) provides for aeronautical studies of obstructions to air navigation to determine their effect on the safe and efficient use of airspace; (d) provides for public hearings on the hazardous effect of proposed construction or alteration on air navigation; and (e) provides for establishing antenna farm areas.

Federal Grant Assurance – The terms and conditions of accepting Airport Improvement Program (AIP) grants from the Federal Aviation Administration for carrying out the provisions of Title 49, United States Code. The terms and conditions become applicable when the airport sponsor accepts a grant offer from the FAA.

Finding of No Significant Impact (FONSI) – A document briefly explaining the reasons an action will not have a significant effect on the human environment and therefore justifies the decision to not prepare an EIS. A FONSI is issued by the federal agency following the preparation of an EA.

Fixed-Base Operator (FBO) – An airport facility that serves the general aviation community by selling and repairing aircraft and parts, selling fuel, and providing flight and ground-school instruction.

General Aviation (GA) – Refers to all civil aircraft and operations that are not classified as air carrier, commuter or regional. The types of aircraft used in general aviation activities cover a wide spectrum from corporate multi-engine jet aircraft piloted by professional crews to amateur-built single engine piston acrobatic planes, balloons and dirigibles.

General Conformity – All federal actions (except those involving highways and transit projects) within non-attainment and maintenance areas that result in a net increase in emissions above specified *de minimis* levels.

Growth Policy – A local or regional governmental policy intended to influence the rate, amount, type, location and/or quality of future development within the jurisdiction.

Housing Codes – The codes that usually apply to both existing and future living units. The codes include minimum standards of occupancy, and usually govern spatial, ventilation, wiring, plumbing, structural and heating requirements.

Hubbing – A method of airline scheduling that times the arrival and departure of several aircraft in a close time period to allow the transfer of passengers between different flights of the same airline. Several airlines may conduct hubbing operations at an airport.

Incompatible Land Use — The use of land, which is defined in Appendix A, Table 1 of FAR Part 150, which is normally incompatible with the aircraft and airport operations (such as homes, schools, nursing homes, hospitals, and libraries). See Table X, *Land Use Compatibility Guidelines – FAR Part 150*, of this guide to review the FAA land use compatibility table.

Infrastructure – A community’s built elements that establish the community’s foundation for maintaining existing populations, activities, future growth and development. Infrastructure elements include airports, roads and highways, bridges, water and sewer systems, waste disposal facilities, utilities and telecommunications systems, schools, and governmental and community facilities.

Instrument Approach – A series of predetermined maneuvers for the orderly transfer of an aircraft under instrument flight conditions from the beginning of the initial approach to a landing or to a point from which a landing may be made visually.

Instrument Flight Rules (IFR) – Rules governing the procedure for conducting instrument flight. In addition, a term used by pilots and controller to indicate a type of flight plan.

Integrated Noise Model (INM) – FAA’s computer model used by the civilian aviation community for evaluating aircraft noise impacts near airports. The INM uses a standard database of aircraft characteristics and applies them to an airport’s average operational day to produce noise contours.

Itinerant Operation – Any aircraft arrival and/or departure other than a local operation.

Land Use Compatibility –The coexistence of land uses surrounding the airport with airport-related activities.

Land Use Controls - Measures established by state or local government that are designed to carry out land use planning. The controls include among other measures: zoning, subdivision regulations, planned acquisition, easements, covenants or conditions in building codes and capital improvement programs, such as establishment of sewer, water, utilities or their service facilities.

Land Use Management Measures – Land use management techniques that consist of both remedial and preventive measures. Remedial, or corrective, measures typically include sound insulation or land acquisition. Preventive measures typically involve land use controls that amend or update the local zoning ordinance, comprehensive plan, subdivision regulations and building code.

Landside – That part of an airport used for activities other than the movement of aircraft, such as vehicular access roads and parking.

Local Operation – Any operation performed by an aircraft that: (a) operates in the local traffic pattern or within sight of the tower or airport, or (b) is known to be departing for, or arriving from, flight in local practice areas located with a 20-mile radius of the control tower or airport, or (c) executes a simulated instrument approach or low pass at the airport.

Maintenance Area – a geographical area which was once designated as nonattainment but the pollution levels have met the National Ambient Air Quality standards for two consecutive years and has an approved maintenance plan which outlines how the geographical area will continue to meet these standards.

Mediation – The use of a mediator or co-mediators to facilitate open discussion between disputants and assist them to negotiate a mutually agreeable resolution. Mediation is a method of alternative dispute resolution that provides an initial forum to informally settle disputes prior to regulatory intervention on the part of the FAA.

Mitigation – The avoidance, minimization, reduction, elimination, or compensation for adverse environmental effects of a proposed action.

Mitigation Measure – An action taken to alleviate adverse impacts.

National Environmental Policy Act of 1969 (NEPA) – The original legislation establishing the environmental review process.

National Plan of Integrated Airport Systems (NPIAS) – A primary purpose of the NPIAS is to identify the airports that are important to national transportation and, therefore, eligible to receive grants under the Airport Improvement Program (AIP). The NPIAS is composed of all commercial service airports, all reliever airports, and selected general aviation airports.

Nautical Mile – A measure of distance equal to one minute of arc on the earth's surface, which is approximately 6,076 feet.

Navigation Aids (NAVAIDS) – Any facility used by an aircraft for guiding or controlling flight in the air or the landing or take-off of an aircraft.

Noise Abatement Procedures – Changes in runway usage, flight approach and departure routes and procedures, and vehicle movement, such as ground maneuvers or other air traffic procedures that shift aviation impacts away from noise sensitive areas.

Noise Compatibility Plan (NCP) – The NCP consists of an optimum combination of preferred noise abatement and land use management measures, and a plan for the implementation of the measures. For planning purposes, the implementation plan also includes the estimated cost for each of the recommended measures to the airport sponsor, the FAA, airport users, and the local units of government.

Noise Compatibility Program – See “Part 150 Study.”

Noise Exposure Contours – Lines drawn about a noise source indicating constant energy levels of noise exposure. DNL is the measure used to describe community exposure to noise.

Noise Exposure Map (NEM) — The NEM is a scaled map of the airport, its noise contours and surrounding land uses. The NEM depicts the levels of noise exposure around the airport, both for the existing conditions and forecasts for the five-year planning period. The area of noise exposure is designated using the DNL (Day-Night Average Sound Level) noise metric.

Noise Level Reduction (NLR) — The amount of noise level reduction in decibels achieved through incorporation of noise attenuation (between outdoor and indoor levels) in the design and construction of a structure.

Noise-Sensitive Area - Areas where aircraft noise may interfere with existing or planned use of the land. Whether noise interferes with a particular use depends upon the level of noise exposure and the types of activities that are involved. Residential neighborhoods, educational, health, and religious structures and sites, outdoor recreational, cultural and historic sites may be noise sensitive areas.

Nonattainment - Areas that exceeded the national ambient air quality standards for any of six pollutants (ozone, or smog; carbon monoxide; lead; particulate matter; or PM-10; or nitrogen dioxide)

Nonconforming Use – Any pre-existing structure, tree, or use of land that is inconsistent with the provisions of the local land use or airport master plans.

Off-Airport Property – Property that is beyond the boundary of land owned by the airport sponsor.

Official Map – A legally adopted map that conclusively shows the locations and width of proposed streets, public facilities, public areas and drainage rights-of-way.

On-Airport Property – Property that is within the boundary of land owned by the airport sponsor.

Overlay Zone – A mapped zone that imposes a set of requirements in addition to those of the underlying zoning district.

Part 150 Study – Part 150 is the abbreviated name for the airport noise compatibility planning process outlined in Part 150 of the Federal Aviation Regulation (FAR) that allows airport owners to voluntarily submit noise exposure maps and noise compatibility programs to the FAA for review and approval. See Noise Compatibility Plan.

Passenger Facility Charge (PFC) Program – The PFC Program, first authorized by the Aviation Safety and Capacity Expansion Act of 1990 and now codified under Section 40117 of Title 49 U.S.C., provides a source of additional capital to improve, expand and repair the nation’s airport infrastructure. The legislation allows public agencies controlling commercial service airports to charge enplaning passengers using the airport a facility charge. The FAA must approve any facility charges imposed on enplaning passengers.

Performance Standards – Minimum acceptable levels of performance, imposed by zoning, that must be met by each land use.

Primary Runway – The runway used for the majority of airport operations. Large, high-activity airports may operate two or more parallel primary runways.

Public Use Airport – A publicly or privately owned airport that offers the use of its facilities to the public without prior notice or special invitation or clearance.

Reliever Airport – An airport that meets certain FAA criteria and relieves the aeronautical demand on a busier air carrier airport.

Runway Protection Zone (RPZ) – A trapezoidal-shaped area centered about the extended runway centerline that is used to enhance the safety of aircraft operations. It begins 200 feet beyond the end of the runway or area usable for takeoff or landing. The RPZ dimensions are functions of the design aircraft, type of operation and visibility minimums.

Sound Attenuation – Acoustical phenomenon whereby a reduction of sound energy is experienced between the noise source and the receiver. This energy loss can be attributed to atmospheric conditions, terrain, vegetation, constructed features (e.g., sound insulation) and natural features.

Sound Exposure Level (SEL) — A measure of the physical energy of the noise event that takes into account both intensity and duration. By definition SEL values are referenced to a duration of one second. SEL is higher than the average and the maximum noise levels as long as the event is longer than one second is. Sound exposure level is expressed in decibels (dB). People do not hear SEL.

Special Exceptions – Land uses that are not specifically permitted as a matter of right but can be permitted in accordance with performance standards and other local criteria. Also known as “conditional uses.”

Stage 2 Aircraft – Aircraft that meet the noise levels prescribed by FAR Part 36 and are less stringent than noise levels established for the quieter designation Stage 3 aircraft. The Airport Noise and Capacity Act requires the phase-out of all Stage 2 aircraft by December 31, 1999, with case-by-case exceptions through the year 2003.

Stage 3 Aircraft – Aircraft that meet the most stringent noise levels set forth in FAR Part 36.

State Implementation Plan (SIP) – a detailed description of the programs a state will use to carry out its responsibilities under the Clean Air Act. State Implementation Plans are collections of the regulations used by a state to reduce air pollution.

Statute Mile – A measure of distance equal to 5,280 feet.

Subdivision Regulations –

Terminal Area – A general term used to describe airspace in which airport traffic control or approach control service is provided.

Transfer of Development Rights – This involves separate ownership and use of the various "rights" associated with a parcel of real estate. Under this concept, some of the property's development rights are transferred to a remote location where they may be used to intensify allowable development.

Turbojet Aircraft – Aircraft operated by jet engines incorporating a turbine-driven air compressor to take in and compress the air for the combustion of fuel, the gases of combustion (or the heated air) being used both to rotate the turbine and to create a thrust-producing jet.

Turboprop Aircraft – Aircraft in which the main propulsive force is supplied by a gas turbine driven conventional propeller. Additional propulsive force may be supplied from the discharged turbine exhaust gas.

Variance – An authorization for the construction or maintenance of a building or structure, or for the establishment or maintenance of a use of land that is prohibited by a zoning ordinance. A lawful exception from specific zoning ordinance standards and regulations predicated on the practical difficulties and/or unnecessary hardships on the petitioner being required to comply with those regulations and standards from which an exemption or exception is sought.

Visual Approach – An approach to an airport conducted with visual reference to the terrain.

Visual Flight Rules (VFR) – Rules that govern flight procedures in good weather, with conditions usually being at least 1,000-foot ceiling and three miles visibility.

Wetlands Mitigation Banking – involves consolidating fragmented wetland

mitigation projects into one large contiguous site. Units of restored, created, enhanced or preserved wetlands are expressed as "credits" which may be withdrawn to offset "debits" incurred at a project development site.

Yearly Day-Night Average Sound Level (YDNL) — The 365-day average, in decibels, day-night average sound level. The symbol for YDNL is also Ldn.

Zoning – The partitioning of land parcels in a community by ordinance into zones and the establishment of regulations in the ordinance to govern the land use and the location, height, use and land coverages of buildings within each zone. The zoning ordinance usually consists of text and zoning map.

Zoning Ordinance – Primarily a legal document that allows a local government effective and legal regulation of uses of property while protecting and promoting the public interest.

APPENDIX A

Relevant Kentucky Revised Statutes

KRS 183.861 Establishment of Airport Zoning Commission. – There is hereby created and established within the cabinet (Transportation), a commission known as the "Kentucky airport zoning commission" which notwithstanding the provisions of KRS chapters 100 and 147 (Kentucky's basic planning and zoning statutes), shall be empowered to issue such orders, rules and regulations pertaining to use of land within and around all publicly owned airports within the state as will promote the public interest and protect and encourage the proper use of such airports and their facilities.

KRS 183.865 Commission Functions – All of the powers, provisions and duties relating to the zoning and use of land, structures, and air space within and around public airports within the state are hereby conferred upon, delegated to and vested in the commission. The commission shall also exercise all powers, provisions and duties relating to the use of navigable air space within the state. Nothing contained in this chapter shall prevent a governmental unit from acquiring airports, airport facilities, or air navigation facilities, or from taking any action authorized by law for the elimination of any airport hazard, either alone or jointly with the commission.

KRS 183.867. Zoning Jurisdiction – Regulations – Public Files – (1)

The commission shall require that every public airport in the state file with it, from time to time, as required, maps showing the airport and area surrounding such airport used for approach or landing purposes.

The commission shall thereafter designate on such maps, by reference to the regulations or standards promulgated by the federal aviation administration concerning the area required for the safe maneuvering approach and landing of aircraft, the area over which jurisdiction will be assumed for zoning purposes. The commission shall notify any local zoning bodies of the area so designated and may exercise jurisdiction of such area insofar as it pertains to the safe and proper maneuvering of aircraft and the safe and proper use of the airport involved. The local zoning body may retain jurisdiction of zoning in such areas as to all other matters. (2) The commission may adopt such regulations pertaining to the zoning of areas over which jurisdiction is assumed as will provide for the proper and safe use of such area and airport.

KRS 183.868 Factors to be Considered in Zoning. – In addition to considering the regulations or standards promulgated by the FAA in zoning the use of land and structures in areas over which jurisdiction is assumed, the commission shall consider among other things, the safety of airport users and surface persons and property, the character of flying operations conducted at the airport , the nature of the terrain, the height of existing structures and trees above the level of the airport, the views of officials of the FAA as to the safe approaches required for operations at the airport, the future development of the airport including extensions to runways that may be required, the density of dwellings that may safely be permitted in the area, protection of the public investment in the A-1 airport and its facilities, the interest of the public in developing a sound public air transportation system within the state and the views and opinions of those owning land in such area.

KRS 183.870 Maximum Building Height Regulation – The commission shall establish by regulation the maximum height to which any structure may be erected within the navigable airspace of the state. In establishing such maximum heights, the commission shall consider, among other things, the regulations or standards promulgated by the FAA , the terrain involved, the location of the structure in relation to airports, the safety of aircraft, the safety of surface persons and structures, the future development of the area involved, the density of population and dwelling within the area involved, the interest of the public in developing a sound public air transportation system within the state and the interest of the person desiring to erect such structure, except that upon application

to the commission, special permission may be granted to exceed such heights. The commission shall, before issuing any such permit, give consideration to the standards set out herein.

KRS 183.872 Acquisition of Property Rights – In any case in which it is desired to remove, lower or otherwise terminate a nonconforming use; or the approach protection necessary cannot, because of unconstitutional limitations, be provided by zoning regulations; or it appears advisable that the necessary approach protection be provided by acquisition of property rights rather than by zoning regulations, the department, commission, air board or boards, or governmental unit may acquire by purchase, grant, condemnation or otherwise, such air right, easement, or other estate or interest in the property or nonconforming use in question as may be necessary to effectuate the purposes of this chapter.