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MY BASIC principle is that you don't make decisions because they are easy; you don't make them because they are cheap; you don't make them because they're popular; you make them because *they're right*.

THEODORE HESBURGH, C.S.C
former president University of Notre Dame

INTRODUCTION

WELCOME TO THE WORLD OF AIRPORTS!

Some readers of this guide may already possess a familiarity with aviation. However, even if you are a newcomer to airports, the benefit of this guide's thorough coverage of airport issues will quickly advance your aviation knowledge. If you are already connected with the air transportation industry as a pilot or aviation enthusiast, this guide is still for you. It will serve as an excellent resource for ready, concise and useful information. Whether an expert or novice, you will want to keep this handbook readily available to assist you time and time again. It is an invaluable tool toward increasing your awareness of airport issues and an indispensable addition to any aviation library.

The purpose of this guide is two-fold. First, the handbook helps elected and appointed airport officials to gain a better understanding and direction when relating to the seemingly endless stream of federal regulations, state laws, local ordinances and programs applicable to governing, administering, planning and operating an airport. Second, the handbook guides the reader toward a better understanding of public-owned airports, their funding, grant programs, business and management. It also includes a glossary of frequently used terms.

The important judgments and decisions rendered by you, as an airport official, not only affect the utility of your airport and the economy of your community, but could also impact the aviation and air transportation system nationwide.

The Southwest Chapter of the American Association of Airport Executives is proud to present this Elected and Appointed Officials' Guide, and wants you to profit from as much useful and applicable information as possible. Contributors to this informational publication are from many diverse aviation backgrounds. Each collaborator is an eminently respected member of the aviation community. All possess strong professional certifications and accreditations, federal and state aviation expertise, and affiliations with highly acclaimed professional aviation planning and legal consulting firms.

It is important for you to use this guide in support of the state and local statutes that pertain to your individual airport. Your familiarity with the mandated and implied responsibilities should assure objectivity in your decision-making process for the benefit of aviation and the public.

CHAPTER ONE

AIRPORTS AND AVIATION

An Overview

AIRPORTS

Public use airports in the United States are owned and operated under a variety of organizational and jurisdictional arrangements. Airports may be owned and operated by a city, county or state, or by more than one jurisdiction (e.g., a joint city and county operation). In some cases, an airport is owned by one or more of these governmental entities but operated by a separate public body, such as an airport authority specifically created for the purpose of managing the airport. Regardless of ownership, legal responsibility for day-to-day operation and management can be vested in any of the following kinds of governmental or public entities: (1) a municipal or county government; (2) a multi-purpose port authority, or (3) special district or independent airport authority.

MUNICIPAL or COUNTY: As an elected or appointed official, you will be working primarily with the airport manager. The manager's position within the administrative structure is as varied as the enabling legislation that permits the airport. If the airport is owned by a county or city, the airport manager may be at the directorate level with a direct line of communication to the county administrator, the city manager, board of supervisors or city council. In other cases, the airport manager may be subordinate to another county or city department such as public works or transportation.

MULTI-PURPOSE PORT AUTHORITY: Some forms of airport administration are governed by a Port Authority. Port Authorities are legally chartered institutions with the status of public corporations that operate a variety of public-owned facilities, such as airports, harbors, toll roads and bridges. In managing the properties under their jurisdiction, port authorities have extensive independence from state and local governments. Some port authorities have the power to tax within their port jurisdiction.

SPECIAL DISTRICT or INDEPENDENT AIRPORT AUTHORITY: The governmental organization which provides for the greatest autonomy in the operations of an airport is a special district or airport authority. If the airport serves two or more governmental jurisdictions, requires special coordination in its operations, is large and complex, creates sufficient revenue to support its operation, then the airport's interests may best be served by creating a special district of government.

The executive body of the special district is made up of airport board members (or a board of commissioners) who are either appointed by the city and county that established the district, or are voted into office by the public in a general election. In the latter case, the airport manager will work directly for the airport board.

Similar in structure and in legal charter to multi-purpose port authorities, single-purpose airport authorities also have considerable independence from state or local governments. Like multi-purpose port authorities, airport authorities have the power to issue their own debt for financing capital development.

AIRPORT COMMISSION: An airport commission, in general, is a body set up by the airport owner specifically to run the airport. Usually an airport commission has full authority to make airport policy decisions. Most states have laws that are quite precise on how commissions are formed, their authority, and their makeup.

AIRPORT COMMITTEE: An airport committee is usually a body appointed by the airport owner to advise them on airport matters. The airport committee may have little or no direct authority over airport policy. They usually, however, will have considerable influence over the owning governmental body on airport matters.

AVIATION

When most people refer to “aviation”, they are speaking about one of several major aviation domains. Usually, this means (1) airlines, (2) general aviation, and (3) military. Aviation is a multi-billion dollar factor in our national economy. Our national transportation system would be seriously crippled if all aircraft were suddenly grounded. Without aviation, many industries would find their costs greatly increased, their markets restricted, and their customer services drastically reduced.

Airlines: There are approximately 5,400 large airline jet aircraft in use by major U.S. scheduled air carriers today. Domestically, they transport in excess of 540 million passengers, plus millions of tons of freight and mail each year. Forecasts indicate that the number of airline jet aircraft will rise to nearly 6,000 during the next ten years.

General Aviation: General aviation can best be defined as all civil aviation except that classified as air carrier or air taxi. General aviation aircraft are used for pilot training, combined business and pleasure uses, air charter, air ambulance, police, and other commercial purposes, such as aerial agricultural application, forestry work, aerial photography, powerline and pipeline patrol and air freight. These aircraft are owned by individuals, businesses, corporations and by non-military government agencies. The sizes and types range from large jet types, similar to those used by the major scheduled air carriers, to small single-seat types powered by very small reciprocating engines. In some, such as balloons and gliders, there is no engine at all.

The uses made of these general aviation aircraft are many and varied. Federal statistical studies show that general aviation accounts for 98% of the Nation's aircraft. The studies indicate that these aircraft are the only means of air access to 96% of the Nation's airports and landing fields. Moreover, general aviation flies more hours, more miles, and hauls more cargo than the air carriers. Approximately 20% of the general aviation fleet is used purely for pleasure and recreational flying. There are over 171,000 general aviation aircraft in the United States.

Today, airport management is giving much more attention to general aviation. Its contributions to the economic development of our Nation are clearly recognized and can be documented. More and more businesses are purchasing or leasing general aviation aircraft to be used as business tools. These business entities consider adequate aviation facilities to be an important factor in deciding to locate in a community. There is also ample evidence throughout the United States that many businesses prefer to locate their plants in the immediate vicinity of an airport.

Military: There are about 22,000 military aircraft operating in the United States. The southwestern area of the United States (California, Arizona, Nevada and Utah) has attracted its share of military aircraft due to the excellent flying weather and location of the largest air-to-air and air-to-ground gunnery ranges in the free world. Additionally, many military units from other areas visit the southwest during the winter periods to avoid the inclement weather and to maintain mission capability.

CHAPTER TWO

WHAT IS AN AIRPORT?

Airports serve as gateways to the air transportation system. Today, airports contribute directly to a community's economic growth by facilitating transportation and communication. An airport must be considered as a man-made resource which exists for the benefit of the entire community. When new industry locates in the community, it enhances economic growth through the creation of new jobs. Every citizen in the entire community benefits from the existence of a healthy and busy airport, directly or indirectly.

Airports come in many shapes and sizes with no two being identical. Large airports used by the airlines for travel of some distance are called air carrier airports. Some air carrier airports serve as hubs (see *Glossary*) and others serve as origin and destination airports. General aviation or non-hub airports are usually smaller facilities that serve a mix of commercial, private and business-type aircraft. Airports used by the Military are typically referred to as air bases, airfields, or air stations.

Most airports, no matter the category, are divided into landside and airside facilities.

Landside facilities, such as access roads, automobile parking lots, public transit terminals and vehicle passenger loading and unloading areas, serve the needs of the traveling public. Modern air passenger terminals are designed to support the transition of passengers from one mode of travel to another. At large airports, terminal buildings may have restaurants, waiting lounges, shops, and perhaps a hotel.

Airside facilities such as loading bridges connected to the terminal building, maintenance shops, fueling equipment and aircraft storage areas, provide support for the operation of aircraft while on the ground. Warehouse and cargo facilities serve the needs of the air freight industry. Other airside facilities which serve airplanes during takeoff and landing include runways, taxiways and parking ramps.

Air traffic controllers regulate air traffic at and near the airport. Many kinds of special devices associated with air traffic control assist planes in taking off and landing, among them instrument landing systems, radar, approach lights and global positioning satellite systems.

Numerous federal and state regulations affect and control the operation of airports. Airports that operate under Federal Aviation Regulations (FAR) Part 139 are certified for air carrier aircraft operations, and are held to a higher safety and operational standard than smaller airports that do not provide air carrier services. Airports and airlines subject to FAR Part 107, 108 and 139 are also faced with increasing costs for maintaining security, as established by the Federal Aviation Administration (FAA) for the protection of passengers and facilities.

Airports are perceived to have significant impacts, both positive and negative, on the communities in which they reside. Jobs, flexibility of transportation, tourism, emergency services and tax dollars are most often cited as the benefits of airports to their communities. Noise and safety concerns are the two negative aspects most often raised by groups or individuals living near an airport. Significant responsibility resides with elected officials responsible for moderating the impact of airports on local communities.

Today's airports must be capable of generating revenues that will support the operational costs of facilities. Revenues are generated through property leases, concession agreements, parking, fuel sales or flowage fees, and the rental of aircraft storage hangars and tiedowns. Larger air carrier airports may also charge Passenger Facility Charges of up to three dollars per ticket.

The Federal Aviation Administration (FAA) provides Airport Improvement Project (AIP) Grants that pay up to 90% of the cost of large capital improvement projects. Funds for these grants are derived from passenger ticket taxes and aviation fuel taxes.

Airport owners (or, "sponsors") are strongly encouraged by the FAA to develop Airport Master Plans to guide the development of the airport. The FAA defines airport master planning as "... the development for planning purposes of information and guidance to determine the extent, type and nature of development needed at a specific airport." Airport Master Plans usually include the preparation of an Airport Layout Plan and planning studies that determine the short-, intermediate-, and long-range aeronautical demands which must be met by a particular airport. Most often, these planning actions will involve a projection of the demand for based aircraft over the twenty-year duration of the plan and will also look at the number of projected aviation activities.

Once an Airport Master Plan is complete, extensive environmental documentation is required before the plan may be implemented. In today's world, it is essential that airports are operated with environmental integrity.

It would be helpful for any person, as their first involvement with any airport, to receive a copy of the Airport Master Plan, the Airport Master Plan Summary or, at a minimum, the Airport Layout Plan and all associated environmental documentation. These documents will help one become familiar with the airport, its environs, and its planned future.

OBSTRUCTIONS TO NAVIGABLE AIRSPACE

One of the ways airports and neighboring communities are assisted with land-use planning issues to reduce obstructions around an airport, is through Federal Aviation Regulation (FAR) Part 77 (see *Glossary*). Zoning issues and FAR Part 77 guides airport operators and surrounding municipalities in determining which of the areas around an airport should be protected from encroachment by tall structures. This is done in the interest of preserving the safety and utility of an airport. Part 77 defines obstructions to air navigation, or navigable airspace. Navigable airspace is the airspace above minimum altitudes for safe flight, and includes the airspace needed to ensure safety in the takeoff and landing of aircraft. Until the Federal Aviation Act of 1958, the airspace surrounding an airport was not clearly defined, and the rights of aircraft to use that airspace were not firmly established. Section 307 of the 1958 Act established the standards for determining obstructions to navigable airspace. It defines the navigable airspace in the vicinity of an airport in terms of imaginary surfaces established with relation to the airport and to each runway. The size of each such imaginary surface is based on the category of each runway according to the type of approach available or planned for that runway.

Although associated with the airport, the imaginary surfaces do not belong to the airport. They define the lower limits of airspace through which aircraft may rightfully navigate. The imaginary surfaces do not prohibit development from the ground up unless the airport operating authority owns title to the land, either in fee simple or by easement, or has some other legal means of prohibiting intrusion.

CHAPTER THREE

WHAT IS AN AIRPORT MANAGER?

Airport management is a specialized field of public service that encompasses a broad range of important management and administrative responsibilities.

Airport management positions are as unique as airports are to each other, with no two airport managers holding the exact same position. Some airports require “hands on” managers who attend to administrative duties and also pump gas, repair buildings, replace lights, and provide aviation advisory information. Some cities or counties have airport managers or directors of aviation that are responsible for managing several airports. At large airports, there may be one or more assistant managers, with the manager or director distributing or dividing responsibilities as appropriate.

The role of the airport manager within each area encompassed within the aviation system is determined by several factors. This includes the size of the airport, level of service provided, number and technical qualifications of the airport staff, limits of the geographical area served and the complexities of interjurisdictional coordination that must be accomplished. The airport manager is an administrative agent for an elected body (city, county, airport district/authority, or commission). It is the airport manager’s responsibility to carry out their policy decisions, and not become involved in politics. The elected officials are responsible to the public at large. The elected bodies are the ones involved in politics and policy decisions.

Many skills, talents and understandings are required of all airport managers. First and foremost, airport managers agree that the responsibility of an airport manager is safety. Every manager understands that the safe operation of an airport must be the highest priority of the airport organization.

Airport managers often act as the chief administrative officer with responsibilities that include the implementation of policies, preparation of an annual budget, and developing and staffing of the airport organization. An airport manager must also have some understanding of related duties such as accounting, engineering, human resources, public relations, marketing, construction, real property and project management.

Most airport managers also act as business managers for the airport. The manager will develop potential airport businesses, solicit requests for proposals from potential business operators, evaluate business opportunities, and make recommendations for contract language and administering contracts once they are completed. The airport manager also deals with various government agencies who have business interests with the airport. It is the goal of the airport manager in this capacity to manage the airport in an economic and self-sufficient manner.

The airport manager generally has responsibility for the development and implementation of an Airport Capital Improvement Program (ACIP), with responsibility for obtaining federal or state grants to implement the plan. The airport manager may also be charged with developing an airport maintenance program, including the acquisition of material and equipment.

A successful airport manager must be able to work with federal and state agencies charged with regulating public health and safety, environmental issues and, of course, airports. Storm Water Pollution Prevention Plans, wetlands issues, fuel handling, hazardous material storage, noise abatement, worker safety and welfare, and endangered species are only some of the regulated issues that airport managers must contend with on a day-to-day basis.

An important role which has emerged in recent years for airport managers is that of an airport advocate. In this capacity, the airport manager develops support for the airport with the public, elected officials and airport users. This is most often achieved by carefully developing honest open relationships with all concerned groups and individuals. It is essential that the airport manager be perceived as honest and trustworthy when communicating the value and importance of the airport to the concerned constituencies. Ultimately, it is the communication skills of an airport manager that will ensure the success of the individual in this complex and challenging position.

Since passage of the Deregulation Act in 1978, airlines are freer to move about in responding to market demands. If the airport is a commercially served airport, one of the important duties of an airport manager is to stay abreast of nationwide airline economics and activity, as well as the individual airline business plans at your airport. Such activity is vital to retention and growth of the community's air service. The airport manager can help by educating the citizens about the quality of air service being largely a matter of meeting demand in the free market place.

The American Association of Airport Executives (AAAE) and the Southwest Chapter of the American Association of Airport Executives (SWAAAE) are two important organizations that support airport managers and elected officials in successfully managing airports.

CHAPTER FOUR

HOW ARE AIRPORTS FINANCED?

The airport system is a sophisticated and complex operation that requires delicate balancing of both the public and private sector interests. In most instances, airports in the United States are public-owned and operated with private investors operating businesses on an airport through leases and license agreements. The successful operation of an airport depends upon this critical equilibrium between elected bodies that oversee the airport, and policies that establish rates and charges which ultimately determine the success of the businesses on an airport.

Today, most airports operate like a business, similar to an enterprise system. Airport properties that are public-owned have a legal obligation to be as self-sustaining as possible, at least as far as the circumstances existing at each airport will permit. The reason for this requirement is to minimize an airport's reliance on federal funds, and also to minimize a need for the airport to be supported by local taxation. Airport enterprise fund systems are responsible for the full operational and capital costs of the airport. As such, there is very little that is "free" in the way of services or facilities provided.

AIRPORT RATES AND CHARGES

Airports almost always charge fees for everything that its users demand. The airport owner (or, "sponsor") generally charges a variety of fees or rents from tenants. Sponsors must charge fair market value for assets found within the airport grounds, or they will be subject to violating state or federal grant funding assurances. Additionally, airports must charge fair market value to governmental agencies for aeronautical land leases. They must market vacant land, and all leases must include a reasonable escalation or renegotiation clause. Airport lease agreements cannot be negotiated without consideration of some important limiting factors, conditions, or restrictions. Examples include, but are not limited to, FAA Grant Assurances, Airport Land Use Compatibility Planning, and Minimum Standards.

Businesses located on airport property, or commercial activities conducted at the airport, are required to pay rent and/or fees that are fair, reasonable, and not unjustly discriminatory. At general aviation airports, fixed-based operators (FBOs) usually provide general aviation services. Examples of FBO services include, but are not limited to, aircraft charters, flight training, rental car services, restaurants, gift shops, and other concessions. Land in excess of the aviation needs can and should be developed for compatible non-aviation uses. Compatible non-aviation land uses include industrial parks, golf courses, and theaters. Automobile parking lots and hotels are also a major source of revenue for airports. Today, airports are considering innovative, non-traditional sources, such as shopping malls, to generate revenues.

In summary, airport rates and charges must be fair, reasonable and non-discriminatory. They must produce revenues which render the airport as self-sustaining as possible under the circumstances. Normally, this means setting rates at fair market value for the facilities or services provided, unless some other clearly identifiable benefit or service is received by the airport in exchange. When setting rates and charges, federal regulations require consultation and exchange of information with tenants. Airport revenue is required to be used for aviation purposes. This means that the airport cannot provide free or below market facilities or services or make payments to the sponsoring local government or any other government unless an equivalent reciprocal benefit is received. There has been significant regulatory, enforcement and litigation activity in recent years related to how airports set their rates and charges and how airport revenues are used. These are matters which should always be considered with great care.

AIRPORT IMPROVEMENT PROGRAM (AIP)

Airport financing today is marked by a prominent federal role. The federal government exerts its influence in the following ways: (1) Airport Improvement Program (AIP) grant funding based on enplaned (boarding) airline passenger counts (called "entitlement funds"), or (2) grants funded by user taxes on airline tickets, aircraft fuel, airfreight waybills and international departures (called "discretionary funds"). These definitions are, of course, overly simplified, but the concepts are applicable. Also, there are exemptions from federal tax on interest income for holders of airport bonds. In addition, the Passenger Facility Charge (PFC) program, when approved by the FAA, generates local funds to finance airport improvements at commercial airports with air carrier service.

The AIP is the current federal grant program to distribute funds available from the Airport and Airway Trust Fund. The Trust Fund was established by the Airport and Airway Revenue Act of 1970 to generate revenues for airport aid through taxes paid by users of the aviation system. These taxes are surcharges on domestic passenger fares, international passenger taxes, aviation fuel, airfreight waybills, and other fees. This Act was later amended when Congress created the Airport and Airway Improvement Act of 1982, for planning and improving airport infrastructure in the United States. AIP grants are approved and administered by the FAA and are generally limited to capital improvements, such as runway or taxiway development, expansion, or reconstruction. Grants may also be used for other uses such as airport master plans, noise, or security programs.

Over the last few years, Congress has made significant changes to the AIP program. For example, on May 26, 1994, Congress signed into law the FAA Authorization Act of 1994 (Public Law 103-305). It directed the Secretary of Transportation to conduct a study of innovative approaches for using federal funds to finance airport development as a means of supplementing financing available under the AIP.

There is increasing concern that AIP, as we know it today, may continue to dwindle or even cease to exist. Therefore, now more than ever before, it is extremely important for airports to pursue innovative sources for revenue generation.

BONDS

Traditionally, airport financing has been accomplished through the use of either general obligation bonds or revenue bonds. Therefore, a major portion of airport capital improvement financing today comes from the sale of tax-exempt bonds. The payment of tax-exempt bond debt service incurred for airport infrastructure development is the result of a combination of revenues generated from air traffic activity, aviation-related development, and non-aviation-related development. To be implemented successfully, the bond structure must comply with applicable federal laws and regulations regarding airport improvement program grant funded airports, and needs to be constructed so as to maintain the tax-exempt status of the debt. Both federal grants and tax exemption policies assist significantly in airport capital improvements. The federal tax exemption on bonds can reduce the interest costs for airport borrowers by almost 2 percent.

Because bonds and other municipal securities are exempt from federal income taxation, they are inviting to investors as a tax shelter. However, if bonds must be used as taxable instruments, the associated interest rates could be higher, adding significantly to bond debt service requirements and reducing the likelihood of public participation.

PASSENGER FACILITY CHARGES

The airport, in consultation with its airlines, and with approval from the FAA, may elect to implement a Passenger Facility Charge (PFC) program. The PFC generates local funds to finance airport improvements at commercial airports with air carrier service. The PFC is basically a head tax, and nationally generates over \$1 billion a year. It provides an extremely powerful tool for financing critically needed airport development, particularly at the nation's largest airports. This is important to the small airport community, because PFC program legislation calls for large and medium hub airports that implement PFCs to return up to 50% of their AIP entitlement funds to FAA. The FAA is then required to redistribute that money by shifting scarce AIP dollars to the smaller airports. Under current PFC legislation, passengers can be charged either a \$1, \$2 or \$3 facility charge.

FINANCING THE AIRPORT SYSTEM INFRASTRUCTURE¹

The United States airport system is highly concentrated in terms of passengers and revenues. Approximately 80 percent of the passengers in the country travel between the 50 largest airports. Ninety percent of passengers travel between the largest 75 airports. Although our aviation system generates tremendous cash flows with twice the population of the United States traveling each year—549 million enplanements in 1995, forecast to go over 800 million by 2005—the revenue is highly concentrated among the top few airports. This concentration of passenger frequency and dollars at the largest airports requires a national system that redistributes some dollars to meet the relatively high fixed costs of any airport development. Such a redistribution is the airport system's customer acquisition cost and is necessary if a national aviation system is to be maintained beyond the largest communities.

Our system is also designed to cross-subsidize the capital costs of some public-use general aviation and reliever airports. This cross-subsidy is a means of avoiding the delay and congestion costs that would be encountered at major air carrier airports without such smaller airport facilities. General aviation is considered by some to be a “development cost” for the aviation system, generating future pilots and system champions, while to others such valuations are debatable and controversial. But the overriding fact is that without a national system of capital finance for airport infrastructure, our country would have only a relative handful of airports that could locally generate revenues to meet the fully allocated costs of operation, maintenance and construction. If airports in the United States are financed on a *system* basis, as they have been historically, a much larger number of airports can be supported at large and small communities.

The hub-and-spoke systems that some airlines operate offer important insight into the broader cost analysis needed to support financing a national airport system. Short-haul flights to hubs from smaller markets are often unprofitable in a point-to-point fare analysis. Airlines subsidize the fares of such short-haul segments for connecting passengers, in order to keep those passengers on the airline’s system for continuation on profitable long-haul flights. When the economics are analyzed on the passenger’s complete trip, the short-haul “subsidy” is actually a customer acquisition cost that contributes to a profit within the airline’s complete system. The same analysis can be applied to capital costs in the airport system. Expensive, long-term capital improvements at small airports—both air carrier and general aviation—are almost always in need of a subsidy beyond what the local market can generate. When that subsidy comes from passengers traveling most frequently at larger airports but who, as a group, need the system as a whole, it is a customer acquisition cost for the airport system that is not only affordable, but wise.

The United States airport system ranges from a few large airports that enjoy market leverage over the airlines to the many smaller airports that for the most part do not enjoy scheduled service. The smaller airports that do have airline service find the market leverage is on the airlines’ side. This heterogeneous collection of economic capabilities complicates the design of a national system of airport capital finance. America’s largest 100 airports, approximately, are capable of self-sustaining operating and capital programs. The remaining 3,100 airports that are currently eligible for federal funding require system cross-subsidization for capital projects, with an inverse relationship between the amount of subsidy and aeronautical activity. America’s widespread aviation system complicates financing its infrastructure, but it maximizes nationwide economic growth and competitiveness.

¹Charles M. Barclay, AAE, *America’s Future in Airport Infrastructure*

CHAPTER FIVE

FEDERAL AVIATION ADMINISTRATION

OVERVIEW

The federal government regulates interstate commerce, operates the air traffic control system, certifies airline companies and their airplanes, certifies commercial and general aviation pilots, registers general aviation aircraft, and administers the Airport and Airway Trust Fund. Due to the major role of the federal government, its statutory responsibilities and policies have a significant impact on aviation. There are also a number of other public agencies, industries and entities who participate in the development and operation of the air transportation system. The airport owners, airlines, federal, state, regional and local agencies, and the public all have an impact on the aviation system.

The Federal Aviation Administration (FAA) is the most influential outside agency with which airports must deal. The general powers and duties vested with the Federal Aviation Administration are:

The regulation of air commerce in such a manner as to best promote its development and safety and fulfill the requirements of national defense;

The promotion, encouragement, and development of civil aeronautics;

The control of the use of the navigable airspace of the United States and the military operations in such airspace in the interest of the safety and efficiency of both;

The consolidation of research and development with respect to air navigation facilities, as well as the installation and operation thereof; and

The development and operation of a common system of air traffic control and navigation for both military and civil aircraft.

Simply stated, the FAA's mission is to ensure the safe and efficient use of the nation's airspace, by military as well as civilian aviation, and to promote civil aeronautics and commercial aviation.

FAA FUNDING OF AIRPORTS

During World War II, the need for a comprehensive national system of airports was recognized. Shortly after the war, the Federal Government began a grant-in-aid program to state and local governments to help foster the development of the national airport system. This early program was known as the Federal-Aid Airport Program. In 1970, a more comprehensive program was established with the passage of the Airport and Airway Development Act. This Act provided funds for planning under the Planning Grant Program and for various types of airport construction and improvement through the Airport Development Aid Program. The current grant program was established by the Airport and Airway Improvement Act of 1982, which has subsequently been amended several times, and is known as the Airport Improvement Program (AIP).

Under the AIP, local governments (known as “sponsors”) that own and operate airports may apply for funding from the Airport and Airway Trust fund. To be eligible for AIP funding, a project must be included in the sponsor’s Airport Capital Improvement Program (ACIP) and depicted on an FAA approved Airport Layout Plan. Typical eligible projects include site preparation; runway, taxiway and apron construction and reconstruction; airfield marking and lighting; terminal construction and modernization (at eligible airports); safety and security equipment; land acquisition for airport development, runway protection zones and approach protection; soundproofing of structures for noise mitigation; and preparing and updating Airport Master Plans. Sponsors should work closely with their local FAA Airports office to learn the details of project eligibility and process.

Approximately one-half of the AIP funds which are appropriated by Congress each year are set aside for “Primary” airports (see *Glossary*). Primary airports have scheduled passenger service and enplane at least 10,000 passengers each year. Each Primary airport’s entitlements are based on the number of passengers enplaned each year. There is also a formula distribution for cargo activity, based on the landing weight of all-cargo aircraft.

An additional amount is set aside annually to be used at “Commercial Service”, “Reliever” (see *Glossary*) and airports handling strictly General Aviation operations. After the various set asides, about 12 percent of the annual apportionment remains as discretionary funds to be used for capacity, safety, security and noise compatibility projects.

Most AIP projects are funded at 90 percent federal share and 10 percent local share. The Office of Management and Budget (OMB) Circular A-87, Cost Principles for State and Local Governments, provides principles and standards for determining allowable costs under grants. Generally, a cost is allowable if it is: necessary to accomplish the project in conformity with the terms and conditions of the grant; incurred after the execution of the grant; reasonable in amount; and not included in another federally assisted project.

Sponsors interested in obtaining a grant under the AIP are invited to contact the appropriate FAA Airports office listed at the end of this Chapter. This provides an opportunity to discuss the project scope and become familiar with grant requirements and the application.

In accepting Federal aid for purposes other than planning, the sponsor incurs obligations which continue after the project is financially complete. The assurances for an airport development project include such things as:

1. Keeping the airport available for public use on fair and reasonable terms;
2. Not granting an exclusive right to any persons providing aeronautical services to the public;
3. Suitably operating and maintaining the airport;
4. Taking appropriate action, to the extent reasonable, to achieve compatible uses of lands in the vicinity of the airport;
5. Using all airport revenue for airport purposes;
6. Submitting annual or special financial and operations reports as the Secretary of Transportation may request, as well as making any records available for the Secretary's inspection; and
7. Assuring that no person is excluded from participating in any activity conducted with or benefiting from grant funds on the grounds of race, creed, color, national origin, sex, age or handicap.

Similar assurances apply to sponsors that receive grants to implement projects contained in noise compatibility programs. Assurances for planning projects relate to the project itself and do not obligate the sponsor beyond the duration of the planning effort.

In the late 1980's, the Federal Aviation Administration and Congress recognized the need for additional funding sources to provide for expansion of the national airport system. The continued growth of air traffic was straining the capacity of the system infrastructure. Delays were increasing, and new security and environmental mitigation requirements necessitated new funding sources. In 1990, Congress enacted the Aviation Safety and Capacity Expansion Act. This Act allows sponsors of Commercial service airports to charge enplaning passengers a \$1, \$2 or \$3 fee, or facility charge. The revenue from these fees must be used for specific, FAA approved capital construction costs. Guidance and procedures for the PFC program are available from your local FAA Airports office.

PRIVATIZATION

The Federal Aviation Reauthorization Act of 1996 includes a provision authorizing the establishment of a two-year pilot program on airport privatization. This pilot program permits, subject to Department of Transportation (DOT) approval, the long-term lease of four airports and the sale or long-term lease of one general aviation airport. This program represents a significant change in the posture of the federal government which long has encouraged public ownership of public aviation facilities. Yet, this is only one in a series of experiments to meet the huge demands for airport improvement dollars in an environment of declining revenues from traditional sources, and continued pressure from Congress for financially self-sufficient airports.

Other efforts to meet these goals are visible through the increased effort by many airport administrations to expand non-airline revenues such as concessions and parking. Aggressive development of non-aviation related revenues from such sources as industrial parks, hotels, recreational facilities and the like have generated new dollars for airport improvements.

Some airport sponsors have explored contracting for some or all airport management functions. This continuing trend has gone from parking lot management and janitorial to the total management of a complete airport system, as was negotiated in Indianapolis, Indiana. Other large hub airports have entered into public private partnerships for the construction, management and operation of entire terminals. The Port Authority of New York-New Jersey is a good example in the United States.

The last and most final step in airport privatization is the outright sale or transfer of an airport to a private entity. Many issues relating to the successful sale of an entire airport have yet to be resolved. Some, but not all, of these issues are previous grant assurances, deed restrictions, bond covenants and public concerns about the competitive forces on airport cost structures. The sale or transfer of a public airport between various governmental agencies is not only permitted, but many examples exist across the country.

The following is a list of some of the issues that should be addressed when approaching the question of privatization:

- Privatization of airports is not a single theory with a single definition. The concept of privatization includes a broad spectrum of potentially useful mixes of public and private features available between the extremes of totally public and totally private enterprises;
- Converting government-owned and operated enterprises to private sector management is a trend strongly supported across the United States at all levels of government. However, when privatization includes the sale of government assets to the private sector, a number of legal, regulatory and public interest questions are raised;
- Fundamental aspects of privatization already exist in the management and operational structure of airports in the United States, including:
 - third party airport facility development;
 - airport management contracts;
 - airport concession agreements;
 - the use of private contractors for services (e.g., janitorial, parking lots);
 - independent local authorities

In addressing privatization, each airport must be analyzed individually, for no two airports are identical. Thus, each airport sponsor must choose the right mix of public and private involvement for their airport, given the strengths and weaknesses of their ownership structure.

LOCAL FAA OFFICES

Arizona/Southern California:

Federal Aviation Administration
Safety & Standards Branch, AWP-620
Western-Pacific Region
15000 Aviation Boulevard
Hawthorne, CA 90261
Phone (310) 725-3621
Fax (310) 536-8600

Nevada/Northern California:

Federal Aviation Administration
Airports District Office, SFO-600
831 Mitten Road, Room 210
Burlingame, CA 94010-1303
Phone (650) 876-2775
Fax (650) 876-2733

Utah:

Federal Aviation Administration
Airports District Office, DEN-ADO
26805 E. 68th Avenue, Suite 224
Denver, CO 80249-6361
Phone (303) 342-1254
Fax (303) 342-1260

CHAPTER SIX

STATE AERONAUTICS PROGRAMS

Arizona - California - Nevada - Utah

OVERVIEW

Many state agencies become involved in airport funding, safety and inspection programs. Most states which have an aeronautics department also have a grant funding, licensing or permitting program for airports. If new airports are being developed, state agencies can be quite helpful in establishing minimum criteria for these airports. This can even include private-use, privately-owned airports. In some states, the state agency may have contracts with the FAA for certain of the FAA's inspection duties. For example, in California, the State Aeronautics Program is responsible for permitting of heliports and airports. In addition to funding and permitting responsibilities, the Aeronautics Program provides assistance in the development and maintenance of aviation facilities through its engineering and aviation expertise, aviation system planning, as well as environmental and community services programs. In Arizona, the State Aeronautics Division does not permit or license airports. It does have a large development and construction program, and is deeply involved in engineering and technical assistance to airports. Many aeronautics departments also propose legislation, track bills, and analyze aviation-related bills affecting their states.

CALIFORNIA

Airport Land Use Commission (ALUC) and Zoning Laws

The California Legislature instituted laws in the late 1960's which require counties to plan for compatible land uses around airports. Current law requires that each county with at least one airport open for the benefit of the general public, form an Airport Land Use Commission (ALUC) by choosing one of three options: (1) Form a separate ALUC; (2) Designate an existing agency to perform the functions of an ALUC; or (3) Develop alternative processes to accomplish the required planning. The ALUC (or the substitute agency) must formulate an airport Comprehensive Land Use Plan (CLUP) for each of its public-use airports and perform certain project reviews. Among other required reviews, the ALUC must review the city/county general/specific plans, as well as certain individual development projects in order to make a determination of compatibility with the CLUP.

Importantly, the ALUC is also required by law to review and assess zoning ordinances for compatibility with the CLUP. The ALUC's compatibility determination is final, unless the referring local agency, after making specific findings based upon evidence in the record that the action is consistent with the stated purposes of the laws, overrules the decision with a two-thirds vote of its governing body. Clearly, the unstated purpose of these laws is to prevent incompatible land uses and encroachment from impacting the viability and longevity of the airport.

In 1983, to help with the planning and prevention of incompatible land uses, the California Department of Transportation (Caltrans), in conjunction with various regional planning agencies, developed and produced the Airport Land Use Planning Handbook (Handbook). In 1993, the Handbook was updated. Since 1993, the statute was amended to require its use as a guide for ALUCs in the preparation or amendment of a Comprehensive Land Use Plan (CLUP). It is also required as a resource for the preparation of environmental documents for a project located within the planning boundary of an airport, or two miles from the airport if no planning boundary has been established.

In addition to discussions on height and noise, the Handbook considers the aspects of safety relative to compatible land use planning for airports. It includes a nationwide study of general aviation accidents within a radius of five miles of an airport. The results of the study are used as a basis for recommending airport safety zones in which compatibility criteria relating to land uses and population densities are made. The safety zones also incorporate any height and noise parameters which are applied to the airport as well. The safety study section of the Handbook was updated in 1997 and includes the latest accident data available from the National Transportation Safety Board (NTSB). This latest data will be included in the next update of the Handbook which is due for publication in 1999.

The Handbook addresses many issues germane to airport land use planning, not only for California, but nationwide. As a result, its distribution ranges from the Pentagon and other Federal Agencies to universities, consultants, developers, planners, and aviation officials throughout the U.S. For some states, the Handbook has been a model or an idea generator for application to their particular circumstances.

California Aid to Airports Program

California State Aeronautics Program activities are funded each year from the Aeronautics Account in the State Transportation Fund. The revenues that support these activities are generated primarily by excise taxes collected on general aviation (GA) fuel. As of 1994, GA jet fuel is taxed at 2 cents per gallon and aviation gas (AVGAS) is taxed 18 cents per gallon. These taxes generate about \$8 million a year. Certified air carriers, aircraft manufacturers, and the military are exempt from paying these taxes. The majority of the revenues generated (other than those covering the operating costs of the Aeronautics Program and other minor administrative costs) are used to fund the local assistance programs to airports, administered by the State Aeronautics Program. These local assistance programs are in the form of grants or loans. There are three grant programs available to eligible airports throughout the state: annual grants, federal Airport Improvement Program (AIP) matching grants, and Acquisition and Development (A&D) grants.

Annual Grants: These grants provide each airport with \$10,000 annually for use at the sponsor's discretion, subject to applicable laws and regulations, with prior approval from the state Aeronautics Program. In general, eligible airports are public-owned owned by a city, county, or airport district and are available for public use. (Airports defined by FAA as reliever or commercial service airports are not eligible for these annual grants.) These grants can be used to fund maintenance and operations activities or airport improvement projects. This type of grant can be accumulated over 5 years, or to a maximum of \$50,000.

AIP Matching Grants: These state grants are used to assist eligible airport sponsors in providing the local match for federal AIP grants. (The eligibility is the same as the annual grants with the exception that designated reliever airports are also eligible.) The matching rate, 5% of the federal grant amount, is fixed in law. State funds for this purpose cannot be allocated by the state until the federal grant has been accepted by the airport sponsor.

Acquisition and Development (A&D) Grants: These grants are used to fund capital improvement projects which have been adopted by the California Transportation Commission (CTC). These grants, which range from \$10,000 minimum to \$500,000 maximum, require a local match. This local match can vary from 10 to 50% as set by the CTC (a 10% rate has been utilized for the last 12+ years). The project sponsor must meet the same eligibility requirements as the annual grant; however, both reliever and commercial airports are also eligible. These funds are allocated for aviation related capital improvements on an airport. They may not be expended for operations and maintenance.

Capital Airport Loan Program

Low-interest loans are also available to airports (the airport can serve general aviation aircraft as well as scheduled airlines) for construction and land acquisition projects that benefit the airport and improve their self-sufficiency. These loans can be used to provide the sponsor's match for a project that is funded by an FAA grant. These also can be used (and typically are) for revenue-producing projects, such as hangars, wash racks, fuel facilities, or GA terminals. There is no local match requirement for a loan. Generally, the term of the loan will vary between 8 and 17 years, depending on the amount of the loan. Loans may be repaid early without penalty. Simple interest is charged on the outstanding balance of the loan principal.

Note: More detailed information, particularly on eligibility and application requirements, can be found in a State Aeronautics Program manual, entitled ***State Dollars for your Airport***. Copies should be available at your local airport. If not, they can be obtained from the Aeronautics Program.

ARIZONA

Arizona Aid to Airports Program

The primary revenue sources for airport construction are federal, state and bond funds. Arizona has a statewide airport priority rating system which is used to distribute the available state funds for airport projects. Most of the state funds come from the flight property tax revenues (taxes paid on aircraft equipment owned by the airlines), "in lieu" taxes (personal property taxes on aircraft) and aviation fuel taxes. Historically, these state taxes have generated between \$22 and \$25 million annually for the Aeronautics Fund.

Arizona has two funding programs for its Airport Development Program. The state/local programs consist of 90 percent funding by the state and 10 percent by locals. The federal/state/local funding includes 91.06% of federal funding for eligible projects, with matching state funds of 4.47%, and 4.47% from local airport owners. These funds are allocated to four categories of airport projects.

- Projects at commercial/reliever airports.
- Projects at general aviation facilities on the state's Primary System or those receiving commuter air services on a regular basis. The Primary System includes those airports having 10 based aircraft, or 2,000 annual operations, or community air service and/or are projected to meet one of these criteria within 10 years.
- Projects at airports on the state's Secondary System. The Secondary System includes airports which have not reached the level of the Primary System and are open to the public.
- Miscellaneous projects. This includes Primary aviation planning funds for special projects, such as contingencies for emergency airport projects.

Approximately, 70 percent of the total funding program is designated for commercial service and reliever airports. The other 30 percent is allocated to general aviation airports and special projects.

Arizona has also developed a State Airport Loan Program. This is a low interest loan for both grant eligible and revenue generating projects. Loans have been made for various types of projects such as hangars, fuel facilities, terminal buildings and T-shades, and are to be repaid within 20 years or less. Private and Restricted Airports are not eligible for the grant or loan programs.

NEVADA

Nevada Aid to Airports Program

Unlike most other states, the Nevada Legislature has enacted an airport funding system that provides each county with the option of levying a per gallon fee on fuel dispensed on its airport(s). Current limits are 8 cents per gallon on aviation gas and 4 cents per gallon on jet fuel. Revenue from this fee can be used for any airport purpose including grant matches, salaries, and maintenance activities.

LOCAL STATE AERONAUTICS' DEPARTMENTS

Arizona Department of Transportation
Division of Aeronautics
P.O. Box 13588, MD 426M
Phoenix, AZ 85002-3588
PHONE: (602) 254-6234
FAX: (602) 254-6361

California Department of Transportation
Aeronautics Program - MS#40
P.O. Box 942874
Sacramento, CA 94274-0001
PHONE: (916) 654-5470
FAX: (916) 653-9531

Nevada Department of Transportation
Statewide Aviation
1263 So. Stewart Street
Carson City, NV 89712
PHONE: (702) 888-7464
FAX: (702) 888-7207

Utah Department of Transportation
Aeronautical Operations Division
135 North 2400 West
Salt Lake City, UT 84116
PHONE: (801) 715-2260
FAX: (801) 533-6048

CHAPTER SEVEN

WHY A PUBLIC-OWNED AIRPORT?

First, and perhaps foremost, airports—whether large or small—are very valuable assets to a community. The annual economic benefit that accrues to a community ranges from many billions, in the case of a large hub airport, to many millions, in the case of even a small general aviation airport.

Today, millions of people travel by air, including employees of corporations which make the products we purchase and use daily. Aircraft are vital for the transportation of people and products. In 1994, there were over 9,000 corporate and 27,000 business aircraft in the United States. These aircraft flew over 6 million hours. Many companies own extensive fleets of corporate aircraft to allow them to operate both from corporate headquarters and their remote facilities. Any community that wants to attract industry and employment needs a gateway to the airways of the world.

Economic benefits accrue directly, by the infusion of aviation funds at the airport and the creation of jobs at the airport. Many services and products are also necessary to support the airport operation, and these items represent secondary benefits to a community.

As a catalyst of economic activity, the airport is an asset that the community cannot allow to be mismanaged. Costs for operation, land rental, etc., must be reasonably set. Safety and security must also be maintained. All of these will be priorities to a community that views its airport as an asset.

Municipalities are in a good position to draw on each of their departments, whether for police support, fire support, or in the case of a small facility, for everything from engineering to landscaping support. One other important area is information systems support. Geographic information systems (GIS) are often developed for highway use, etc., but are also very important for airports. Many opportunities for synergy are found in a municipality.

Zoning and other environmental issues such as noise are of paramount importance to an airport. Consequently, the airport must have major and direct input in such issues. Municipally-owned airports are in the best position to have such input. Municipalities have the power of condemnation to acquire land for noise, safety or airport expansion purposes. Private owners are hard-pressed to do so.

Municipalities are also generally best suited to make investments in the infrastructure necessary to support the airport, and are often able to issue bonds against their general fund strength.

Environmental issues have already been mentioned, but airports, if not operated correctly, have the potential to be huge polluters. A municipality has its community's interests at heart in ensuring the clean operation of their airport.

Whether a public or private enterprise, attempting to establish an airport requires investing large sums of money. The amount invested could, perhaps, be far more substantial than any private corporate venture could afford. Even if an individual or corporation does have the financial resources to construct an airport, additional economic factors will impact the investment further. Taxes on airport property may become prohibitive as land values rise. The cost of funds for development cannot be controlled and the high interest rates associated with borrowed funds might make investment infeasible.

Communities desire an aeronautical facility which they can be proud of as their "aeronautical gateway." Therefore, many public agencies have undertaken the task of providing these facilities. This has been done through public-owned airport development and management.

An optimally functioning airport is one of the most powerful economical stimulants a community can use to attract developing industries. Only progressive businesses and industries pay the type of wages, and give wage earners the type of employment stability, which makes the community grow and develop. Elected and appointed officials should be aware that this service to business and industry, and indirectly to the wage earners and retail merchants, is one important reason the community should operate and maintain a public-owned airport.

PUBLIC PROTECTION OF AIRPORTS THROUGH ZONING

Citizens are becoming much more aware of airplane activities and are actively soliciting others to complain about airport noise. To protect their valuable asset, legislative authorities must work closely with their neighboring communities. All communities owning an airport must protect it through their General Plan. Additionally, to assure that the desires and needs of the residents are addressed, input and perspectives from surrounding communities are vital to acceptable airport land-use planning. Public outreach and education programs have proven useful at a number of airports. As such, there are several complex zoning related issues relevant to airport land use compatibility addressing the land adjacent to public airports. Some of them are:

Noise (as defined by measurable levels of noise from aircraft operations near an airport):

The clear objective of noise compatibility criteria is to minimize the number of people exposed to frequent and/or high levels of noise. The basic strategy for achieving noise compatibility in an airport vicinity is to limit the development of land uses which are particularly sensitive to noise.

Safety (from the perspective of minimizing the risks of aircraft accidents beyond the runway environment):

There are two components to this objective: (1) Safety on the ground; and (2) Safety for aircraft occupants. Compatibility strategies must consider both components. In both cases, the primary strategy is to limit the intensity of use in locations most susceptible to an off-airport aircraft accident by establishing criteria regarding: density/intensity of use limitations; creating open space requirements; and restricting critical types of land uses such as schools, residential dwellings, hospitals, senior/nursing homes or other uses in which the mobility of occupants is severely limited, and flammable/hazardous material storage.

Airspace Protection

Height zoning laws and the application of FAR Part 77 have historically been used to help protect airports from tall structures and other objects which could affect the viability of an airport. While many states employ the use of one or both of these, there are drawbacks to each of them when used alone as protection for the airport's environs. FAR Part 77 is also often misunderstood by the public. When the FAA makes a "no hazard" determination on a proposed structure, it is not automatically classified as a proper land use for the airport environs. The FAA examines the proposed structure in terms of airspace and navigational impacts, not land use impacts. The FAA also cannot enforce a "hazard" determination; that remains with local government and its zoning laws. The zoning laws themselves may or may not be effective in providing for compatible uses of the land around airports. Much depends on how the zoning is administered, notwithstanding the fact that they can be changed by a local government entity which may not be supportive of its airport. The objective is to avoid development of land use conditions which can increase the risk of an accident occurring. Compatibility strategies are to avoid airspace obstructions as well as other hazards to flight. Protection from residential encroachment or navigable airspace obstructions requires the support of community zoning and ordinance functions.

Overflights (loosely defined as impacts to the public by aircraft routinely flying over a community):

The objective associated with overflight impacts is not easily expressed in land use planning terms. It can be stated as to avoid having people located where they might be annoyed by frequent overflights. The ideal land use compatibility strategy with respect to overflight annoyance is to avoid development of residential areas in the affected locations.

Airports also have a responsibility to the surrounding communities. The issue of aircraft noise must be particularly addressed in the more urban areas. If surrounding land use is properly developed, the issue of noise becomes substantially less. Airplanes are being built significantly quieter than in the past, and the actual noise is diminishing. This lower noise level, however, should not be a signal for municipalities to allow additional residential units closer to airports.

CHAPTER EIGHT

YOUR AIRPORT RESPONSIBILITIES

As an elected or appointed official, you are charged with providing policy and guidance to the management of the airport system with which you are associated. Depending on the nature of the enabling legislation, statute, or by-laws, you and your fellow officials may have authority to approve budgets, capital programs and planning projects, as well as having responsibility for setting rules for purchasing and personnel matters.

Each airport has a unique and often colorful history. Historic obligations and limitations may exist for the airport's governing body. You should be provided with the limiting conditions that came with the land and facilities when the airport was passed to the organization you represent. Additional land acquisitions may also be encumbered by deed restrictions, land use limitations and funding grant covenants.

It is a truism that the more activity at the airport, the greater its political profile, and the larger the number of constituents with a vested interest; but the rules governing most airport activities are set by the FAA. Even the smallest airport in a rural area, with few based aircraft and only occasional operations, will be bound by many of the same rules. The regulations are designed to help you accomplish two key issues.

- Protect the asset value of the airport for the betterment of the traveling public and the local community, and
- Ensure the airport's ongoing operation as a public facility.

In your policy making deliberations, you will be asked to make decisions regarding these two issues. You will be called upon to balance the revenues and expense items so as not to unduly burden any of the users. You must balance your representation by considering all facets of aviation, without discriminating for or against any segment.

Rates and charges to users for airport assets should return fair market value to the organization. At most airports, it is illegal for land or facilities to be used by other governmental or quasi-governmental agencies for non-aeronautical uses or for rents of less than fair market value. Animal shelters, police and fire facilities, and non-airport administrative buildings are examples of problematic land uses that have occurred in the past. Deed covenants and funding grant restrictions can provide you with guidance on issues limiting the use of airport property.

The use of airport revenues from operations, rents, or land sales may also be constrained. Many airport governing boards are faced with litigation when planning to subsidize new airline service using funds from other airlines. Beware of those attractive community non-profit fund raisers and programs. Unless the outcome directly benefits the airport and its activities, supporting these activities may be construed as diversion of funds to non-aeronautical uses.

Airports have some traditional funding sources, but a supportive and enthusiastic representative body can choose to pursue bonds or more nontraditional funding sources, including:

- community development block grants
- historic preservation block grants
- funds from other transportation modes for access road and multi-modal links
- tourism development funds to draw additional air service or passengers.

Your policies may address expanded marketing of your airport's assets. When successful, these efforts are positive and legal ways to raise revenue to support the airport while contributing to overall community economic health. Marketing efforts can focus on expanded air cargo activity, new aviation services and revived airport terminal concessions. Identifying unused or underutilized lands and buildings for new opportunities has a potential to bring in new revenues.

Your responsibilities to ensure continuing operations of the airport may involve you in issues far from airport property boundaries. As a representative of your entity, you have the obligation to assist local land use planners and be concerned with projects or construction with potential negative impact on the airport, its approach and departure traffic patterns, and the safety of those on the ground and in the air. You can be an advocate for comprehensive zoning regulations on the future locations of telecommunications towers, land fills, expanded electrical transmission lines, and other incompatible construction. You may be faced with difficult decisions on siting public facilities such as schools, hospitals and stadiums near airport operations areas.

The “big picture” clearly shows that airport authorities have much work to do in the years ahead to make their facilities attractive to aviation users. With proper management and direction of the airport, the community will benefit directly and indirectly through the payrolls brought into the community by new businesses and industries.

As the second millennium arrives, the emphasis will continue on sound management principles for entities both private and public. Your policy decisions should meet that primary challenge. Adopt self-sustainability as a primary goal for the business of airport business.

INFORMATION: For more information about the Southwest Chapter/AAAE, airports, airport management, or other aviation associations, or to order additional copies of this Guide, contact us on our homepage at:

<http://www.swaaae.org>

GLOSSARY OF AIRPORT TERMS

Many technical terms and expressions are used in the airport and aviation industry. This glossary has been prepared for the Southwest Chapter of the American Association of Airport Executives. The definitions in this glossary were compiled from various sources including government publications such as Federal Aviation Administration (FAA) Advisory Circulars, FAA Orders, the Federal Aviation Regulations (FARs) and professional literature.

AAAE (TRIPLE-A E) - AMERICAN ASSOCIATION OF AIRPORT EXECUTIVES.

A-WEIGHTED SOUND LEVEL (dBA) - The human ear does not respond equally to all sound frequencies. It is less efficient at low and high frequencies than it is at medium or speech-range frequencies. Thus, to obtain a single number representing the sound level of a noise having a wide range of frequencies in a manner representative of the ear's response, it is necessary to reduce the effects of the low and high frequencies with respect to the medium frequencies. The resultant sound level is said to be A-weighted, and the units are decibels (dB); hence, the abbreviation is dBA. The A-weighted sound level is also called the noise level. Sound level meters have an A-weighting network for measuring A-weighted sound level.

ABOVE GROUND LEVEL (AGL) - An elevation datum given in feet above ground level.

AC - See **ADVISORY CIRCULAR**

ADT - See **AVERAGE DAILY TRAFFIC**

ADVISORY CIRCULAR (AC) - A series of external FAA publications consisting of all non-regulatory material of a policy, guidance, and informational nature.

AERONAUTICAL CHART - A representation of a portion of the earth, its culture and relief, specifically designated to meet the requirements of air navigation.

AFFECTED LOCAL GOVERNMENT AGENCIES - The local government agencies that have the authority to control land uses in areas that are adversely affected by aviation activities.

AGL - See **ABOVE GROUND LEVEL**

AIM – See **AIRMAN'S INFORMATION MANUAL**

AIP PROGRAM - See **AIRPORT IMPROVEMENT PROGRAM**

AIR CARRIER - A legal entity who undertakes directly by lease or other arrangements, to engage in air transportation.

AIR CARRIER, CERTIFICATED ROUTE - An air carrier holding a Certificate of Public Convenience and Necessity, issued by the U.S. Department of Transportation under Part 121 of the Federal Aviation Regulations (FAR), to conduct scheduled services over specified routes and a limited amount of nonscheduled operations.

AIR CARRIER, COMMUTER - An air taxi operator who, under FAR Part 135, (1) performs at least five round trips per week between two or more points and publishes flight schedules which specify the times, days of the week, and places between which such flights are performed; or (2) transports mail by air pursuant to a contract with the U.S. Postal Service.

AIRCRAFT ACCIDENT - An occurrence associated with the operation of an aircraft which takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, and in which any person suffers death or serious injury as a result of being in or upon the aircraft or by direct contact with the aircraft or anything attached thereto, or in which the aircraft receives substantial damage.

AIRCRAFT APPROACH CATEGORY - A grouping of aircraft based on a speed of 1.3 times the stall speed in the landing configuration at maximum gross landing weight. An aircraft shall fit in only one category. If it is necessary to maneuver at speeds in excess of the upper limit of a speed range for a category, the minimums for the next higher category should be used. For example, an aircraft which falls in Category A, but is circling to land at a speed in excess of 91 knots, should use the approach Category B minimums when circling to land. The categories are as follows:

1. Category A. Speed less than 91 knots.
2. Category B. Speed 91 knots or more but less than 121 knots.
3. Category C. Speed 121 knots or more but less than 141 knots.
4. Category D. Speed 141 knots or more but less than 166 knots.
5. Category E. Speed 166 knots or more.

AIRCRAFT CLASSES – For the purposes of Wake Turbulence Separation Minima, ATC classifies aircraft as Heavy, Large, and Small as follows:

1. Heavy. Aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are operating at this weight during a particular phase of flight.
2. Large. Aircraft of more than 12,500 pounds, maximum certificated takeoff weight, up to 300,000 pounds.
3. Small. Aircraft of 12,500 pounds or less maximum certificated takeoff weight.

AIRCRAFT PARKING LINE LIMIT (APL) - A line established by the airport authorities beyond which no part of a parked aircraft should protrude.

AIRFIELD CAPACITY (HOURLY) - The maximum number of aircraft operations (landings or takeoffs) that can take place on an airfield in one hour under specific conditions.

AIRMAN'S INFORMATION MANUAL (AIM) - A primary FAA publication whose purpose is to instruct airmen about operating in the National Airspace System of the U.S. It provides basic flight information, ATC Procedures and general instructional information concerning health, medical facts, factors affecting flight safety, accident and hazard reporting, and types of aeronautical charts and their use.

AIRPORT - An area of land or water that is used or intended to be used for the landing and taking off of aircraft, and includes its buildings and facilities, if any.

AIRPORT ELEVATION - The highest point of an airport's usable runways, measured in feet above mean sea level.

AIRPORT ENVIRONS - The area surrounding an airport that is considered to be directly affected by the presence and operation of that airport.

AIRPORT HAZARD - Any structure or natural object located on or in the vicinity of a public airport, or any use of land near such airport, that obstructs the airspace required for the flight of aircraft landing, taking off, or taxiing at the airport.

AIRPORT IMPROVEMENT PROGRAM (AIP) - The AIP program is administered to provide financial grants-in-aid for airport development projects such as runways, taxiways, aircraft parking aprons, terminal buildings and land acquisition associated with airport development including runway protection zones and approach protection.

AIRPORT LAND USE COMMISSION (ALUC) - In California, a state-authorized body existing in each county having the responsibility to develop plans for achieving land use compatibility between airports and their environs.

AIRPORT LAND USE PLAN (ALUP) - In California, the formal plan, developed and adopted by an ALUC, setting forth criteria, policies and specifications for the preservation of long-term, land use compatibility between an airport and its environs.

AIRPORT LAYOUT PLAN - A plan (drawings) for an airport showing boundaries and proposed additions to all areas owned or controlled by the sponsor for airport purposes, the location and nature of existing and proposed airport facilities and structures, and the location on the airport of existing and proposed non-aviation areas and improvements thereon.

AIRPORT MASTER PLAN - An assembly of appropriate documents and drawings covering the development of a specific airport from a physical, economic, social, and political jurisdictional perspective. The Airport Layout Plan is a part of this plan.

AIRPORT NOISE COMPATIBILITY PLANNING STUDY - A study designed to increase the compatibility of land and facilities in the areas surrounding an airport that are most directly affected by the operation of the airport. The specific purpose is to reduce the adverse effects of noise as much as possible by implementing both on-airport noise control measures and off-airport land use control programs. The basic products of an Airport Noise Compatibility Planning Study typically include:

- (1) workable on-airport noise abatement actions such as preferential runway use programs, new or preferential flight tracks, curfews, etc.;
- (2) off-airport land use control programs and regulations such as land acquisition, soundproofing, or special actions and programs; and
- (3) policies and procedures related to the implementation of on-airport and off-airport programs.

AIRPORT PROPRIETOR - Owner of an airport or other party having authority to control airport operations. In California, the holder of an airport permit issued by the Department of Transportation, Division of Aeronautics pursuant to Article 3, Chapter 4, Part 1, Division 9, Public Utilities Code.

AIRPORT RADAR SERVICE AREA (ARSA) - Regulatory airspace surrounding designated airports wherein FAA Air Traffic Control provides radar vectoring and sequencing on a full-time basis for all IFR and VFR aircraft. As of September 1993, the term ARSA has been replaced by the term Class C Airspace.

AIRPORT REFERENCE POINT - A point established on an airport, having an equal relationship to all existing and proposed landing and takeoff areas, and used to geographically locate the airport for other planning purposes.

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

AIRPORT TRAFFIC AREA - Unless otherwise specifically designated in FAR Part 93, that airspace within a horizontal radius of 5 statute miles from the geographical center of any airport at which a control tower is operating, extending from the surface up to, but not including, an altitude of 3,000 feet above the elevation of an airport. Unless otherwise authorized by ATC, no person may operate an aircraft within an airport traffic area except for the purpose of landing at or taking off from an airport within that area. ATC authorizations may be given as individual approval of specific operations or may be contained in written agreements between airport users and the tower concerned.

AIRPORT TRAFFIC CONTROL TOWER (ATCT) - A terminal facility that uses air-to-ground communications, visual signaling, and other devices to provide ATC services to aircraft operating in the vicinity of an airport or on the movement area.

AIR ROUTE SURVEILLANCE RADAR (ARSR) - Air route traffic control center (ARTCC) radar used primarily to detect an aircraft's position which en route between terminal areas, enabling controllers to provide radar air traffic control service when aircraft are within the ARSR coverage.

AIR ROUTE TRAFFIC CONTROL CENTER (ARTCC) - An FAA facility established to provide air traffic control service to aircraft operating on an instrument flight rule (IFR) flight plan within controlled airspace and principally during the en route phase of flight.

AIR TAXI - Operations performed by operators of aircraft holding an air taxi certificate under Part 135 of the Federal Aviation Regulations. This category includes commuter airline operations (excluding certificated commuter airlines), mail carriers under contract with the U.S. Postal Service, and operators of nonscheduled air taxi services. Typically, air taxis do not utilize aircraft with a payload capacity over 75,000 pounds or capable of carrying more than 30 passengers.

AIR TRAFFIC - Aircraft operating in the air or on an airport surface, exclusive of loading ramps and parking areas.

AIR TRAFFIC CONTROL (ATC) - A service operated by appropriate authority (the FAA) to promote the safe, orderly, and expeditious flow of air traffic.

AIRWAY/FEDERAL AIRWAY - A Class E airspace area established in the form of a corridor, the centerline of which is defined by radio navigational aids. (See also **CONTROLLED AIRSPACE**.)

ALPA - Airline Pilot's Association.

ALTITUDE - The height of a level, point, or object measured in feet Above Ground Level (AGL) or from Mean Sea Level (MSL).

ALUC - See **AIRPORT LAND USE COMMISSION**

ALUP - See **AIRPORT LAND USE PLAN**

AMBIENT NOISE - The total of all noise in a system or situation, independent of the presence of the specific sound to be measured. In acoustical measurements, strictly speaking, ambient noise means electrical noise in the measurement system. However, in popular usage ambient noise means is also used with the same meaning as "background noise" or "residual noise." (See also **AMBIENT NOISE LEVEL**.)

AMBIENT NOISE LEVEL – The composite of noise from all sources near and far. The ambient noise level constitutes the normal or existing level of environmental noise at a given location. (i.e., the background noise level.)

APPROACH CLEARANCE - Authorization by ATC for a pilot to conduct an instrument approach at an airport with appropriate facilities.

APPROACH LIGHT SYSTEM (ALS) - An airport lighting system which provides visual guidance enabling a pilot to align the aircraft with the extended runway centerline during final approach to landing.

APPROACH SPEED - The recommended speed contained in aircraft manuals used by pilots when making an approach to landing. This speed will vary for different segments of an approach as well as for aircraft weight and configuration.

APRON/RAMP - A defined area on an airport or heliport intended to accommodate aircraft for purposes of loading passengers or cargo, refueling, parking, or maintenance.

ARTCC - See **AIR ROUTE TRAFFIC CONTROL CENTER**

ASNA - See **AVIATION SAFETY AND NOISE ABATEMENT ACT OF 1979**

ATA - Air Transport Association.

ATC - See **AIR TRAFFIC CONTROL**

ATIS - See **AUTOMATIC TERMINAL INFORMATION SERVICE**

AUTOMATED WEATHER OBSERVING SYSTEM (AWOS) - Airport electronic equipment which automatically measures meteorological parameters, reduces and analyzes the data via computer, and broadcasts weather information which can be received on aircraft radios.

AUTOMATIC TERMINAL INFORMATION SERVICE (ATIS) - The continuous broadcast of recorded non-control information in selected terminal areas (e.g. time, weather, ceiling, visibility, etc.).

AVERAGE DAILY TRAFFIC (ADT) - An expression of traffic volume, ADT means the average number of vehicles per day that pass over a given point.

AVIATION SAFETY AND NOISE ABATEMENT ACT OF 1979 (ASNA) - Public Law 96-193, enacted February 18, 1980. The purpose of the Act is to provide assistance to airports in preparing and carrying out noise compatibility programs and in assuring continued safety for aviation. The Act also contains provisions that extend, until January 1, 1988, the requirement for certain types of aircraft to comply with Part 36 of the Federal Aviation Regulations (see also FAR Part 36 and FAR Part 150). Funding for the noise studies has been appropriated by the U.S. Congress and has commenced in 1983. Funding for program implementation, including acquisition and soundproofing of affected residences, has been approved by FAA and is being implemented at several U.S. airports.

AVIGATION EASEMENT - A type of acquisition of an interest in land or property which involves less-than-fee purchase. One form of avigation easement grants an airport the right to perform aircraft operations over the designated property, including operations that might cause noise, vibration, and other effects. A stronger form of easement is a deed restriction that may include (1) the right to perform aircraft operations on the property, and (2) public acquisition of a landowner's rights restricting future development of the property for any use more intensive than that existing at the time of the transaction. This easement may also include specific prohibitions on the uses for which the property may be developed. Maximum heights of structures and other objects may also be specified.

AZIMUTH - Horizontal direction or bearing; usually measured from the reference point of 0 degrees clockwise through 360 degrees.

BACKCOURSE APPROACH - A non-precision instrument approach utilizing the rearward projection of the ILS Localizer beam.

BASED AIRCRAFT - Aircraft stationed at an airport on a long-term or permanent basis, usually by some form of agreement between the aircraft owner and airport management.

BASE LEG - A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline. (See also **TRAFFIC PATTERN**.)

BLAST PAD - A paved area, of runway width, extending beyond the runway takeoff threshold for a sufficient distance (typically 150 to 300 feet) to prevent soil erosion caused by jet engine backblast.

BUILDING RESTRICTION LINE (BRL) - A line established with respect to the runway centerline to assure that structures will not project above the imaginary surfaces required by Federal Aviation Regulations, Part 77, "*Obstruction Clearance Criteria*," (FAR Part 77).

BUSINESS AVIATION - The sector of general aviation (as defined by ICAO) which concerns the operation of aircraft by companies for the carriage of passengers or goods as an aid to the conduct of their business, flown for purposes generally considered not for public hire, and piloted by individuals having at the minimum a valid commercial pilot license with an instrument rating.

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) – An Act of the State of California designed to:

1. Inform governmental decision-makers and the public about the potential, significant environmental effects of proposed activities.
2. Identify the ways that environmental damage can be avoided or significantly reduced.
3. Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
4. Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved. (CEQA Guidelines, Sec. 15002[a]).

CATEGORICAL EXEMPTION - An exemption from CEQA for classes of projects based on findings by the secretary of the resources agency that the listed classes of projects do not have a significant effect on the environment.

CEILING - Height above the earth's surface to the lowest layer of clouds or obscuring phenomena that is reported as "broken," "overcast," or "obscuration" and not classified as "thin" or "partial."

CEQA - **See** CALIFORNIA ENVIRONMENTAL QUALITY ACT

CIRCLING APPROACH/CIRCLE-TO-LAND MANEUVER - A maneuver initiated by the pilot to align the aircraft with a runway for landing when a straight-in landing from an instrument approach is not possible or not desirable.

CLEAR ZONE - **See** RUNWAY PROTECTION ZONE

CLEARWAY - For turbine engine powered airplanes certificated after August 29, 1959, an area beyond the runway, not less than 500 feet wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of clearway plane, extending from the end of the runway with an upward slope not exceeding 1.25 percent, above which no object nor any terrain protrudes. However, threshold lights may protrude above the plane if their height above the end of the runway is 26 inches or less and if they are located to each side of the runway.

CNEL - See **COMMUNITY NOISE EQUIVALENT LEVEL**.

COMMERCIAL SERVICE AIRPORT - Commercial service airports are public-owned owned airports which enplane 2,500 or more passengers annually and receive scheduled service.

COMMON TRAFFIC ADVISORY FREQUENCY (CTAF) - A frequency designed for the purpose of carrying out airport advisory practices while operating to or from an uncontrolled airport. The CTAF may be a UNICOM, Multicom, FSDS, or tower frequency and is identified in appropriate aeronautical publications.

COMMUNITY NOISE EQUIVALENT LEVEL (CNEL) - A method of predicting, by a single number rating, cumulative aircraft noise that affects communities in airport environs. As defined in the California Airport Noise Standards, CNEL represents the average daytime noise level during a 24-hour day, adjusted to an equivalent level to account for the lower tolerance of people to noise during evening and nighttime periods relative to the daytime period. Weighting factors equivalent to penalties of about five decibels and ten decibels are applied to operations conducted from 7:00 PM to 10:00 PM and from 10:00 PM to 7:00 AM, respectively, to account for increased sensitivity during those periods.

COMMUTER AIR CARRIER - See **AIR CARRIER, COMMUTER**

COMPREHENSIVE LAND USE PLAN (CLUP) - See **ALUP**.

CONTROLLED AIRSPACE - Any of several types of airspace within which some or all aircraft may be subject to air traffic control. An airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification. Controlled airspace is a generic term that covers Classes A-E airspace. Controlled airspace is also that airspace within which all aircraft operators are subject to certain pilot qualifications, operating rules, and equipment requirements in Part 91 (for specific operating requirements, please refer to Part 91). For IFR operations in any class of controlled airspace, a pilot must file an IFR flight plan and receive an appropriate ATC clearance. Each Class B, Class C, and Class D airspace area designated for an airport contains at least one primary airport around which the airspace is designated (for specific designations and descriptions of the airspace classes, refer to FAR Part 71).

COUNCIL ON ENVIRONMENTAL QUALITY (CEQ) - Established by the National Environmental Policy Act (NEPA) of 1969, the Council is composed of three members appointed by the President. A major purpose of the Council is to formulate and recommend national policies to promote the improvement of environmental quality.

CTAF - See **COMMON TRAFFIC ADVISORY FREQUENCY**.

DATABASE - A computer file (or set of files) containing a field of related numerical information (data) for use in automated analysis or processing. A computerized "land use database" is a computer file containing the coordinates, dimensions and areas of all individual land use polygons which comprise the pattern of land use within a specific geographic area.

DAY-NIGHT AVERAGE SOUND LEVEL (DNL or Ldn) - A method for predicting, by a single number rating, cumulative aircraft noise that affects communities in airport environs. The Ldn value represents decibels of noise as measured by an A-weighted sound-level meter (see also). In the Ldn procedure, the noise exposure from each aircraft takeoff or landing at ground level around an airport is calculated, and these noise exposures are accumulated for a typical 24-hour period. (The 24-hour period often used is the average day of the year being analyzed.) Daytime and nighttime noise exposures are considered separately. A weighting factor equivalent to a penalty of 10 decibels is applied to operations between 10:00 p.m. and 7:00 am to account for the increased sensitivity of people to nighttime noise. The Ldn values can be expressed graphically on maps using contours of equal noise exposure. Ldn may also be used for measuring other noise sources, such as automobile traffic, to determine combined noise effects.

dB - See **DECIBEL, dB**

DECIBEL, dB - A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).

DEREGULATION ACT - Airline regulatory reform act of 1978. Designed, among other things, to encourage competition among domestic air carriers, the Act allows an air carrier greater freedom to enter and leave any given market.

DISPLACED THRESHOLD - A runway landing threshold that is located at a point other than the designated beginning of the runway (where departures would begin).

DISTANCE MEASURING EQUIPMENT (DME) - Equipment (airborne and ground) used to measure, in nautical miles, the slant range distance of an aircraft from the DME navigational aid.

DME - See **DISTANCE MEASURING EQUIPMENT**

DNL - See **DAY-NIGHT AVERAGE SOUND LEVEL**

DOWNWIND LEG - A flight path parallel to the landing runway in the direction opposite the landing direction.

DURATION - Length of time, in seconds, a noise event such as an aircraft flyover is experienced. (May refer to the length of time a noise event exceeds a specified threshold level.)

EA - See **ENVIRONMENTAL ASSESSMENT**

EIR - See **ENVIRONMENTAL IMPACT REPORT**

EIS - See **ENVIRONMENTAL IMPACT STATEMENT**

ENGINE RUN-UP AREA - An area on an airport where aircraft engines are serviced or tested. The noise from such servicing or testing can affect neighborhoods adjacent to the airport.

ENVIRONMENTAL ASSESSMENT (EA) - An assessment of the environmental effects of a proposed action for which federal financial assistance is being requested or for which federal authorization is required. The EA serves as the basis for the FAA's Environmental Impact Statement (EIS) or Finding of No Significant Impact (FONSI), as specified in FAA Orders 1050.1D and 5050.4.

ENVIRONMENTAL IMPACT REPORT (EIR) – An EIR is a detailed statement prepared in accordance with CEQA describing a proposed project, analyzing significant environmental effects of the proposed project, identifying a reasonable range of alternatives, and discussing possible ways to mitigate or avoid the significant environmental effects.

ENVIRONMENTAL IMPACT STATEMENT (EIS) - A document prepared under the requirements of the National Environmental Policy Act of 1969 (NEPA), Section 102(2)(c). The EIS represents a federal agency's evaluation of the effect of a proposed action on the environment. New regulations relating to the preparation of an EIS are published in FAA Orders 1050.1D and 5050.4.

ENPLANED/DEPLANED PASSENGERS - The volume of passengers outbound from an airport (enplaned) or inbound to an airport (deplaned). The annual passenger volume of an airport is the total of enplaned and deplaned passengers.

EQUIVALENT ENERGY LEVEL, Leq - The sound level corresponding to a steady state sound level containing the same total energy as a time varying signal over a given sample period. Leq is typically computed over 1, 8 and 24-hour sample periods.

EPA - The U.S. Environmental Protection Agency

FAA - See **FEDERAL AVIATION ADMINISTRATION**

FAA NOISE POLICY - The Aviation Noise Abatement Policy of the Department of Transportation, Federal Aviation Administration issued on November 18, 1976. The policy outlines the responsibilities and actions that may be taken to reduce adverse effects of aviation-related noise.

FAA ORDER - An internal FAA directive which sets standards, procedures and guidelines for FAA execution of its various regulatory and grant administration mandates.

FAA ORDER 1050.1D - An order published by the FAA, dated December 21, 1983, entitled "*Policies and Procedures for Considering Environmental Impacts.*" This order was prepared in response to the CEQ 1500 Regulations.

FAA ORDER 5050.4A - This document, entitled "*Airport Environmental Handbook,*" was revised by the FAA on October 8, 1985. It contains all of the essential information an airport sponsor needs to meet both procedural and substantive environmental requirements, including relevant text from Order 1050.1D.

FAR – See **FEDERAL AVIATION REGULATIONS (FAR)**

FAR PART 36 - Federal Aviation Regulations, Part 36. Establishes noise standards for the civil aviation fleet. Some extensions for compliance are included in the Aviation Safety and Noise Abatement Act of 1979 (see also).

FAR PART 77 - Federal Aviation Regulations, Part 77. Establishes standards for identifying obstructions to aircraft in navigable airspace.

FAR PART 77 SURFACES - Imaginary surfaces established with relation to each runway of an airport. There are five types of surfaces (a simple acronym to remember is **P.A.T.C.H.**):

(1) *Primary Surface*, longitudinally centered on a runway, extending 200 feet beyond the ends of the runway with prepared hard surfaces. The width of a primary surface varies from 250 feet for utility runways having only visual approaches to 1,000 feet for precision instrument runways;

(2) *Approach Surface*, longitudinally centered on the extended runway centerline and extending outward and upward from each end of the primary surface. An approach surface is applied to each end of each runway based upon the type of approach available or planned for that runway end;

(3) *Transitional Surfaces* are those surfaces extending outward and upward at right angles to the runway centerline and extended at a slope of 7 to 1 from the sides of the primary surface and from the sides of the approach surfaces;

(4) *Conical Surface*, extending outward and upward from the periphery of the horizontal surface at a slope of 20 to 1 for a horizontal distance of 4,000 feet; and

(5) *Horizontal Surface* is a horizontal plane 150 feet above the established airport elevations, the perimeter of which is constructed by swinging arcs of specified radii from the center of each end of the primary surface of each runway and connecting the adjacent arcs by lines tangent to those arcs. The radius of each arc is: 5,000 feet for all runways designated as utility or visual; 10,000 feet for all other runways.

FAR PART 91 – Establishes criteria for general operating and flight rules.

FAR PARTS 121 AND 135 - The parts of Federal Aviation Regulations that deal with certification and operational requirements for commercial operators of large aircraft and air taxis, respectively.

FAR PART 150 - Federal Aviation Regulations, Part 150. Effective February 28, 1982, FAR Part 150 is the regulation which implements the noise compatibility standards and provisions contained in the Aviation Safety and Noise Abatement Act of 1979 (ASNA). FAR Part 150 prescribes procedures for airport sponsors who wish to develop Noise Exposure Maps and Airport Noise Compatibility Plans to identify and mitigate airport - land use compatibility problems. FAR Part 150 was published in the Federal Register in amended form September 14, 1993.

FAR PART 161 - Federal Aviation Regulations, Part 161. Proscribes standards and procedures which must be followed by airport sponsors in order to impose new aircraft noise restrictions.

FBO - See **FIXED BASE OPERATOR**.

FEDERAL AVIATION ADMINISTRATION - The FAA is the agency of the U.S. Department of Transportation that is charged with (1) regulating air commerce to promote its safety and development; (2) achieving the efficient use of navigable airspace of the United States; (3) promoting, encouraging, and developing civil aviation; (4) developing and operating a common system of air traffic control and air navigation for both civilian and military aircraft; and (5) promoting the development of a national system of airports.

FEDERAL AVIATION REGULATIONS (FAR) - Regulations established by the Federal Aviation Administration (FAA). These regulations are the rules which govern the operation of aircraft, airways, and airmen.

FEE-SIMPLE LAND ACQUISITION (PURCHASE) - The full purchase by the airport sponsor of land and improvements. The land is usually maintained for airport purposes or leased for uses that are compatible with airport operations. Alternatively, the airport sponsor can resell the land with an aviation easement (see also) and deed restrictions that specify the compatible land uses that are permitted. The resale option has the benefit that the land is returned to the tax rolls.

FERRY FLIGHT – A flight for the purpose of:

1. Returning an aircraft to base.
2. Delivering an aircraft from one location to another.
3. Moving an aircraft to and from a maintenance base.

FINDING OF NO SIGNIFICANT IMPACT (FONSI) - An administrative determination by the FAA that a proposed action by the airport sponsor will have no significant impact (on the environment). Specific guidelines for the preparation of a FONSI report (see EA) are included in FAA Orders 1050.1D and 5050.4A.

FIXED BASE OPERATOR (FBO) – (1) A business operating at an airport that provides aircraft services to the general public, including but not limited to sale of fuel and oil; aircraft sales, rental, maintenance and repair; parking and tie down or storage of aircraft; flight instruction; air taxi/charter operations; and specialty services, such as instrument and avionics maintenance, painting, overhaul, aerial application, aerial photography, aerial hoists or pipeline patrol. (2) The owner of such an operation.

FLIGHT PATH/TRACK - A line, course, or track along which an aircraft is flying or intended to be flown.

FLIGHT SERVICE STATION (FSS) - FAA facilities that provide pilot briefings on weather, airports, altitudes, routes, and other flight planning information. More specifically, these FSS facilities also provide en route communications and VFR search and rescue services, assist lost aircraft and aircraft in emergency situations, relay ATC clearances, originate Notices to Airmen, broadcast aviation weather and NAS information, receive and process IFR flight plans, and monitor NAVAID's. In addition, at selected locations, FSS's provide Enroute Flight Advisory Service (Flight Watch), take weather observations, issue airport advisories, and advise Customs and Immigration of transborder flights.

FLIGHT STANDARDS DISTRICT OFFICE (FSDO) - An FAA field office serving an assigned geographical area and staffed with Flight Standards personnel who serve the aviation industry and the general public on matters relating to the certification and operation of air carrier and general aviation aircraft. Activities include general surveillance of operational safety, certification of airmen and aircraft, accident prevention, investigation, enforcement, etc.

FLIGHT WATCH - A shortened term for use in air-ground contacts to identify the flight service station providing En Route Flight Advisory Service; e.g., "Oakland Flight Watch."

FLIGHT VISIBILITY - See **VISIBILITY**.

FONSI - See **FINDING OF NO SIGNIFICANT IMPACT**

GENERAL AVIATION (GA) - All civil aviation except that classified as air carrier or air taxi. The types of aircraft typically used in general aviation activities vary from multi-engine jet aircraft to single-engine piston aircraft.

GENERAL AVIATION OPERATIONS - Operations performed by all civil aircraft not classified as air carrier or air taxi aircraft.

GLIDE SLOPE (GS) - An electronic signal radiated by a component of an ILS to provide descent path guidance to approaching aircraft.

GLOBAL POSITIONING SATELLITE SYSTEM (GPS) - A navigational system utilizing satellites to provide non-precision guidance in azimuth, elevation, and distance measurement.

GROUND VISIBILITY - See **VISIBILITY**.

HEAVY AIRCRAFT - Aircraft capable of takeoff weights of 300,000 pounds or more whether or not they are operating at this weight during a particular phase of flight.

HELICOPTER - Rotorcraft that, for its horizontal motion, depends principally on its engine-driven rotors.

HELIPAD - A small, designated area, usually with a prepared surface, on a heliport, airport, landing/takeoff area, apron/ramp, or movement area used for takeoff, landing, or parking of helicopters.

HELIPORT – An area of land, water, or structure used or intended to be used for the landing and takeoff of helicopters and includes its buildings and facilities if any.

HUB - The term *hub* has more than one meaning in air transportation. It was first used by the Civil Aeronautics Board to describe the geographic areas that generate substantial portions of the nation's airline traffic. Later, it was adapted to categorize airports by the amount of passengers enplaned. It is also used to describe an airline route structure in which flights radiate from a major (hub) airport, much like spokes from the hub of a wheel, with the major airport serving as a transfer point for passengers changing flights. The strong competition among airlines in recent years has encouraged the use of such hubs. Urbanization and airline use of transfer hubs tends to concentrate traffic at the nation's largest airports. Commercial service airports (see) are classified as large, medium, small, or nonhub airports, depending upon the percentage of the total national enplanements for which they account. See also definition of Primary airport.

<u>Hub Category</u>	<u>Percentage of total national enplanements</u>	<u>Number of annual enplanements -1988</u>
Large (L)	1% and more	4,830,895 or more
Medium (M)	0.25 - 1.00	1,207,724 - 4,830,895
Small (S)	0.05 - 0.25	241,545 - 1,207,724
Non (N)	Less than 0.05%	Less than 241,545

IFR - See **INSTRUMENT FLIGHT RULES**

IFR CONDITIONS - Weather conditions that require aircraft to be operated in accordance with instrument flight rules.

IFR MINIMUMS AND DEPARTURE PROCEDURES (FAR PART 91) - Prescribed takeoff rules. For some airports, obstructions or other factors require the establishment of nonstandard takeoff minimums or departure procedures, or both. Both may be required to assist pilots in avoiding obstacles during climb to the minimum en-route altitude.

ILS - See **INSTRUMENT LANDING SYSTEM**.

ILS CATEGORIES –

1. ILS Category I – An ILS approach procedure which provides for approach to a height above touchdown of not less than 200 feet and with runway visual range of not less than 1,800 feet.
2. ILS Category II – An ILS approach procedure which provides for approach to a height above touchdown of not less than 100 feet and with runway visual range of not less than 1,200 feet.
3. ILS Category III.
 - a. IIIA – An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 700 feet.
 - b. IIIB – An ILS approach procedure which provides for approach without a decision height minimum and with runway visual range of not less than 150 feet.
 - c. IIIC – An ILS approach procedure which provides for approach without a decision height minimum and without runway visual range minimum.

IMPACT - In environmental and noise control studies, the word “impact” is used to express the extent or severity of an environmental problem, e.g., the number of persons exposed to a given noise environment. As indicted in CEQ 1500 (Section 1508.8), impacts and effects are considered to be synonymous. Effects or impacts may be ecological, aesthetic, historic, cultural, economic, social, or health related, and they may be direct, indirect, or cumulative.

INCOMPATIBLE LAND USE - Residential, public, recreational and certain other noise-sensitive land uses which are designated as unacceptable within specific ranges of cumulative (Ldn) noise exposure as set forth in Table 2 of Appendix A of FAR Part 150.

INSTRUMENT APPROACH PROCEDURE - 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. It is prescribed and approved for a specific airport by competent authority.

INSTRUMENT FLIGHT RULES (IFR) - Rules specified by the FAA for flight under weather conditions in which visual reference cannot be made to the ground and the pilot must rely on instruments to fly and navigate.

INSTRUMENT LANDING SYSTEM (ILS) - An electronic system which provides the aircraft with lateral, longitudinal and vertical guidance necessary for an instrument landing.

INSTRUMENT OPERATION - An aircraft operation in accordance with an IFR flight plan or an operation where IFR separation between aircraft is provided by a terminal traffic control facility.

INSTRUMENT RUNWAY - A runway equipped with electronic and visual navigation aids for which a precision or non-precision approach procedure having straight-in landing minima has been approved.

ITINERANT OPERATION - An arrival or departure performed by an aircraft from or to a point beyond the local airport area. Also defined as all aircraft arrivals and departures other than local operations.

LAND USE COMPATIBILITY - The compatibility of land uses surrounding an airport with airport activities and particularly with the noise from aircraft operations.

LAND USE COMPATIBILITY ASSURANCE - Documentation provided by an airport sponsor to the FAA. The documentation is related to an application for an airport development grant. Its purpose is to assure that a reasonably appropriate action, including the adoption of zoning laws, has been taken or will be taken to restrict the use of land adjacent to the airport or in the immediate vicinity of the airport. Such uses are limited to activities and purposes compatible with normal airport operations, including the landing and takeoff of aircraft. This assurance is required of airport sponsors by Section 511 (a) (5) of the Airport and Airway Improvement Act of 1981. (See also **AIP PROGRAM**.)

LAND USE CONTROLS - Controls established by local or state governments to carry out land use planning. The controls include zoning, subdivision regulations, land acquisition (in fee simple, lease-back, or easements), building codes, building permits, and capital improvement programs (or provide sewer, water, utilities, or other service facilities).

LAND USE PLANNING - Comprehensive planning carried out by units of local government, for all areas under their jurisdiction, to identify the optimum uses of land and to serve as a basis for the adoption of zoning or other land use controls.

LARGE AIRCRAFT - An aircraft of more than 12,500 pounds maximum certificated takeoff weight, up to 300,000 pounds.

Ldn - See **DAY-NIGHT AVERAGE SOUND LEVEL**

Lmax - The maximum A-weighted noise level recorded during a noise event.

LEAD AGENCY - In California, the public agency that has the principal responsibility for carrying-out or approving a project. The Lead Agency will decide whether an EIR or Negative Declaration will be required for the project and will cause the document to be prepared. Criteria for determining which agency will be the Lead Agency for a project are contained in Section 15051 of the CEQA guidelines.

Leq - See **EQUIVALENT ENERGY LEVEL, Leq**

Lmax - See **MAXIMUM A-WEIGHTED NOISE LEVEL**

LOC - See **LOCALIZER**.

LOCAL AGENCY - In California, any public agency other than a state agency, board, or commission. "Local Agency" includes but is not limited to cities, counties, charter cities and counties, districts, school districts, special districts, redevelopment agencies, local agency formation commissions, and any board, commission, or organizational subdivision of a local agency when so designated by order or resolution of the governing legislative body of the local agency.

LOCAL OPERATION - An aircraft operation which remains no more than 25 nautical miles from the departure point, or which terminates at the point of departure, or which does not include a stop of a greater duration than 15 minutes. Touch-and-go operations are local operations.

LOCAL TRAFFIC - Aircraft operating in the traffic pattern or within sight of the tower, or aircraft known to be departing or arriving from flight in local practice areas, or aircraft executing practice instrument approaches at the airport.

LOCALIZER (LOC) - The component of an ILS which provides horizontal course guidance to the runway.

LOCALIZER TYPE DIRECTIONAL AID (LDA) - A NAVAID used for non-precision instrument approaches with utility and accuracy comparable to a localizer, but which is not part of a complete ILS and is not aligned with the runway.

LOUDNESS - The judgment of the intensity of a sound by a person. Loudness depends primarily on the sound pressure of the stimulus. Over much of the loudness range it takes about a tenfold increase in sound pressure (approximately 10 decibels) to produce a doubling of loudness.

LOW APPROACH - An approach over an airport or runway following an instrument approach or a VFR approach including the go-around maneuver where the pilot intentionally does not make contact with the runway.

MAJOR AIRPORT DEVELOPMENT - Airport development of such a scale as to require shifts in patterns of population movement and growth, public service demands, and changes in business and economic activity.

MARKER BEACON - The component of an ILS which informs pilots that they are at a significant point on the approach course.

MEAN SEA LEVEL (MSL) - An elevation datum given in feet above mean sea level.

MICROWAVE LANDING SYSTEM (MLS) - An advanced electronic system of ground-based devices and aircraft avionics which provides the aircraft with lateral, longitudinal and vertical guidance necessary for an instrument landing. In the U.S., MLS technology has been supplanted by GPS (which see).

MILITARY OPERATION - Operations performed by military groups, such as the Air National Guard, the U.S. Air Force, U.S. Army, U.S. Marine Corps, or the U.S. Navy.

MILITARY OPERATIONS AREA (MOA) - A type of special use airspace established to separate certain military activities from IFR traffic and to identify for VFR traffic where these activities are conducted.

MINIMUM DESCENT ALTITUDE (MDA) - The lowest altitude, expressed in feet above mean sea level, to which descent is authorized on final approach or during circle-to-land maneuvering in execution of a standard instrument approach procedure where no electronic glide slope is provided.

MINIMUM SAFE ALTITUDE - The minimum altitude specified in Part 91 for various aircraft operations.

MINIMUMS - Weather condition requirements established for a particular operation or type of operation; e.g., IFR takeoff or landing, alternate airport for IFR flight plans, VFR flight, etc.

MISSED APPROACH –

1. A maneuver conducted by a pilot when an instrument approach cannot be completed to a landing. The route of flight and altitude are shown on instrument approach procedure charts. A pilot executing a missed approach prior to the Missed Approach Point (MAP) must continue along the final approach to the MAP. The pilot may climb immediately to the altitude specified in the missed approach procedure.
2. A term used by the pilot to inform ATC that he is executing the missed approach.
3. At locations where ATC radar service is provided, the pilot should confirm to radar vectors when provided by ATC in lieu of the published missed approach procedure.

MITIGATION MEASURE - An action that can be planned or taken to alleviate (mitigate) an adverse environmental impact. As set forth in CEQ 1500 (Section 1508.20), “mitigation” includes:

- (a) Avoiding the impact altogether by not taking a certain action or parts of an action.
- (b) Minimizing the impact by limiting the degree or magnitude of the action and its implementation.
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- (e) Compensating for the impact by replacing or providing substitute resources or environments.

A proposed airport development project, or alternatives to that project, may constitute a mitigation measure as defined by the CEQ. CEQA contains a similar definition of mitigation measure (Cal. Pub. Res. Code 21002, et seq.).

MLS - See **MICROWAVE LANDING SYSTEM**

MSL – See **MEAN SEA LEVEL**

NATIONAL AIRSPACE SYSTEM/NAS - The common network of U.S. airspace; air navigation facilities, equipment and services, airports or landing areas; aeronautical charts, information and services; rules, regulations and procedures, technical information, and manpower and material. Included are system components shared jointly with the military.

NAVAID - See **NAVIGATIONAL AID**

NAVIGATIONAL AID (NAVAID) - Any visual or electronic device (airborne or on the ground) that provides point-to-point guidance information or position data to pilots of aircraft in flight.

NDB – See **NONDIRECTIONAL RADIO BEACON (NDB)**

NEPA - National Environmental Policy Act of 1969 (PL 91-190).

NOISE - Any sound or signal that is undesirable because it interferes with speech and hearing, or is intense enough to damage hearing, or is otherwise annoying.

NOISE ABATEMENT PROCEDURES - Changes in operational procedures affecting runway use, in flight approach and departure routes and procedures, and in other air traffic procedures that are made to shift adverse aviation effects away from noise-sensitive areas (such as residential neighborhoods).

NOISE COMPLAINT - A recorded complaint concerning aircraft noise made by an individual and kept on file at an airport.

NOISE CONTOURS - Lines drawn on a map that connect points of equal noise exposure (Ldn or CNEL) values. They are usually drawn in 5-dB intervals, such as Ldn 75 dB values, Ldn 70 dB values, Ldn 65 dB values, and so forth.

NOISE CONTROL PLANS - Documentation by the airport sponsor of actions to be taken by the sponsor to reduce the effect of aviation noise. These actions are to be taken by the sponsor either alone or in cooperation with the FAA, airport users, and affected units of local government, with appropriate comments from affected citizens. Alternative actions should be considered, particularly where proprietary use restrictions (see also) on aircraft operations are involved).

NOISE LEVEL REDUCTION (NLR) - The noise reduction between indoor and outdoor environments of two rooms is the numerical difference, in decibels, of the average sound pressure levels in those areas or rooms. A measurement of “noise level reduction” combines the effect of the transmission loss performance of the structure plus the effect of acoustic absorption present in the receiving room.

NOISE-SENSITIVE LAND USE - Land uses that can be adversely affected by high levels of aircraft noise. Residences, schools, hospitals, religious facilities, libraries, and other similar uses are often considered to be sensitive to noise.

NONCOMPATIBLE LAND USE - See **INCOMPATIBLE LAND USE**.

NONDIRECTIONAL RADIO BEACON (NDB) - A low or medium frequency radio beacon transmitting non-directional signals whereby the pilot of an aircraft equipped with direction finding equipment can determine his bearing to or from the radio beacon and “home” on or track to or from the station.

NONPRECISION APPROACH PROCEDURE - A standard instrument approach procedure in which no electronic glideslope is provided, such as VOR, GPS, or LOC (which “see”).

NONPRECISION INSTRUMENT RUNWAY - A runway with an instrument approach procedure utilizing air navigation facilities, with only horizontal guidance, or area-type navigation equipment for which a straight-in non-precision instrument approach procedure has been approved or planned, and no precision approach facility or procedure is planned.

NOTAM – See **NOTICE TO AIRMEN**

NOTICE TO AIRMEN - A notice containing information (not known sufficiently in advance to publicize by other means) concerning the establishment, condition, or change in any component (facility, service, or procedure of, or hazard in the National Airspace System) the timely knowledge of which is essential to personnel concerned with flight operations.

OBSTACLE - An existing object, object of natural growth, or terrain, at a fixed geographical location, or which may be expected at a fixed location within a prescribed area, with reference to which vertical clearance is or must be provided during flight operation.

OBSTACLE FREE ZONE (OFZ) - A volume of space above and adjacent to a runway and its approach lighting system if one exists, free of all fixed objects except FAA-approved frangible aeronautical equipment and clear of vehicles and aircraft in the proximity of an airplane conducting an approach, missed approach, landing, takeoff, or departure.

OBSTRUCTION - An object that exceeds a limiting height or penetrates an imaginary surface described by current Federal Aviation Regulations (Part 77).

OPERATION - A take-off or a landing.

ORDER - See **FAA ORDER**.

OUTER MARKER - A marker beacon at or near the glide slope intercept position of an ILS approach.

PAPI - See **PRECISION APPROACH PATH INDICATOR**

PILOT IN COMMAND - The pilot responsible for the operation and safety of an aircraft during flight time.

PRECISION APPROACH PATH INDICATOR (PAPI) - An airport landing aid similar to a VASI, but which has light units installed in a single row rather than two rows.

PRECISION APPROACH PROCEDURE – A standard instrument approach procedure in which an electronic glideslope/glidepath is provided; e.g., ILS/MLS and PAR.

PRECISION INSTRUMENT PROCEDURE - A standard instrument procedure for an aircraft to approach an airport in which an electronic glide slope is provided, e.g., an instrument landing system (ILS) or military precision approach radar.

PRECISION INSTRUMENT RUNWAY - A runway with an instrument approach procedure utilizing an instrument landing system (ILS), microwave landing system (MLS), precision approach radar (PAR), or GPS.

PREFERENTIAL RUNWAY USE (PROGRAM) - A noise abatement action whereby the FAA Air Traffic Division, in conjunction with the FAA Airports Division, assists the airport sponsor in developing a program that gives preference to the use of a specific runway(s) to reduce overflight of noise-sensitive areas.

PRIMARY AIRPORT - Primary airports are commercial service airports (*see*) which enplane more than 10,000 passengers annually. Until 1987, a Primary airport was defined as one that had .01 percent or more of the total number of passengers enplaned annually.

PROPRIETARY USE RESTRICTIONS - Restrictions by an airport sponsor on the number, type, class, manner, or time of aircraft operations at the airport. The imposition of a curfew is an example of a proprietary use restriction.

PUBLIC AGENCY - In California, includes any state agency, board, or commission and any local or regional agency, as defined in the CEQA guidelines. It does not include the courts of the state. The term does not include agencies of the federal government.

RADAR APPROACH CONTROL FACILITY - A terminal ATC facility that uses radar and non-radar capabilities to provide approach control services to aircraft arriving, departing, or transiting airspace controlled by the facility. Provides radar ATC services to aircraft operating in the vicinity of one or more civil and/or military airports in a terminal area. Specific facility nomenclatures are used for administrative purposes only and are related to the physical location of the facility and the operating service generally as follows:

- Army Radar Approach Control/ARAC (Army),
- Radar Air Traffic Control Facility/RATCF (Navy/FAA),
- Radar Approach Control/RAPCON (Air Force/FAA),
- Terminal Radar Approach Control/TRACON (FAA),
- Tower/Airport Traffic Control Tower/ATCT (FAA) [only those towers delegated approach control authority].

REIL - See **RUNWAY END IDENTIFIER LIGHTS**

RELIEVER AIRPORT - An airport serving general aviation aircraft that might otherwise use a congested air carrier airport.

RESPONSIBLE AGENCY - In California, a public agency which proposes to carry out or approve a project, for which a Lead Agency is preparing or has prepared an EIR or Negative Declaration. For purposes of CEQA, the term "Responsible Agency" includes all public agencies other than the Lead Agency which have discretionary approval power over the project.

RESTRICTED AREA - Designated airspace within which the flight of aircraft, while not wholly prohibited, is subject to restriction.

RETROFIT - The retroactive modification of existing jet aircraft engines for noise abatement purposes.

RUNWAY - A defined rectangular area on a land airport prepared for the landing and takeoff run of aircraft along its length. Runways are normally numbered in relation to their magnetic direction rounded off to the nearest 10 degrees; e.g., Runway 01, Runway 25.

RUNWAY EDGE LIGHTS - Lights used to define the lateral limits of a runway.

RUNWAY END IDENTIFIER LIGHTS (REILs) - Two synchronized flashing lights, one on each side of the runway threshold, which provide a pilot with a rapid and positive visual identification of the approach end of a particular runway.

RUNWAY HEADING - The magnetic direction indication by the runway number. When cleared to “fly/maintain runway heading,” pilots are expected to comply with the ATC clearance by flying the heading indicated by the runway number without applying any drift correction; e.g., Runway 4, 040^o magnetic heading; Runway 20, 200^o magnetic heading.

RUNWAY PROTECTION ZONE - A trapezoidal area at ground level whose perimeter conforms to the projection on the ground of the innermost portion of the Approach Surface as defined in FAR Part 77. The runway protection zone is centered on the extended runway centerline and begins at the end of the FAR Part 77 Primary Surface, terminating below the line where the Approach Surface reaches a height of 50 feet above the elevation of the runway end. FAA regulations require that runway protection zones be kept free of obstructions and any uses that cause an assemblage of persons.

RUNWAY SAFETY AREA - A cleared, drained, graded, and preferably turfed area symmetrically located about the runway which, under normal conditions, is capable of supporting snow removal, fire fighting, and rescue equipment and of accommodating the occasional passage of aircraft without causing major damage to the aircraft.

RUNWAY THRESHOLD - The beginning of that portion of a runway usable for landing or takeoff. (See also **DISPLACED THRESHOLD**.)

RUNWAY USE PROGRAM - See **PREFERENTIAL RUNWAY USE PROGRAM**

SEL – See **SOUND EXPOSURE LEVEL (SEL)**

SEVERE NOISE EXPOSURE - Exposure to aircraft noise that is likely to interfere with human activity in noise-sensitive areas; repeated vigorous complaints can be expected and group action is probable. This exposure may be specified by a cumulative noise descriptor as a level of noise exposure, such as the Ldn (or CNEL) 75 dB level.

SIGNIFICANT ENVIRONMENTAL EFFECT - A significant effect on the environment is a substantial or potentially substantial adverse change in the physical conditions of the area affected by a project.

SMALL AIRCRAFT - Aircraft of 12,500 pounds or less maximum certificated takeoff weight.

SOUND EXPOSURE LEVEL (SEL) – The level of noise accumulated during a single noise event, such as an aircraft overflight, with reference to a duration of one second. More specifically, it is the level of time-integrated A-weighted squared sound pressure for a stated time interval or event, based on the reference pressure of 20 micronewtons per square meter and reference duration of one second.

SOUND INSULATION - (1) The use of structures and materials designed to reduce the transmission of sound from one room or area to another, or from the exterior to the interior of a building, (2) the degree of reduction in sound transmission by means of sound insulating structures and materials.

SOUND LEVEL (NOISE LEVEL) - The weighted sound pressure level obtained by the use of a sound level meter having a standard frequency filter for attenuating or accentuating part of the sound spectrum.

SOUND LEVEL METER - An instrument, comprising a microphone, an amplifier, an output meter, and frequency weighting networks, that is used to measure noise and sound levels in a specified manner.

SOUND TRANSMISSION CLASS (STC) - The preferred single figure rating system designed to give an estimate of the sound insulation properties of a partition or a rank ordering of a series of partitions. It is intended for use primarily when speech and office noise constitute the principal noise problem.

SOUND TRANSMISSION LOSS - A measure in decibels of sound insulation provided by a structural configuration.

SPECIAL USE AIRSPACE - Airspace of defined horizontal and vertical dimensions wherein activities must be confined because of their nature and/or wherein limitations may be imposed upon aircraft operations that are not a part of those activities.

SPECIAL VFR CONDITIONS - Meteorological conditions that are less than those required for basic VFR flight in Class B,C,D, or E surface areas and in which some aircraft are permitted flight under visual flight rules.

SPECIAL VFR OPERATIONS - Aircraft operating in accordance with clearances within Class B, C, D, and E surface areas in weather conditions less than the basic VFR weather minima. Such operations must be requested by the pilot and approved by ATC.

STANDARD - A specific statement by an authority of permitted environmental conditions.

STANDARD INSTRUMENT DEPARTURE (SID) - A pre-planned instrument flight rules (IFR) air traffic control departure procedure printed for pilot use in graphic and/or textual form. SIDs provide transition from the terminal to the appropriate en route structure.

STANDARD TERMINAL ARRIVAL ROUTE (STAR) - A pre-planned instrument flight rules (IFR) air traffic control arrival route published for pilot use in graphic and/or textual form. STARs provide transition from the en route structure to an outer fix or an instrument approach fix/arrival waypoint in the terminal area.

STOPWAY - An area beyond the takeoff runway, no less wide than the runway and centered upon the extended centerline of the runway, able to support the aircraft during an aborted takeoff, without causing structural damage to the aircraft, and designated by the airport authorities for use in decelerating the aircraft during an aborted takeoff.

STRAIGHT-IN INSTRUMENT APPROACH - An instrument approach wherein final approach is begun without first having executed a procedure turn; it is not necessarily completed with a straight-in landing or made to straight-in landing weather minima.

TAXI - The movement of an airplane under its own power on the surface of an airport. Also, it describes the surface movement of helicopters equipped with wheels.

TAXILANE - The portion of the aircraft parking area used for access between taxiways, aircraft parking positions, hangars, storage facilities, etc.

TAXIWAY - A defined path, from one part of an airport to another, selected or prepared for the taxiing of aircraft.

TERMINAL AIRSPACE - See **TERMINAL AREA**.

TERMINAL AREA - A general term used to describe airspace in which approach control service or airport traffic control service is provided.

TERMINAL INSTRUMENT PROCEDURES (TERPS) - Procedures for instrument approach and departure of aircraft to and from civil and military airports. There are four types of terminal instrument procedures: (1) precision approach, (2) non-precision approach, (3) circling, and (4) departure.

TERPS - Terminal Instrument Procedures.

THRESHOLD - The beginning of that portion of the runway usable for landing.

TOUCH-AND-GO OPERATION - A practice maneuver consisting of a landing and a takeoff performed in one continuous movement—the aircraft lands and begins takeoff roll without stopping. A touch-and-go is considered as two operations.

TOWER - See **AIRPORT TRAFFIC CONTROL TOWER (ATCT)**.

TRAFFIC PATTERN - The traffic flow that is prescribed for aircraft landing at, taxiing on, or taking off from an airport. The components of a typical traffic pattern are upwind leg, crosswind leg, downwind leg, base leg, and final approach.

1. Upwind Leg – A flight path parallel to the landing runway in the direction of landing.
2. Crosswind Leg – A flight path at right angles to the landing runway off its upwind end.
3. Downwind Leg – A flight path parallel to the landing runway in the direction opposite to landing. The downwind leg normally extends between the crosswind leg and the base leg.
4. Base Leg – A flight path at right angles to the landing runway off its approach end. The base leg normally extends from the downwind leg to the intersection of the extended runway centerline.
5. Final Approach – A flight path in the direction of landing along the extended runway centerline. The final approach normally extends from the base leg to the runway. An aircraft making a straight-in approach VFR is also considered to be on final approach.

TRANSIENT AIRCRAFT - Aircraft not based at the airport.

TRANSITIONAL AIRSPACE - That portion of controlled airspace wherein aircraft change from one phase of flight or flight condition to another.

TRANSMISSOMETER - An apparatus used to measure runway visibility on an ILS runway.

TRANSPORT AIRPORT - An airport designed, constructed, and maintained to serve airplanes having approach speeds of 121 knots or more.

TURBOJET AIRCRAFT - An aircraft having a jet engine in which the energy of the jet operates a turbine which in turn operates the air compressor.

TURBOPROP AIRCRAFT - An aircraft having a jet engine in which the energy of the jet operates a turbine which drives the propeller.

UNICOM (Aeronautical Advisory Station) - A non-government air/ground radio communication facility which may provide airport information (winds, weather, etc.) at specific airports.

UTILITY AIRPORT - An airport designed, constructed, and maintained to serve airplanes having approach speeds less than 121 knots.

ULTRALIGHT VEHICLE - An aeronautical vehicle operated for sport or recreational purposes which does not require FAA registration, an airworthiness certificate, nor pilot certification. They are primarily single-occupant vehicles, although some two-place vehicles are authorized for training purposes. Operation of an ultralight vehicle in certain airspace requires authorization from ATC.

VASI - See **VISUAL APPROACH SLOPE INDICATOR**

VECTOR - A heading issued to a pilot to provide navigational guidance by radar.

VERY HIGH FREQUENCY (VHF) OMNIDIRECTIONAL RANGE (VOR) - The standard navigational aid used throughout the airway system to provide bearing information to aircraft. When combined with Tactical Air Navigation (TACAN) the facility, called VORTAC, provides distance as well as bearing information.

VFR - See **VISUAL FLIGHT RULES**

VFR CONDITIONS - Weather conditions that permit aircraft to be operated in accordance with visual flight rules.

VICTOR AIRWAY - A control area or portion thereof established in the form of a corridor, the centerline of which is defined by VOR's.

VISIBILITY - The ability, as determined by atmospheric conditions and expressed in units of distance, to see and identify prominent unlighted objects by day and prominent lighted objects by night. Visibility is reported as statute miles, hundreds of feet or meters.

1. Flight Visibility. The average forward horizontal distance, from the cockpit of an aircraft in flight, at which prominent unlighted objects may be seen and identified by day and prominent lighted objects may be seen and identified by night.
2. Ground Visibility. Prevailing horizontal visibility near the earth's surface as reported by the United States National Weather Service or an accredited observer.

VISUAL APPROACH - An approach to an airport wherein an aircraft on an IFR flight plan, operating in VFR conditions under the control of a radar facility and having an air traffic control authorization, may deviate from the prescribed instrument approach procedure and proceed to the airport of destination, served by an operational control tower, by visual reference to the surface.

VISUAL APPROACH SLOPE INDICATOR (VASI) - An airport landing aid which provides a pilot with visual descent (approach slope) guidance while on approach to landing. See also **PAPI**.

VISUAL FLIGHT RULES (VFR) - Rules that govern the procedures for conducting flight under visual conditions (Federal Aviation Regulations, Part 91).

VISUAL RUNWAY - A runway intended solely for the operation of aircraft using visual approach procedures, with no straight-in instrument approach procedure and no instrument designation indicated on an FAA-approved airport layout plan.

VOR - See **VERY HIGH FREQUENCY OMNIDIRECTIONAL RANGE**

WAKE TURBULENCE - Phenomena resulting from the passage of an aircraft through the atmosphere. The term includes vortices, thrust stream turbulence, jet blast, jet wash, propeller wash, and rotor wash both on the ground and in the air.

WARNING AREA - Airspace which may contain hazards to non-participating aircraft in international airspace.

WIND SHEAR - A change in wind speed and/or wind direction in a short distance resulting in a tearing or shearing effect. It can exist in a horizontal or vertical direction and occasionally in both.

ZONING AND ZONING ORDINANCES - Ordinances that divide a community into zones or districts according to the present and potential use of properties for the purpose of controlling and directing the use and development of those properties. Zoning is concerned primarily with the use of land and buildings, the height and bulk of buildings, the proportion of a lot which buildings may cover, and the density of population of a given area. As an instrument of plan implementation, zoning deals principally with the use and development of privately owned land and buildings. The objective of zoning legislation is to establish regulations that provide locations for all essential uses of land and buildings and to ensure that each use is located in the most appropriate place. In FAR Part 150 planning, zoning can be used to achieve two major aims: (1) to reinforce existing compatible land uses and promote the location of future compatible uses in vacant or undeveloped land, and (2) to convert existing non-compatible uses to compatible uses over time.

ACKNOWLEDGMENTS

The Southwest Chapter of the American Association of Airport Executives would like to thank all of the members of its *Elected and Appointed Officials' Guide to Airport Issues Committee* for their outstanding contributions toward the development of this project.

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We would also like to extend our gratitude to **Coffman & Associates** for contributing the cover design and graphics. A special acknowledgment and thank you to **P&D Consultants, Inc.**, for providing the very thorough and useful Glossary of Airport Terms.

We also appreciate the many hours of proofing and revising skills contributed by **Peggy Baker**, Hayward Airport, for bringing this handbook to final print.

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July, 1998