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Notices

DEPARTMENT OF TRANSPORTATION (DOT)

Federal Aviation Administration (FAA)

[Docket No.: 30109]**Aviation Noise Abatement Policy 2000**

65 FR 43802

DATE: Friday, July 14, 2000**ACTION:** Proposed policy document, Request for comments.-----
To view the next page, type .np* TRANSMIT.To view a specific page, transmit p* and the page number, e.g. p*1
-----**[*43802]**

SUMMARY: In 1976, the Department of Transportation published its Aviation Noise Abatement Policy, which provided a course of action for reducing aviation noise impact. The principles contained in that document and subsequent legislative and regulatory action have resulted in a dramatic reduction in the number of Americans adversely exposed to aviation noise.

The changes in transportation use, public expectations, and technology warrant a review of the policy, which the Department is now undertaking. In particular, the Department is considering issuing a revised policy statement, which may extend to all forms of transportation noise, in order to provide direction to its efforts over the next 25 years.

Although the 1976 policy document was signed by the Secretary of Transportation and the Administrator of the Federal Aviation Administration, the future document will be divided into two parts: first, the Secretary will publish a policy statement broadly addressing noise concerns. Based on this policy statement, the FAA Administrator will issue aviation noise policy guidelines.

The issuance of this draft document on aviation noise abatement represents a first step in a process to develop an aviation noise policy. It is intended to stimulate ideas that will result in comments to the public docket. These comments will be evaluated, along with other inputs, in the development of a comprehensive policy statement and guidance document.

This proposed FAA policy document reaffirms and incorporates the major tenets of the 1976 Aviation Noise Abatement Policy and includes subsequent developments. It summarizes current conditions affecting aviation and sets forth goals, policies, and strategies for addressing them. This policy document also outlines the foundations and methodologies for assessing aviation noise, promoting research and development in aircraft noise reduction technology and noise abatement procedures, and promoting compatible usage of noise impacted lands. Finally, it presents a selective listing of reference materials that form the basis for the Federal Government's aviation noise policies.

As we stand at the threshold of the 21st century, the achievements realized from the 1976 Policy provide a solid foundation for the future. The successive phaseouts of Stage 1 and Stage 2 aircraft are responsible for the larger component of the considerable success in reducing noise levels around the airports. With all civil turbojet aircraft heavier than 75,000 pounds now Stage 3 compliant, the most severe aircraft noise will be limited to within or very near the airport boundaries. The long-term outlook beyond 2000 is for a generally stable situation with respect to noise contours around airports, followed by further reduction as the result of advances in noise abatement technology and the replacement of hushkitted Stage 3 airplanes by built-as Stage 3 airplanes. One of the cornerstones of the FAA's year 2000 aviation noise abatement policy is the continuation of aircraft source-noise reduction. The FAA is aggressively pursuing a variety of approaches, including source noise abatement technologies, with the goal of substantially reducing community noise exposure. In late 1999, the Secretary of Transportation supported this effort by announcing as one of his flagship initiatives the need for more stringent aircraft noise standards. The initiative states "Promote the development of international certification noise standards for turbojet airplanes that will be more stringent than the current Stage 3 standards; and, develop models to assess new noise abatement technologies that will encourage introduction of quieter planes."

The 21st century will offer opportunities for additional noise reduction not only from its source, through improved aircraft design, but also from other technological advances. New tools such as Global Positioning System (GPS) technology, which will be used for greater safety and efficiency of air transportation, will also be used to mitigate noise by keeping aircraft tightly within their designated noise corridors. Noise abatement flight procedures are constantly evolving with advances in technology, improved aircraft design, and more refined airspace management procedures. State-of-the-art navigational technology will enable us to refine the ability to define, and the pilot's ability to fly, flight tracks with increased precision in the vicinity of noise sensitive areas.

The continued development of aviation growth is a vital element of U.S. transportation, and the aviation industry is, in turn, a powerful generator of economic activity and jobs within communities. Notwithstanding anticipated technological improvements, aircraft noise will remain and will be a pivotal quality-of-life issue. While the number of Americans exposed to significant levels of aviation noise has been dramatically reduced since the 1976 Policy was issued, a large number of people still remain so impacted. Furthermore, even as Americans stimulate aviation growth by their increased air travel, they also express an ever-increasing desire for a quieter neighborhood environment. As significant noise around the Nation's airports is dramatically reduced, people will direct more attention to the lower but still annoying noise levels. Unless aircraft noise is addressed with purpose and vigor, it will likely become a potential impediment to the robust airport and aviation system growth and operation that will be needed as public demand for access to aviation services continues to grow.

The FAA continues to place great emphasis on reducing the number of persons residing in areas of significant noise exposure around airports. Each airport with areas of significant noise exposure outside its boundary is encouraged to evaluate its current and projected noise levels, and to develop a program that both reduces the number of persons significantly impacted by noise, and prevents new noncompatible development from occurring. This may be accomplished through either the Federal voluntary airport noise compatibility planning process, with FAA technical and financial assistance, or through a locally-determined process. Community involvement is a critical part of airport noise compatibility planning. It serves to provide input on noise mitigation measures that are the most desirable to airport neighbors, while informing the public of the technical and reasonable limits to noise reduction.

Noise relief continues to be a shared responsibility, as described in the 1976 Policy. The FAA and the aviation industry have the primary responsibility to address aircraft source noise, technological advances, and air traffic procedures. Airport proprietors, State and local governments, and citizens have the primary responsibility to address airport noise compatibility planning and local land use planning and zone. The airport operator must be **[*43804]** involved in local land use planning and control efforts on a continuing basis.

The 1976 Policy encouraged airport proprietors and others to consult with FAA about their plans and proposals and to suggest innovative ways to meet the noise problem in their communities. Airport proprietors were encouraged to consult and review proposals to restrict use with airport users and

DATES: Comments must be received on or before August 28, 2000.

ADDRESSES: Comments should be mailed in triplicate to: Federal Aviation Administration, Office of the Chief Counsel, Attention: Rules Docket (AGC-200), Docket No. [30109], 800 Independence Avenue, SW., Washington, DC 20591. Comments may be examined in the Rules Docket in Room 915G on weekdays between 8:30 a.m. and 5:00 p.m., except on Federal holidays.

FOR FURTHER INFORMATION CONTACT: Thomas L. Connor, Noise Division, AEE-100, Office of Environment and Energy, Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591; telephone, (202) 267-8933; facsimile, (202) 267-5594.

SUPPLEMENTARY INFORMATION: Interested persons are invited to participate by submitting such written data, views, or arguments as they may desire. Comments should identify the regulatory docket or notice number and should be submitted in triplicate to the **[*43803]** Rules Docket address specified above. All comments received on or before the specified closing date for comments will be considered by the Administrator before taking action on this proposed policy. The proposals contained in this notice may be changed in light of comments received. All comments received will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report summarizing each FAA public contact concerned with the substance of this document will be filed in the docket. Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this notice must include a preaddressed, stamped postcard on which the following statement is made: "Comments to Docket No. xxxxx." The postcard will be date stamped and mailed to the commenter.

Issued in Washington, DC on July 7, 2000.

James D. Erickson,

Director of Environment and Energy.

FAA Aviation Noise Abatement Policy 2000

Section 1: Introduction

The first comprehensive aviation noise abatement policy was issued by the Secretary of Transportation and the Administrator of the Federal Aviation Administration (FAA) on November 18, 1976. At that time, six to seven million Americans residing near airports were exposed to significant levels of aircraft noise-defined by FAA as those areas in which noise levels are Day-Night Average Sound Level (DNL) 65 dB or higher. Aircraft noise had become a growing problem in the 1960's with the introduction of jet aircraft and the rapidly increasing number of commercial aircraft operations in the United States. Aircraft noise, and its adverse impacts on residential and other noise sensitive land uses, was recognized as a major constraint on the further development of the aviation system, threatening to limit the further construction and expansion of airports and ground access to them. The 1976 Policy outlined a national effort under Federal leadership to reduce aircraft noise, with aircraft noise source reduction being a key component of the policy.

The 1976 Policy has been highly successful. It has guided actions over a period of almost 25 years that have substantially reduced aviation noise and its impacts. By the year 2000, the FAA estimates that there will be about 500,000 Americans exposed to significant levels of aircraft noise-down substantially from the six to seven million people exposed in 1976. Even as noise has been so dramatically reduced, the national aviation system, including the airport component of that system where aircraft noise is the most severe, has grown significantly in this last quarter of the century.

the FAA before implementation. FAA advised airports so that "uncoordinated and unilateral restrictions at various individual airports do not work separately or in combination to create an undue burden on foreign or interstate commerce, unjustly discriminate, or conflict with FAA's statutory authority." This policy foreshadowed the national noise policy announced by the Airport Noise and Capacity Act of 1990 (ANCA). Citing similar concerns, the Act, among other things, established a national program for review of airport Noise and access restriction proposals.

At the time of the 1976 Policy, before the phaseout of Stage 1, there was limited potential for effective control of the sizeable land area subjected to significant noise levels. Land use solutions were to a large extent beyond the reach of local affected communities until effective aircraft source noise reduction was implemented. However, with the year 2000 phaseout of Stage 2, compatible land use has become a viable, effective, and necessary solution. With the vast reduction in land area that is significantly impacted by aviation noise, the major actions needed at the beginning of the 2000's decade to achieve and maintain noise compatibility around airports are land use and developmental actions outside the airport boundary appropriate to the airport's remaining and future noise.

The Federal Government generally does not control land use-zoning authority is reserved to the States and their subdivisions. The FAA has established a compatible land use initiative program to encourage and guide State and local governments having land use control authority, to exercise that authority in a way that serves both the airport and the community. Jurisdictions are particularly urged to refrain from permitting noise sensitive land uses to develop ever closer to airports as the Stage 2 phaseout shrinks their noise contours. In some communities, it may be possible to establish a broad noise buffer beyond areas of significant noise exposure, between the airport and the community, where noise sensitive land uses would either be prohibited or remediated in some way. Noise buffers are subject to determinations of local feasibility and decisions. The FAA will respect and support such locally established buffers.

Beyond the airports' environs, with responsible airspace management and safety being the first consideration, the FAA's goal is to design prospective air traffic routes and procedures to minimize noise consistent with local consensus. The FAA will carefully review the noise impact of prospective changes to air traffic routes and procedures on communities and, in response to requests, will consider alternatives to minimize noise sensitive areas as described above. Locations with unique noise sensitivities in national parks, national wildlife refuges, and other Federally managed areas merit and will receive special consideration as FAA manages the navigable airspace and evaluates aviation actions that raise noise concerns for these areas.

The 1976 Policy initiated the first pilot program under which the Federal government funded up to 25 airport noise control plans a year. That modest beginning was expanded in the 1980's and 1990's by legislation and policies. By the end of the century, the FAA had issued Airport Improvement Program (AIP) grants for over \$ 2.6 billion from an earmarked noise set-aside. Since the statutory establishment of the Passenger Facility Charge (PFC) program in 1990, the FAA has approved PFC collection at commercial service airports exceeding \$ 1.6 billion for noise mitigation projects. Additional AIP funding is provided to mitigate the noise impact of airport expansion projects. In addition to these Federal administered funds, airports finance substantial noise mitigation with locally generated funds. U.S. Department of Transportation (DOT) policy on airport rates and charges identifies aircraft noise abatement and mitigation as an environmental cost recoverable through fees charged to air carriers for the use of airport facilities and services. All funding sources must be used responsibly to ensure continuing strong financial support for noise mitigation, including exploration of innovative financing and creative public/private partnerships. In summary, the FAA's year 2000 aviation noise abatement goals are the following:

- . Continue to reduce aircraft noise at its source.
- . Use new technologies to mitigate noise impacts.
- . Bring existing land uses into compatibility with levels of significant noise exposure around airports, and prevent the development of new noncompatible uses in these areas.
- . Design prospective air traffic routes and procedures to minimize aviation noise impacts in areas

beyond legal jurisdiction of airport proprietors, consistent with local consensus and safe and efficient use of the navigable airspace.

- . Provide special consideration to locations in national parks and other Federally managed areas having unique noise sensitivities.
- . Ensure strong financial support for noise compatibility planning and for mitigation projects.

This document is comprised of five sections plus an appendix of references, with this introduction being Section 1. Section 2 is the heart of the policy, and outlines FAA's noise goals and policies, with a brief discussion of each policy element. Section 3 describes the legal and regulatory framework governing aviation noise and the shared responsibilities of all those who must act in complementary ways to mitigate the noise problem-government, aviation, and private citizens. Section 4 presents the FAA's methods and standards for measuring and assessing noise impacts, which are derived from scientific research and a series of Federal interagency committee reviews. Section 5 provides greater detail on aircraft source noise reduction, history, research, and future prospects.

As stated previously, the 1976 Policy has served the nation well. This comprehensive update to that Policy seeks to build upon ANCA and meet the challenges of the first part of the 21st century. It is a task that must be shared by government at all levels, by the aviation industry, and by citizens. Solutions depend on technological advances, solid airport noise compatibility programs, strong land use commitments, noise-responsible airspace management, and adequate financial resources.

Section 2: Goals and Policies

This section is the heart of the Aviation Noise Abatement Policy. It outlines FAA's noise goals and policies, and provides a brief discussion of each element. This policy fully incorporates and amplifies, clarifies, and supplements the 1976 Policy, based upon our experience and changing needs.

2.1 Aviation Noise Goals

Since it was issued, the 1976 Policy has successfully guided actions on civil aviation noise in the United States. To keep pace with changing technology and the projected growth in aircraft operations, the FAA must set realistic and achievable aviation noise goals, and **[*43805]** develop new policies to support the safety and efficiency of the National Airspace System (NAS) while seeking to minimize the adverse impacts of aviation noise on people and the environment. Building on past successes in the area of aviation noise, the FAA's goals are to:

Goal 1: Continue to reduce aircraft noise at the source

The successive phaseouts of noisier Stage 1 and Stage 2 aircraft have been largely responsible for the considerable reduction in the number of persons exposed to significant levels of aircraft noise in the United States. Ongoing research and development programs by FAA, NASA, and industry to develop quieter aircraft, combined with regulatory action by FAA will result in achievable future reductions in the number of persons exposed to significant levels of aircraft noise.

Goal 2: Use new technologies to mitigate noise impacts

New technologies bring with them the challenge to integrate noise planning and mitigation into their deployment. GPS, automated flight guidance, free flight, and other innovations will all be examined for their potential to mitigate noise impacts while improving safety and efficiency.

Goal 3: Encourage development of compatible land uses in areas experiencing significant noise exposure around airports, to the extent feasible, and prevent the development of new noncompatible uses in these areas

In the year 2000, there will still be an estimated 500,000 Americans residing in areas of significant noise exposure. A top priority for 2000 and beyond will be to achieve compatibility in these areas. It is important that there be a corresponding emphasis on protecting these gains by preventing new noise sensitive land uses from becoming established in these areas, through stronger State and local

evaluating proposed FAA actions that raise aviation noise concerns.

7. The FAA will continue strong support for noise compatibility planning and noise mitigation projects with financial programs under its jurisdiction, with airport rates and charges policy, and by encouraging innovative funding mechanisms including creative public/private partnerships.

2.3 Discussion of Noise Policy Elements

The above seven elements that together comprise the FAA's year 2000 aviation noise abatement policy are briefly discussed by number in the remainder of this section.

Policy Element 1: Aircraft Source Noise Reduction

The FAA will aggressively pursue the development and prescription of a new generation of more stringent noise standards and regulations in order to protect public health and welfare.

Discussion: Although the reductions in noise impacted populations and the reductions in new noncompatible uses resulting from the airport noise compatibility program have been significant, over the last quarter century the reduction of aircraft noise at its source has provided the greater amount of noise relief to the public. The FAA has a long-standing commitment to achieve increasingly effective source noise reduction and, in accordance with the Secretary of Transportation's [*43806] flagship initiative, is aggressively pursuing the development of even more stringent noise standards. In 1968, the FAA first began developing noise certification standards, initially for measuring and later for limiting aircraft source noise. These certification standards, which paralleled technological improvements in airplane engine design, were codified as 14 CFR Part 36 (Part 36). Effective December 1, 1969, Part 36 set limits on noise emissions of large turbojet aircraft of new design by establishing Stage 2 certification standards. The Noise Control Act of 1972 (49 U.S.C. 44709, 44715) gave the FAA broader authority to set limits for aircraft source noise. Using this authority, the FAA established more stringent Stage 3 standards in Part 36, set limits on source noise for all newly produced airplanes, and required in 14 CFR Part 91 (Part 91) the phaseout of Stage 1 turbojet aircraft over 75,000 pounds by January 1, 1985.

Stage 3 Transition

The Airport Noise and Capacity Act of 1990 (ANCA) required the phased elimination of Stage 2 turbojet airplanes weighing more than 75,000 pounds operating in the contiguous United States. After December 31, 1999, civil turbojet airplanes over 75,000 pounds must be Stage 3 compliant to operate within the contiguous 48 states. To bring about the earliest feasible reduction of noise levels, interim compliance deadlines of 1994, 1996, and 1998 were established in the general operating rules (Part 91, Subpart 1).

The Stage 2 phaseout regulations required all operators of affected airplanes to report compliance progress to the FAA on an annual basis. The regulations also provided separate criteria for interim and final compliance waivers. As prescribed in the ANCA, a final compliance waiver could only be granted to a domestic air carrier that had achieved a fleet mix of at least 85 percent Stage 3 airplanes by July 1, 1999—no waiver may extend beyond December 31, 2003. The benefits of the Stage 3 transition will continue to accrue after completion of the Statutory compliance process. Newly manufactured Stage 3 aircraft are quieter than their predecessors, and significantly quieter than older hushkitted Stage 3 airplanes. Even with substantial growth in operations, noise contours around many U.S. airports will continue to shrink as hushkitted and older Stage 3 airplanes reach the end of their service lives and are replaced by newer airplanes.

Source Noise Research

In early 1992, the FAA and NASA began co-sponsorship of a multiyear program focused on achieving significant advances in noise reduction technology. In October 1992, Congress reinforced this effort by mandating that the FAA and NASA jointly conduct an aircraft noise reduction research program with the goal of developing technologies for subsonic jet aircraft to operate at reduced noise levels. The goal of this program is to identify noise reduction technology to reduce the community noise impacts of future subsonic airplanes by 10 dB (relative to 1992 technology) by the

land use commitments. The FAA's airport noise compatibility program and compatible land use have and will continue to support this goal.

Goal 4: Design air traffic routes and procedures to minimize aviation noise impacts in areas beyond the legal jurisdiction of the airport proprietor, consistent with local consensus and safe and efficient use of the navigable airspace

The trend in recent decades has been a growing expectation by Americans of continuing environmental improvement, including a quieter noise environment. In the airport environs, State and local jurisdictions are strongly encouraged to prevent noise sensitive land uses from developing ever more closely to airports as noise contours shrink with the transition to an all Stage 3 fleet. Creating an extra margin of noise buffer outside significant noise exposure areas is possible for some communities, and locally-established buffers will be supported and respected by the FAA—where a community has adopted and implemented noise standards which are more stringent than FAA's noise compatibility standards, FAA will respect those local standards in its actions which could cause growth of the airport's noise contours, through appropriate mitigation actions.

Goal 5: Provide specific consideration to locations in national parks and other Federally managed areas having unique noise sensitivities

The American heritage is enriched with national parks, national wildlife refuges, and other Federally managed areas containing locations with unique noise sensitivities. These locations merit specific noise considerations as the FAA manages the navigable airspace and evaluates other aviation actions.

Goal 6: Ensure strong financial support for noise compatibility planning and for mitigation projects

The 1976 Policy opened the door to Federal funding of local noise abatement planning and programs. That modest beginning has since grown into a sizeable noise set aside in Airport Improvement Program funding, and was joined in the 1990s by the use of Passenger Facility Charges and more substantial contributions from airport revenues to fund noise mitigation. Future reliable sources of funding are vital, including the exploration of innovative finance programs and public/private partnerships to accelerate adequate financing of noise mitigation projects.

2.2 Aviation Noise Policies

The seven elements comprising FAA's policies to achieve the aviation noise goals outlined above are as follows:

1. The FAA will aggressively pursue the development and prescription of a new generation of more stringent noise standards and regulations in order to protect public health and welfare.
2. The FAA will examine new operational technologies for their potential to mitigate noise impacts while maximizing aviation system efficiencies.
3. The FAA will carefully review the noise impacts of prospective changes to air traffic routes and procedures and, in response to requests, will consider alternative actions to minimize noise impacts for residents of communities surrounding airports and for noise sensitive areas that are outside the airport proprietor's legal area of interest.
4. The FAA will encourage airport proprietors, in consultation with airport users, local planning officials, and the interested public, to implement airport noise compatibility programs that will reduce existing noncompatible land uses around airports, and prevent new noncompatible uses.
5. As requested, the FAA will assist State and local governments and planning agencies in establishing policies and practices to minimize noise sensitive land uses around airports, including locally determined buffers outside areas of significant noise exposure.
6. The FAA will take into account the specific circumstances of locations in national parks and other Federally managed areas with unique noise sensitivities in managing the navigable airspace and

year 2001. Based on the progress in this program and in fulfillment of its legislative mandate, the FAA plans to amend aircraft noise standards and regulations during the first decade of the century to take advantage of feasible noise reduction technologies.

In addition, the FAA is supporting NASA's proposal to extend the research program in order to reach the enabling technology goals in its own "Aeronautics & Space Transportation Technology: Three Pillars for Success" program. Working closely with industry, government, and academia, NASA has set bold goals to sustain U.S. leadership in civil aeronautics and space. The goals are grouped into Three Pillars: "Global Civil Aviation," Revolutionary Technology Leaps, and "Access to Space." Included among the ten enabling technology goals of the program is "Environmental Compatibility." Its noise goal is to reduce the perceived noise levels of future aircraft by a factor of two by 2007 and by a factor of four by 2022, compared to 1995 technology. This effort could result in even greater aircraft source noise reductions.

The FAA is also a major participant on an ICAO Committee on Aviation Environmental Protection (CAEP) technical working group that is formulating proposals for an increase in stringency of the international noise standard for subsonic jet and large propeller-driven airplanes. The FAA plans to set new Stage 4 standards by early in the next century. New standards would result in a future timed transition to a generation of airplanes quieter than Stage 3, similar to source-noise reduction transitions that have been implemented since the 1976 Policy.

Future Supersonic Transport (SST) Airplanes

With respect to future SST airplanes, specific noise standards have not yet been established. The FAA anticipates that any future standards for SST airplanes would be proposed so as to produce no greater noise impact on a community than a subsonic airplane certified to Stage 3 noise limits. Accordingly, the Stage 3 noise limits prescribed in Part 36 for subsonic airplanes may be used as guidelines for developing any future SST airplanes. This policy is consistent with Chapter 4 of the International Civil Aviation Organization's Annex 16, Volume 1, which states that Chapter 3 (equivalent to Stage 3) noise levels applicable to subsonic airplanes may be used as guidelines for future SST airplanes. Any provisions for noise certification of future SST airplanes will give consideration, to the extent possible, to the unique operational flight characteristics of future SST designs.

Policy Element 2: New Operational Technologies

The FAA will examine new operational technologies for their potential to mitigate noise impacts while maximizing aviation system efficiencies.

Discussion: The National Airspace System (NAS) is the infrastructure within which aviation operates in the United States. The NAS includes airports, automated flight service stations, air traffic control towers, terminal radar control facilities, and en route air traffic control centers. The FAA continually seeks to improve various aspects of the NAS. In 1996, the FAA began to develop a NAS modernization plan to define what the aviation system of the future would look like and how it would be implemented. This plan-termed the NAS architecture-is a collaborative effort between the FAA and the aviation community. Several NAS modernization programs have the potential to influence aviation noise.

GPS Augmentation

It appears that the principal navigation system for the 21st century will be based upon the Global Navigation Satellite System (GNSS). The Global Positioning System (GPS) provides a practical starting point for eventual development of the GNSS, but will not totally satisfy all civil aviation requirements for navigation and landing. For use in civil aviation, augmentations are required to improve GPS accuracy for precision approaches, provide integrity and continuity for all phases of flight, and provide availability necessary to meet radio navigation requirements. These GPS augmentations are being implemented incrementally. [*43807]

The first augmentation being developed in the United States is the Wide Area Augmentation System (WAAS). The WAAS is a safety-critical navigation system that will provide a quality of positioning

information never before available to the aviation community. It is a geographically expansive augmentation to the basic GPS service. The WAAS improves the accuracy, integrity, and availability of the basic GPS signals. When fully implemented, this system will allow GPS to be used as a primary navigation system from departure through Category I precision approach. The wide area of coverage for this system includes the entire United States and portions of Canada and Mexico. WAAS will be deployed in phases. The final operating capability will satisfy enroute through Category I precision approach capability requirements for using GPS/WAAS as the only radio navigation aid.

Another augmentation to the GPS signal being developed in the United States is the Local Area Augmentation System (LAAS). The LAAS is intended to complement the WAAS. Together, the two systems will supply users of the NAS with seamless satellite based navigation for all phases of flight. In practical terms, this means that at locations where the WAAS is unable to meet existing navigation and landing requirements, the LAAS will fulfill those requirements. The LAAS will meet the more stringent Category II/III requirements that exist at selected locations throughout the United States. The LAAS will be implemented in stages, with full completion expected in 2006.

When fully implemented, these WAAS and LAAS enhancements to the GPS will permit greater precision in directing aircraft operations than currently is available. The FAA anticipates that this increased precision will permit the refinement of procedures, particularly airport approaches and departures, to abate aircraft noise and minimize exposure levels in noise sensitive areas.

Automated Flight Guidance

Automated flight guidance capabilities have steadily increased and improved with time. Air carrier crews now routinely use autoflight features that are operational during takeoff and landing. An Auto Flight Guidance System (AFGS) includes features such as an autopilot, autothrottles, displays, and controls that are interconnected in such a manner as to allow the crew to automatically control the aircraft's lateral and vertical flight path and speed. A flight management system (FMS) is sometimes associated with an AFGS. An FMS is an integrated system used by flight crews for flight planning, navigation, performance management, aircraft guidance and flight progress monitoring. Some aircraft now have automated features identified for operations specifically at low altitudes-for noise abatement-which when used, contribute to performance, workload, cost, noise, and safety benefits. Such features are certificated on the aircraft by either type certification or supplemental type certification.

Free Flight

The introduction of technologies such as GPS and Auto Flight Guidance allows the future NAS Architecture to be built on a concept of air traffic management called "free flight." This concept is predicated on greater sharing of information between pilots and air traffic controllers to facilitate air traffic management. It is designed to permit aircraft operators to select their own routes as alternatives to the published preferred instrument flight rule (IFR) routes, thereby removing the constraints currently imposed on these users. By providing increased controller-planning support through decision support tools, pilots will be permitted to select the most direct, cost-effective routes between takeoff and landing. As traffic density increases however, the free flight concept calls for structured flow. The same tools that provide flexibility en route and in low-density traffic areas will also help ensure the most efficient flow within a highly structured airspace such as a terminal area.

Free flight is being implemented incrementally. Many of the tools necessary to achieve free flight are currently available; others are still being developed. Enhanced satellite navigation will significantly enhance free flight capability. Full implementation will occur as procedures are modified and technologies become available and are acquired by users and service providers. The dispersal of aircraft at higher altitudes because of free flight can reduce lower-level noise exposure on the ground. At lower altitudes, such as when approaching and departing airports, it would normally be more desirable to concentrate flights (and noise) over those areas least sensitive to noise rather than dispersing the aircraft. Here, free flight's technology may also have applicability to landing, takeoff, and lower altitude flight tracks, by safely concentrating aircraft into narrowly defined corridors which have been protected from noise sensitive development and helping them to avoid the more noise sensitive land areas.

Policy Element 3: Air Traffic Procedures

The FAA will carefully review the noise impact of prospective changes to air traffic routes and procedures and in designing these changes will consider actions to minimize noise impacts for residents of communities surrounding airports and for noise sensitive areas that are outside the airport proprietor's legal area of interest consistent with safety, efficiency, and local consensus.

Discussion: By law, the FAA has the sole authority to establish flight operational procedures and to manage the air traffic control system and navigable airspace in the United States. The FAA is responsible for evaluating actions under the National Environmental Policy Act (NEPA). The FAA's environmental goal is to make and implement air traffic decisions that minimize the noise and other environmental impacts on residential and other noise sensitive areas, consistent with the highest standards of aviation safety and the need for effective and efficient air traffic management. FAA's Community Involvement Policy ensures that FAA will seek and consider community input before making decisions that affect the public. This policy emphasizes active, early, and continuous communication with affected members of the public throughout the NEPA process.

Airspace Changes

The basic structure of the airspace has not changed appreciably over the last ten years. However, in that decade aircraft, navigation aides, and technology in general have advanced by several generations. Free flight has been established as the key direction for the evolution of the NAS. Airspace is a major component of the free flight concept. These advances create the need to redesign the airspace to meet evolving needs. Changes in airspace configuration, architecture, or structure will have implications for air traffic control, air traffic management, the user community, and the environment.

The FAA's policy is to ensure appropriate consideration of noise impacts in decisions on airspace changes, together with safety, technical, and economic factors. The FAA has developed the Integrated Noise Model (INM), a computerized modeling tool widely used by the civilian aviation community for evaluating aircraft noise impacts in the airport environs. The FAA is developing the Noise Integrated Routing System (NIRS), a computerized [*43808] research tool for assessing the environmental impacts of air traffic actions beyond the airport environs, up to 18,000 feet above ground level (AGL). NIRS adapts the noise data and algorithms from the INM for use in an air traffic design system. The program requires integration with air traffic models which contain the routes and events used to assess delay, capacity, and workload. NIRS provides airspace planners with environmental noise screening assessments for airspace design changes encompassing a wide area. NIRS allows an airspace design team to perform noise evaluations concurrently with other modeling requirements. The enables the same routes, procedures and events used in delay/capacity analyses to be used in the related environmental analyses. Predicted noise levels over noise sensitive areas for both existing and alternative scenarios are modeled, and a change of exposure criteria is used to determine if the proposes action is likely to be controversial on environmental grounds. If controversy is anticipated, FAA may use NIRS to identify alternatives or mitigation. Whenever practicable in designing routes and procedures, the FAA seeks to identify and avoid environmentally sensitive areas and to minimize noise effects when such areas cannot reasonably be avoided.

Noise Abatement in the Airport Environs

Most noise impacts related to air traffic procedures are in the airport environs where aircraft operate in the closest proximity to people and homes. FAA requires an environmental assessment for new or revised procedures which would route air traffic over noise sensitive areas at less than 3,000 feet above ground level (AGL).

Where runway use, flight procedure, or air traffic changes are not necessary for operational reasons but are proposed for noise abatement reasons, the FAA relies on airport proprietors to submit requests for such changes. Airport proprietors are the appropriate initiators of such noise abatement proposals because of the liability they bear for noise impacts in the airport environs. Noise abatement proposals are submitted to the FAA by airport proprietors in a variety of ways, including recommendations in airport noise compatibility programs. The airport proprietor and the FAA both

have roles in environmental review and affording opportunities for public participation for proposed air traffic changes in the airport environs.

FAA Advisory Circular (AC) 91.53A, Noise Abatement Departure Profiles (NADP), provides standards for noise abatement departure procedures for subsonic turbojet-powered airplanes with maximum certificated takeoff weights exceeding 75,000 pounds.

The AC provides guidance for selecting the most effective procedures for specific airport environments, while standardizing those choices within a practical number of options in order to increase the margin of safety by superseding a growing number of unique, airport-specific practices. AC 91-53A provides two standard departure procedures, one to benefit noise sensitive communities that are the closest to the airport, and one to benefit more distant noise sensitive communities. It does not mandate the selection of either the AC's close-in or distant NADP. Rather, it allows discretion to select either of the NADPs described in the AC or to use the standard NADP in 14 CFR 25.111(a).

In some cases, local communities seek assurance that certain air traffic procedures will remain in place in perpetuity for noise abatement reasons. Airport proprietors do not have the authority to make air traffic commitments for the FAA because of Federal preemption of airspace use and management. Airport proprietors do have the discretion to assure communities that they will not in the future request the FAA to make any procedural changes at the airport for noise abatement purposes that differ from the procedures at issue. Consistent with its policy, the FAA does not initiate noise abatement procedural changes absent an airport proprietor's request and would only consider changes on its own initiative necessary to assure the highest standards of safety and efficiency in the use of the navigable airspace.

The FAA will make every possible effort to maintain noise abatement procedures that have the community's support. However, unforeseen future circumstances may render current procedures untenable for airspace safety and efficiency, and the FAA cannot abrogate its airspace responsibility in local agreements. It is also possible that future circumstances may render today's noise abatement procedures unnecessary or less desirable from a noise standpoint than alternative arrangements, resulting in local decisions to revisit them. Changes in air traffic procedures that have potentially significant noise impacts on communities surrounding an airport require preparation of an environmental assessment or impact statement.

Beyond the Airport Environs

Beyond the airport environs, aircraft following air traffic routes and procedures normally do not significantly influence the noise environment of underlying land uses. Air traffic procedures for operations over 3,000 feet AGL are normally categorically excluded from FAA environmental assessment requirements. At the same time, in recognition that some actions that are normally categorically excluded can be highly controversial on environmental grounds, the FAA has developed the Air Traffic Noise Screening Model (ATNS), which allows air traffic specialists and planners to evaluate potential noise impacts from proposed air traffic changes. The ATNS can evaluate proposed changes in arrival and departure procedures between 3,000 and 18,000 feet AGL for large civil jet aircraft weighing over 75,000 pounds. Where a proposed change would cause an increase in noise of DNL 5 dB or greater, FAA considers whether there are extraordinary circumstances warranting preparation of an environmental assessment.

Where air traffic changes are not necessary for operational purposes, the FAA is willing in the appropriate circumstances to consider changes for noise abatement reasons for communities at greater distances from airports that are outside the airport proprietor's legal area of interest and already at noise levels consistent with Federal land use compatibility guidelines. In these cases, proposed changes must first be consistent with safe and efficient use of the navigable airspace, and also reflect local consensus. Final decisions will then reflect the FAA policy that operational changes made for noise abatement reasons must reduce the number of people affected by noise and the severity of the effect, without increasing noise effects in natural environments with unique noise sensitivities.

Overflights of Noise Sensitive Areas

The FAA Advisory Circular 91-36C, Visual Flight Rules (VFR) Flight Near Noise-Sensitive Areas, identifies 2,000 feet AGL as the minimum recommended altitude for overflights of noise sensitive areas when aircraft are not landing at or taking off from an airport. It identifies typical noise sensitive areas to include: outdoor assemblies, churches, hospitals, schools, nursing homes, residential areas designated as sensitive by airports, and units of the National Park System. Consistent with aviation safety and efficiency, the FAA will actively assist [*43809] other agencies in seeking the voluntary cooperation of operators with regard to the 2,000 feet AGL minimum altitude advisory. This assistance includes proposals for regulation of low-flying fixed-wing airplanes, helicopters, ultralight vehicles, balloons, and gliders.

Policy Element 4: Airport Noise Compatibility Planning

The FAA will encourage airport proprietors, in consultation with airport users, local planning officials, and the interested public, to implement airport noise compatibility programs that will minimize aviation noise impacts, reduce existing noncompatible land uses around airports, and prevent new noncompatible uses.

Discussion: Airport noise compatibility planning is the primary tool used by many airport proprietors and local officials to minimize aviation noise impacts in the vicinity of airports. Airport noise compatibility planning involves an evaluation of an airport's existing and future noise exposure, the selection of effective measures to reduce noise and noncompatible land uses, and the implementation of those measures. The measures to be implemented are analyzed in a document called an airport noise compatibility program (NCP).

The FAA has provided technical and financial support for airport noise compatibility planning since 1976. FAA's current program derives from the Aviation Safety and Noise Abatement Act of 1979 (ASNA), implemented through 14 CFR Part 150 (Part 150) in 1985. ASNA directed the FAA to establish by regulation a single system for measuring aircraft noise exposure, to identify land uses that are normally compatible with various noise exposure levels, and to receive voluntary submissions of noise exposure maps and noise compatibility programs from airport proprietors. Airport sponsors who prepare noise exposure maps are immune from certain future liability for noise damages. After preparing the map, airport operators may prepare noise compatibility programs. These programs contain measures that an airport operator plans to take to reduce existing or prevent the development of new noncompatible land uses in the area covered by the noise exposure map. Airport sponsors must consult affected parties and provide the opportunity for a public hearing. Airport proprietor participation in airport noise compatibility planning is voluntary. Over 230 airports are participating in the program and 193 airports have FAA approved NCPs in place-this includes about two-thirds of our busiest commercial airports.

Airport noise compatibility planning addresses both existing and future aviation noise impacts. Noise exposure maps use noise contours to depict the extent of existing and future noise exposure within the community and the location of noise sensitive land uses (e.g., residences, schools, hospitals, churches) within the contours. Knowledge of future noise exposure provides a basis for long-term local planning and investment in noise mitigation for particular noise sensitive areas, including how to compatibly develop any vacant land or to redevelop older urban areas around airports into compatible uses.

Based on the noise exposure maps, strategies are developed and evaluated to reduce noise exposure and noncompatible land uses around an airport. Noise solutions are airport-specific-no two airports are alike in their noise and land use environments. The best solutions for one airport may not be effective or desirable in another location. ASNA makes the airport proprietor responsible for airport noise compatibility planning, including selecting the specific noise abatement and mitigation measures deemed appropriate for inclusion in the airport noise compatibility program.

The FAA reviews airport noise compatibility programs submitted by airport proprietors under Part 150 for consistency with criteria established by law and regulation. Program measures must be reasonably consistent with the goals of reducing existing noncompatible land uses around the airport and of preventing the introduction of additional noncompatible land uses. Program measures must not derogate safety or adversely affect the safe and efficient use of airspace. Program measures

must not impose an undue burden on interstate or foreign commerce. Program measures must not be unjustly discriminatory or violate other airport grant agreement assurances. Program measures should be designed to meet both local needs and needs of the national air transportation system. Finally, program measures must be consistent with all of the powers and responsibilities of the FAA Administrator.

The FAA is directed by law to approve airport noise compatibility programs that meet the specified criteria. The FAA may request that an airport proprietor consider additional or alternative program measures, but the FAA does not have the authority to substitute its judgment for that of the airport proprietor regarding which measures to select for implementation. The FAA may only approve or disapprove program measures recommended by an airport proprietor in accordance with established statutory and regulatory criteria. If an airport noise compatibility program is not acted on by the FAA within the statutory 180-day timeframe, it is automatically approved by law with the exception of flight procedures. Flight procedures are not subject to automatic approval.

Although the FAA has established, under ASNA and Part 150, a uniform system for measuring the noise in and around airports, the responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. In preparing noise compatibility programs, airport sponsors may support the use of state and local land use compatibility standards more stringent than Federal guidelines.

If an airport proprietor proposes an airport noise and access restriction subject to the requirements of 14 CFR Part 161 (Part 161), the FAA encourages the proprietor to integrate the required Part 161 analysis into a Part 150 planning process which first analyzes nonrestrictive measures to mitigate noise, and then analyzes the proposed restriction.

For Stage 2 restrictions, which are not subject to FAA approval under Part 161, the FAA advises airport proprietors who have integrated a Part 161 analysis into a Part 150 study to await the FAA's determinations under Part 150 before adopting the restriction. FAA's Part 150 determinations may provide valuable insight regarding the proposed restriction's consistency with existing laws and the position of the FAA with respect to the restriction.

Stage 3 restrictions are subject to either formal agreement among airport users or to FAA approval under Part 161. If an airport proprietor integrates a Stage 3 restriction proposal and analysis into a Part 150 program, the proprietor may submit a combined Part 150/Part 161 submission to the FAA, as provided for in the Part 161 regulation. The FAA will evaluate the proposed Stage 3 restriction under Part 161 requirements in addition to evaluating the submission under Part 150 requirements.

Effective airport noise compatibility planning is a continuous process, rather than a one-time accomplishment. A number of airport proprietors have prepared updates to previously approved airport noise compatibility program as changes have occurred over [*43810] time. For the foreseeable future, Part 150 will remain the primary FAA program for evaluating and mitigating aircraft noise in an airport's vicinity.

Part 150 is a valuable tool for supporting and complementing local land use planning and zoning efforts. A primary goal of part 150 is to improve the compatibility of land uses surrounding airports by reducing existing noncompatible land uses and preventing the introduction of new noncompatible land uses. In response to congressional concerns, as of October 1, 1998, FAA policy is to place additional emphasis on the prevention of new noncompatible land uses by limiting Federal funding to soundproof new homes built in noise-impacted areas. FAA's policy is that new noise sensitive land uses should be prevented from developing around airports or, in cases where prevention is not feasible, they should be rendered compatible with noise exposure levels through measures such as sound insulation during construction.

Policy Element 5: Land Use Planning and Zoning

The FAA will assist State and local governments and planning agencies in establishing policies and practices to minimize noise sensitive land uses around airports, including locally determined buffers outside areas of significant noise exposure.

Discussion: Both the 1976 Policy and Part 150 clearly assert that State and local governments, including airport proprietors and planning agencies, are responsible for determining the acceptable and permissible land uses around airports and defining the relationship between specific properties and airport noise contours. The airport operator must be an integral part of this planning process, and bears its own responsibility for tracking planning and development taking place in its environs and interceding with local governments as may be appropriate to help assure long-term compatibility. Where permitted by law, the FAA is prepared to support compatible land use planning and actions by providing planning guidance, as well as technical and financial assistance. Toward this end, the FAA has engaged in a national compatible land use initiative in a cooperative partnership with the National Association of State Aviation Officials (NASAO).

The transition by the year 2000 to an all Stage 3 fleet of large commercial airplanes significantly reduces aviation noise from levels previously experienced. Noise contours will continue to shrink well into the 21st century around many airports. This reduction in aviation noise exposure presents both a challenge and an opportunity to institute and maintain effective compatible land use policies and practices.

There will be significant pressure to develop residential and other noise sensitive land uses closer to some airports as noise contours shrink towards the airport boundary. Such development should be undertaken only after prudent, thoughtful community planning and appropriate mitigation. The general trend over the past few decades has been an increasing interest on the part of the American public in continuing to upgrade environmental standards. Once noise exposure levels have stabilized with the transition to an all Stage 3 fleet, the demand by residents near airports for an ever quieter environment may outpace the delivery of further source-noise gains from advances in aircraft noise abatement technology. Additionally, not every airport will remain relatively static with respect to aircraft noise; some airports will experience high levels of growth and expansion of their facilities after completion of the Stage 3 transition, with consequent growth of their noise contours.

It is important for the various governmental entities that own airports and control land uses around those airports to coordinate airport and land use planning, and to undertake complementary actions that take into account the needs and operational requirements of the airport and the development goals and environmental needs of the community. The FAA encourages airport noise compatibility planning pursuant to Part 150.

The FAA encourages local jurisdictions with responsibility for land use planning and zoning to take the strongest compatible land use actions with in those areas around airports still subject to significant noise exposure after the transition to an all Stage 3 fleet. According to FAA guidance, areas of significant noise exposure are those in which noise levels are DNL 65 dB or higher. Significant noise exposure is not compatible with a variety of noise sensitive land uses, as delineated in FAA's compatible land use guidelines in Part 150. Jurisdictions should take all possible actions to make existing land uses compatible and to prevent new noncompatible land uses from developing at DNL 65 dB and above.

The FAA further encourages jurisdictions to guard against development of new noise sensitive land uses in areas that have been compatible within the DNL 65 dB contour in the last decade or more, but will be just outside that contour with Stage 3 transition. In situations where noise compatibility measures were funded by Federal grants, Federal grant assurances require that these properties must not become residential or zoned for other noise sensitive uses, but must remain non-noise sensitive even if shrinking noise contours place them outside DNL 65 dB.

Based upon local factors, local jurisdictions may take a more comprehensive approach to aviation noise exposure below DNL 65. Some communities are more noise sensitive than others. Part 150 guidelines recognize local discretion to define noise sensitivity. Some communities have better opportunities than others, because of vacant land or urban redevelopment projects, to reduce and prevent noise sensitive land uses beyond the DNL 65 dB contour. Stage 3 transition and the noise compatibility gains otherwise achieved since the 1976 Policy increase the feasibility in certain locations of dealing with noise exposure below significant levels. A few airport proprietors and local jurisdictions have already begun to address areas outside DNL 65 dB to create an extra margin of noise buffer between the airport and the community.

The FAA will support local efforts to establish noise buffers by agreement between the airport proprietor and the local community, evidenced through both commitments and land use actions by affected jurisdictions. If jurisdictions firmly and consistently act to reduce, prevent, or mitigate noise sensitive development in buffer areas, the FAA will recognize such areas and actions accordingly in NEPA assessments for proposed airport development and in Part 150 noise compatibility programs, and any resulting noise mitigation recommendations.

Local jurisdictions may use the complete array of available methods to address noise sensitive land uses. Several of the most widely used methods are briefly described below, although these are not intended to preclude the use of other methods. A combination of methods, comprising a graduated response from the most to the least adversely affected land uses, may serve communities effectively and can prudently balance costs with levels of noise exposure. The FAA strongly encourages the reduction and prevention of noncompatible land uses at noise exposure levels of DNL 65 dB and higher. Mitigation techniques short of reduction and prevention may be more viable in buffer areas. Methods may support each other for the same [*43811] properties, such as combining sound insulation, an easement, and disclosure. In applying the basic Federal policy elements, the FAA encourages local jurisdictions to.

- . Establish zoning ordinances or other control measures to preclude new noise sensitive development; acquire existing noncompatible properties and relocate people; implement policies and programs to redevelop noise sensitive areas into more compatible land uses.

- . If noise sensitive development cannot be removed or precluded: acoustically insulate existing structures; establish local building codes for new residential and other noise sensitive construction requiring attenuation of exterior noise levels; purchase noise easements.

- . Require formal disclosure of aviation noise exposure levels as a part of real estate transactions for properties located near airports, where authorized by State and local law; provide transaction assistance to noise impacted property owners wishing to sell.

Policy Element 6: Areas With Unique Noise Sensitivities

The FAA will take into account the specific circumstances of locations in national parks and other Federally managed areas with unique noise sensitivities in managing the navigable airspace and evaluating proposed FAA actions that raise aviation noise concerns.

Discussion: The FAA's Noise Policy for Management of Airspace Over Federally Managed Areas, issued November 8, 1996, affirms the FAA commitment to carefully balance the interests of the general public and aviation transportation with the need to protect certain natural environments from the impact of aviation noise. This policy statement addresses FAA's management of the navigable airspace over locations in national parks and other Federally managed areas with unique noise sensitive values. It affirms that the FAA will exercise leadership in achieving an appropriate balance among environmental concerns, airspace efficiency, and technical practicability, while maintaining the highest practicable level of safety. This policy envisions joint efforts by the FAA and resource-managing Federal agencies to enhance compatibility by coordinating management of the airspace and the management goals of these specific areas.

In order to promote an effective balance of agency missions, the Secretaries of Transportation and the Interior are jointly reviewing the environmental and safety concerns resulting from park overflights, developing a national policy on overflights of national parks, and working toward resolution of overflight issues in specific national parks. The overarching goal is to identify how best to provide access to the airspace over national parks while ensuring all park visitors a quality experience and protecting park resources.

The FAA and the National Park Service have initiated individual and joint efforts to achieve a better understanding of the effects of aviation noise on areas within national parks, preserves, and wildlife refuges. A primary focus for FAA is to identify the extent to which low-level noise (*i.e.*, noise levels below existing thresholds of significant, or even adverse, impact for most common land uses) may adversely impact areas with unique noise sensitivities. At present, no scientifically verified, predictable criteria have been established. Until standardization of criteria has been achieved to the

satisfaction of the Federal agencies with noise and land use responsibilities, particular interfaces of concern between aviation and special resource areas will be carefully reviewed on a case-by-case basis by the FAA and the Federal agency with jurisdiction over the area.

Pursuant to Executive Order 13084, "Consultation and Coordination with Indian Tribal Governments," the FAA is committed to removing obstacles that detrimentally affect or impede working directly and effectively with tribal governments. FAA will engage in meaningful consultation with tribal governments whenever significant impacts on trust resources are identified. When requested by a tribal government, the FAA will use best efforts to make aeronautical charts available to tribal representatives, as well as information on how to identify types of aircraft that may be overflying tribal lands. Additionally, on request from tribal officials, the FAA will use best efforts to depict Native American lands that are of significance on a year-around basis on visual flight rules aeronautical sectional maps. The areas will be depicted using the demarcation associated with flying over noise sensitive national park areas. All aircraft are requested to maintain a minimum altitude of 2,000 feet above the surface while flying over these types of areas. On request from tribal officials, the FAA will also use best efforts to assist in alerting pilots of Native American seasonal events of significance through Notice to Airmen (NOTAMs) or a graphical depiction in the appropriate Airport Facility Directory.

Policy Element 7: FAA Financial Programs

The FAA will continue strong support for noise compatibility planning and noise mitigation projects with financial programs under its jurisdiction, with airport rates and charges policy, and by encouraging innovative funding mechanisms including creative public/private partnerships.

Discussion: The 1976 Policy initiated a pilot program under which the FAA awarded the first grants to airport proprietors to develop comprehensive airport noise control plans. This pilot program was expanded in the Aviation Safety and Noise Abatement Act of 1979 (ASNA), which created airport noise compatibility planning under Federal Aviation Regulations (FAR) Part 150 that continues today. ASNA authorizes the FAA to fund the preparation of airport noise compatibility plans and to fund the implementation of noise compatibility programs developed under those plans, subject to FAA's approval of the program measures.

All public airports are eligible to apply for Federal assistance in preparing and implementing airport noise compatibility programs under Part 150. An approved Part 150 program is required for an airport proprietor to receive specifically earmarked grant funds for a broad array of noise mitigation projects. A statutory exception is sound insulation of educational or medical buildings in a noise impact area, which may be funded without an approved Part 150 program. Units of local government in the airport area may also apply for grants to help carry out parts of approved Part 150 programs that are both within their jurisdiction and ability to implement.

The Airport and Airway Improvement Act of 1982 established the first reservation, referred to as a "set-aside," of Airport Improvement Program (AIP) funds specifically for noise compatibility planning and projects under Part 150. The first noise set-aside was established at 8 percent of the total available annual AIP. In 1982, approximately \$ 41 million was given in noise grants. Since 1982, the noise set-aside has remained a key component in AIP legislation, while the set-aside has remained a key component in AIP legislation, while the set-aside percentage has been increased to reflect the growing demand for noise funding. In the last funding year of the century, the noise set-aside (established at 31 percent of AIP discretionary funding) has been over \$ 168.8 million. From the inception of airport noise compatibility funding through fiscal year 1999, the [*43812] FAA has issued noise planning and project grants totaling over \$ 2.6 billion under the Airport Improvement Program.

In addition to the AIP noise set-aside, the FAA administers other statutory provisions and supports decisions that result in additional funding for noise mitigation. The FAA is responsible for evaluating the environmental impact of proposed airport development projects submitted for FAA approval a funding.

FAA's airport funding statute includes environmental requirements. For example, FAA may only approve a grant for a major airport development project that has a potentially significant impact on

natural resources if there is no possible and prudent alternative and the project includes reasonable steps to minimize the harm. These mitigation commitments are included in the FAA decision and any subsequent grant agreements. Such commitments are eligible for AIP funding from sources other than the noise set-aside as part of the cost of the airport development project.

The Passenger Facility Charge (PFC) program, established by the Aviation Safety and Capacity Expansion Act of 1990, includes among its objectives the funding of projects to mitigate airport noise impacts. PFC-eligible projects include mitigation for areas adversely impacted by noise, with or without an approved Part 150 program. Since the inception of the PFC program, the FAA has approved PFC collection authority exceeding \$ 1.6 billion for noise mitigation projects-an important and growing supplement to Federal funding provided through the AIP.

Another important source of airport funding for noise mitigation is airport-generated revenue. As part of its role in administering the AIP, the FAA assumes a stewardship role related to the protection of the Federal investment in airports. Generally, an airport accepting Federal assistance must agree to use all airport revenue for related costs. The FAA has long recognized that noise mitigation associated with an airport capital development project qualifies as a capital cost of the airport and, therefore, is an appropriate use of airport revenue. In June 1996, DOT issued its Policy Regarding Airport Rates and Charges, 61 FR 31994, outlining the expenses an airport proprietor may include in establishing cost-based fees charged to air carriers for the use of airport facilities and services. The policy permits the recovery, through rates and charges, of reasonable environmental costs to the extent that the airport proprietor incurs a corresponding actual expense. The policy expressly identifies aircraft noise abatement and mitigation as a permitted recoverable environmental cost. These provisions were not vacated in a ruling on the policy, *Air Transport Association v. Department of Transportation*, 119 F.3d 38 (D.C. Cir. 1997).

In the future, the FAA will continue to make Federal funding available for measures directed at mitigating noise around airports, reducing noncompatible land uses, and protecting currently compatible land uses, when such funding is financially feasible and permitted by law. The challenge is to ensure adequate financial support for noise mitigation. The FAA manages available AIP funds in a manner to sustain airport noise compatibility planning and programs for as many airports as possible with noise affected communities, giving priority consideration to mitigating the most significant higher noise levels. The FAA evaluates the national demand for Federal noise funding and recommends adjustments to the Congress in reauthorizations of airport grant legislation. Increasingly, the FAA seeks to leverage available Federal funding with other funding sources, including PFCs and airport revenue. In the last two years, the FAA has explored innovative financing proposals. The FAA approved an innovative project to relocate a large number of people on an accelerated schedule from an area of airport noise impact through a Federal/local public and private sector partnership arrangement of shared costs and responsibility. The noise mitigation advantages of this project were obvious, and the overall costs were lower in terms of AIP demand than would have been the case under the traditional approach to funding. Future innovative finance arrangements can help to sustain a strong funding commitment to noise. The FAA will work with State and local governments and the private sector to create new partnerships and opportunities to increase reliable sources of funding and to accelerate adequate financing of noise mitigation projects.

Section 3: Authorities and Responsibilities--Legal Framework

3.1 Legal Responsibilities of the Federal Government

The principal aviation responsibilities assigned to the Federal Aviation Administrator and since 1966 to the Secretary of Transportation, under the Federal Aviation Act of 1958, as amended, 49 U.S.C. 40101 *et seq.*, concern promoting the development of civil aeronautics and safety of air commerce. The basic national policies intended to guide our actions under the Federal Aviation Act are set forth in section 103, 49 U.S.C. 40101(d), which provides public interest standards, including:

- (1) Assigning, maintaining, and enhancing safety and security as the highest priorities in air commerce;
- (2) Regulating air commerce in a way that best promotes safety and fulfills national defense

requirements;

- (3) Encouraging and developing civil aeronautics, including new aviation technology;
- (4) Controlling the use of the navigable airspace and regulating civil and military operations in that airspace in the interest of the safety and efficiency of both of those operations;
- (5) Consolidating research and development for air navigation facilities and the installation and operation of those facilities; and
- (6) Developing and operating a common system of air traffic control and navigation for military and civil aircraft.

To achieve these statutory purposes, sections 307(a), (b), and (c) of the Federal Aviation Act, 49 U.S.C. 40103(b), 44502, and 44721, provide extensive and plenary authority to the FAA concerning use and management of the navigable airspace, air traffic control, and air navigation facilities. The FAA has exercised this authority by promulgating wide-ranging and comprehensive Federal regulations on the use of navigable airspace and air traffic control. n1 Similarly the FAA has exercised its aviation safety authority, including the certification of airmen, aircraft, air carriers, air agencies, and airports under Title VI of the Federal Aviation Act, section 601 *et seq.*, 49 U.S.C. 44701 *et seq.* by extensive Federal regulatory action. n2 In legal terms the Federal government, through this exercise of its constitutional and statutory powers, has preempted the areas of airspace use and management, air traffic control and aviation safety. The legal doctrine of preemption, which flows from the Supremacy Clause of the Constitution, is essentially that state and local authorities do not have legal power to act in an area that already is subject to comprehensive Federal regulation.

n1 See 14 CFR Parts 71, 73, 75, 91, 93, 95, and 97

n2 See 14 CFR Parts 21-43, 61-67, 91, 121 through 149.

Because of the increasing public concern about aircraft noise that accompanied the introduction of turbojet powered aircraft into commercial service in the 1960s, and [*43813] the constraints such concern posed for the continuing development of civil aeronautics and the air transportation system of the United States, the Federal government in 1968 sought and Congress granted broad authority to regulate aircraft for the purpose of noise abatement. Section 611 of the Federal Aviation Act, 49 U.S.C. 44715, constitutes the basic authority for Federal regulation of aircraft noise. In 1972, displaying some dissatisfaction with the FAA's methodical regulatory practice under section 611, the Congress amended that statute in two important respects. To the original statement of purpose, "to afford present and future relief from aircraft noise and sonic boom," it added consideration of, "protection to the public health and welfare." It also added the Environmental Protection Agency (EPA) to the rulemaking process. Section 611 now requires the FAA to publish EPA proposed regulations as a notice of proposed rulemaking within 30 days of receipt. If the FAA does not adopt an EPA proposal as a final rule after notice and comment, it is obliged to publish an explanation for not doing so in the **Federal Register**.

Whether considering a rule it proposes on its own initiative or in response to the EPA, the FAA is required by section 611(d) to consider whether a proposed aircraft noise rule is consistent with the highest degree of safety in air commerce and air transportation, economically reasonable, technologically practicable and appropriate for the particular type of aircraft.

The FAA acted promptly in implementing section 611. On November 18, 1969, it promulgated the first aircraft noise regulations, Federal Aviation Regulations Part 36, 14 CFR Part 36, which set a limit on noise emissions of large aircraft of new design. It reflected the technological development of the high-bypass ratio type engine, and was initially applied to the Lockheed 1011, the Boeing 747, and the McDonnell-Douglas DC-10. The Part 36 preamble announced a basic policy on source noise reduction and a logically phased strategy of bringing it about. Essentially, Part 36 established the quietest uniform standard then possible, taking into account safety, economic reasonableness, and technological feasibility. Part 36 was initially applicable only to new types of aircraft. As soon as the technology had been demonstrated, the standard was to be extended to all newly manufactured

aircraft of already certificated types. Ultimately, the preamble indicated, when technology was available the standard would be extended to aircraft already manufactured and in operation. The last step would require modification or replacement of all aircraft in the fleet that did not meet the Part 36 noise levels. The first two steps have already been accomplished. This third step is being taken now.

In accordance with the Federal noise abatement program announced in the 1976 Policy, the FAA adopted regulations in 14 CFR Part 91 to phase out operations in the United States of so-called "Stage 1 aircraft" by January 1, 1985. These aircraft were defined as civil subsonic aircraft with a gross weight of more than 75,000 pounds that do not meet Stage 2 or 3 Part 36 noise standards. In 1980, pursuant to the Aviation Noise Abatement Act of 1979, the FAA extended the phaseout requirement to foreign international operators, and was directed to issue exemptions to operators of two-engine turbojets with 100 or fewer seats for small community service until January 1, 1988.

In addition to its regulatory authority over aircraft safety and noise, the FAA has long administered a program of Federal grants-in-aid for airport construction and development. By virtue of its decision-making on whether to fund particular projects, the FAA has been able, to a degree, to ensure that new airports or runways will be selected with noise impacts in mind. That indirect authority was measurably strengthened when in 1970 the Airport and Airway Development Act expanded and revised the FAA's grant-in-aid program for airport development, and added environmental considerations to project approval criteria. These criteria include consideration of whether the project is consistent with plans (existing at the time the project is approved) of public agencies authorized by the State in which the airport is located to plan for the development of the area surrounding the airport. The 1976 amendments to the 1970 Act increased funding levels and provided new authority to share in the costs of certain noise abatement activities, as part of a pilot program initiated under the 1976 Policy. Under this program, the FAA funded up to 25-airport noise control plans per year.

In 1979, Congress enacted the Aviation Safety and Noise Abatement Act, 49 USC 47501 *et seq.*, to support Federal efforts to encourage development of compatible land uses around civil airports in the United States. In 1981, the FAA adopted 14 CFR Part 150 to implement ASNA. As explained in detail in Section 2, under ASNA, FAA is authorized to provide grants to airport sponsors to fund voluntary preparation of noise exposure maps, comprehensive noise compatibility planning, and soundproofing, land acquisition, and other projects to carry out noise compatibility programs. Noise compatibility programs are developed in consultation with surrounding communities and airport users. The airport must notify the public and afford an opportunity to comment at a public hearing.

The Airport and Airway Improvement Act of 1982 (AAIA) established the Airport Improvement Program (AIP) and first made funds available for noise compatibility planning and to carry out noise compatibility programs authorized under ASNA. The AAIA has been amended several times, and authorizes the current Federal AIP program. Since 1976, the ability of the FAA to provide financial assistance under the AIP has remained limited in terms of both percentage of project costs and the types of projects eligible for Federal aid. Applications for airport development projects have consistently exceeded available funding, although the amounts available for obligation under the AIP have ranged from approximately \$ 450 million in Fiscal Year 1982 to a recent high of approximately \$ 1.9 billion in Fiscal year 1992. Through additional legislation, FAA gained authority to grant AIP funds to units of local government in order to soundproof public schools and hospitals.

In 1990, Congress established a National Aviation Noise Policy in the Airport Noise and Capacity Act, 49 USC 47521 (ANCA). This Policy had three primary elements. The first was a program for transition to an all-Stage 3 civil subsonic turbojet fleet. In 1991, pursuant to ANCA, the FAA amended Part 91 to establish a phased program to require operations by civil subsonic turbojet airplanes weighing more than 75,000 pounds to meet Stage 3 noise standards by the year 2000. This phaseout requirement applied to all operators of large Stage 2 airplanes, not just air carriers, operating in the contiguous United States.

The second element was a national program for review of airport noise and access restrictions on operations by Stage 2 and 3 aircraft. ANCA applies to restrictions on operations by Stage 2 aircraft proposed after October 1, 1990, and to restrictions on operations by Stage 3 aircraft not in effect before October 1, 1990. In 1991, as a companion rulemaking to the Part 91 amendment, the FAA

adopted Part 161 to implement the requirements under ANCA relating to airport restrictions.

[*43814] After careful study, the FAA determined that Part 161 should cover operations by all Stage 2 aircraft, including those weighing less than 75,000 pounds that are not subject to the phaseout requirement. Part 161 also applies to proposals to restrict operations by helicopters that are certificated as Stage 2. ANCA, as implemented by Part 161, provides that airports must give 180 days notice and an opportunity for public comment on a cost-benefit analysis concerning proposals to restrict operations by Stage 2 aircraft. Proposals to restrict operations by Stage 3 aircraft must (1) be agreed upon by the airport and all users at the airport or (2) satisfy procedural requirements similar to proposals to restrict Stage 2 operations and be approved by FAA. To be approved, restrictions must meet the following statutory criteria:

- (1) The restriction is reasonable, nonarbitrary and nondiscriminatory.
- (2) The restriction does not create an undue burden on interstate or foreign commerce.
- (3) The proposed restriction maintains safe and efficient use of the navigable airspace.
- (4) The proposed restriction does not conflict with any existing Federal statute or regulation.
- (5) The applicant has provided adequate opportunity for public comment on the proposed restriction.
- (6) The proposed restriction does not create an undue burden on the national aviation system.

ANCA does not supersede preexisting law except to the extent required by the application of its terms. Preexisting law governing airport noise and access restrictions is discussed in detail below, under "Legal Responsibilities of Airport Proprietors." FAA encourages airport proprietors to seek to enter into voluntary agreements with users. Voluntary agreements are not subject to ANCA, and may include agreed-upon enforcement mechanisms that are consistent with Federal law.

The final element of the national noise policy was the provision of another source of funds eligible conditions upon compliance with the national program for review of airport noise and access restrictions. In 1990, Congress amended the Anti-Head Tax provisions of the Federal Aviation Act to authorize FAA to approve collection and use of PFCs by public agencies.^{<3>} Public agencies that control commercial service airports may, subject to FAA approval, receive passenger facility charges collected from enplaning passengers using the airport, and use these charges for airport development or noise abatement projects. PFCs charges may be used, among other things, to finance remedial measures that would qualify for AIP funding if included in an approved airport noise compatibility program. The PFC program has assumed increasing importance in providing revenue for noise as well as capacity-enhancing projects.

3.2 Legal Responsibilities of State and Local Governments

While the Federal government's exclusive statutory responsibility for noise abatement through regulation of flight operations and aircraft design is broad, the noise abatement responsibilities of state and local governments, through exercise of their basic police powers, are circumscribed. The scope of their authority has been most clearly described in negative terms, arising from litigation over their rights to act.

The chief restrictions on state and local police powers arise from the exclusive Federal control over the management of airspace. Local authorities have been long prevented by Federal preemption of authority in the area from prohibiting or regulating overflight for any purposes.ⁿ⁴ That principle was found in 1973 to include any exercise of police power relating to aircraft operations in *City of Burbank v. Lockheed Air Terminal*, 411 U.S. 624 (1973). In the *Burbank* case, the Supreme Court struck down a curfew imposed by the City in the exercise of its police power at an airport not owned by it. The court stated that, "the pervasive nature of the scheme of Federal regulation of aircraft noise leads us to conclude that there is Federal preemption." 411 U.S. at 633. The national character of the subject matter also supported preemption. 411 U.S. at 625. "If we were to uphold the Burbank ordinance and a significant number of municipalities followed suit, it is obvious that fractionalized control of the timing of takeoffs and landings would severely limit the flexibility of the

FAA in controlling air traffic flow. The difficulties of scheduling flights to avoid congestion and the concomitant decrease in safety would be compounded." 411 U.S. at 639. Although control of noise is deep-seated in the police power of the states (411 U.S. at 638), the Court found that Congress unequivocally intended that the Federal government have "full control over aircraft noise, preempting state and local control." 411 U.S. 625, 627-28, 639. The Court's reliance on the legislative history of section 611 of the Federal Aviation Act and its 1972 amendments indicates that other types of police power regulation, such as restrictions on the type of aircraft using a particular airport, are equally proscribed. The Court, however, specifically excluded consideration of what limits, if any, apply to a municipality acting in its proprietary capacity.

In two subsequent cases, Federal courts determined that the constitutionality of state airport noise regulations depended upon whether they sought to directly control aircraft noise or mitigate its effects. In *Air Transport Association v. Crotti*, 389 F. Supp. 58 (N.D. Cal., 1975) a state airport noise statute that imposed noise abatement duties on airport proprietors without directly regulating aircraft operation was upheld. California's statutory and regulatory scheme established permissible cumulative noise (community noise equivalent noise levels or CNEL) standards for continued operation of airports, monitoring requirements, and ultimate noise levels for surrounding land uses. In upholding the validity of the statutory scheme, the court noted that airport authorities were left to choose among suggested procedures, and were free to use other noise control measures beyond those suggested to achieve the prescribed noise standards.

n4 *American Airlines v. Town of Hempstead*, 398 F.2d 369 (2d Cir. 1968) Town noise ordinance that prohibited overflights over the village by aircraft that did not meet certain noise standards held invalid because Congress had preempted the field of aircraft operation. Compliance with the ordinance would have required the alteration of FAA-promulgated flight patterns and procedures controlling aircraft in the New York City area; *American Airlines v. City of Audubon Park*, 297 F. Supp. 207, 407 F.2d 1306 (6th Cir. 1969) Court held that local ordinance conflicted with the glide slope which aircraft were required to follow in approaching the airport.

The court indicated that efforts to control aircraft traffic under the CNEL might be suspect, but since no action had been taken the court refrained from ruling upon limitations to the airport proprietor's authority. In this same case, the court struck down maximum single event noise exposure levels (SENEL) for takeoff and landings of aircraft, which had been established by the State for enforcement by counties through criminal fines levied against aircraft operators. The court held that these state regulations were per se unlawful exercises of police power because they attempted to regulate noise levels occurring when aircraft were in direct flight in clear contravention of FAA's statutory authority. n5

n5 See also, *Minnesota Public Lobby v. Metropolitan Airport Commission*, 520 N.W. 2d 388 (Minn. 1994) Minnesota Supreme Court held that the Metropolitan Airports Commission was not required to develop a plan to comply with state pollution control noise standards in operating Minneapolis-St. Paul International Airport. The State's noise standards as applied to MAC impinged on aircraft operations because (1) enforcement of the standards would severely limit the flexibility of the FAA in controlling aircraft flow and (2) compliance would be impossible without either substantially reducing aircraft operations, converting much of South Minneapolis and the surrounding suburbs to non-residential areas, or moving the airport. In the opinion of the court the State had no power to require an airport proprietor such as MAC to use its proprietary powers in certain ways that may have achieved compliance with the noise standards. [*43815]

In 1981, the Ninth Circuit Court of Appeals addressed a measure that the state required an airport proprietor to implement in order to comply with the airport noise standards upheld in *Crotti*. In *San Diego Unified Port District v. Gianturco*, 651 F.2d 1306 (9th Cir. 1981), cert den. 455 U.S. 1000 (1982), the State of California sought to require the Port District, as owner of Lindbergh Field, to extend a curfew. The State made extension of the curfew a condition of the variance needed to continue to operate the airport, which was not in compliance with California noise standards. Like the curfew in *City of Burbank*, the court found that the State's curfew impinged on airspace management by directing when planes may fly in the San Diego area, and on Federal control of aircraft noise at its source by restricting the permissible flight times of aircraft solely on the basis of noise. The court explained that the Federal government has only preempted local regulation of the source of noise, not the entire field of aviation noise. The effects of noise may be mitigated by state

and local government independently of source noise control. "Local governments may adopt local noise abatement plans that do not impinge upon aircraft operations." 651 F.2d at 1314. The court declined to interpret the 1976 Aviation Noise Abatement Policy as evidence that the Federal Government had abdicated its duties to regulate aircraft noise or for the proposition that states may use their police power to coerce political subdivisions to use proprietary powers. The court also found that the State of California was not a proprietor of Lindbergh Field, and thus could not rely upon Burbank's proprietor exception permitting airports utilizing their proprietary powers (rather than police powers) to enact reasonable, nonarbitrary, and nondiscriminatory rules defining the permissible level of noise which can be created by aircraft using the airport.

The ruling in *City of Burbank* was held to govern the exercise of zoning authority to ban a taxiway project in *Burbank-Glendale Pasadena Airport Authority v. City of Los Angeles*, 979 F.2d 1339 (9th Cir. 1992). In the BGPA case, the Ninth Circuit Court of Appeals reviewed the constitutionality of an ordinance that required prior submission and approval of plans for development of a 54-acre parcel of land. The land, which was used solely for aircraft landings and takeoffs at Burbank Airport, was slated for construction of a taxiway project that was expected to produce significant safety improvements and noise benefits. The ordinance was enacted by the City of Los Angeles just before construction of a taxiway project was to begin, and applied exclusively to the parcel of land owned by the airport but located in the jurisdiction of the City of Los Angeles. The court found that the City was prohibited from conditioning airport development on prior City approval. It stated that proper placement of taxiways and runways is critical to the safety of takeoffs and landings and essential to the efficient management of the navigable airspace. The Court stated that Federal aviation safety interests preempted control of airport ground facilities. The Court held that nonproprietor jurisdictions may not abuse their land use powers by delaying a safety project and withholding a building permit until the FAA and the airport proprietor agree to aircraft noise control terms.

Recent years have witnessed a steady increase in state and local ordinances and zoning measures that seek to regulate growth and expansion of large metropolitan airports. n6 Federal law and policy continues to confirm that state and local police power regulation of aircraft noise is Federally preempted when it impinges on airspace management, aircraft flight, and operations. Non-proprietors may take noise impacts into account in siting airports and other facilities, and may mitigate the effects of noise. Federal aviation statutes do not direct the Federal government to decide where airports should be located, or whether and where an existing airport should acquire additional property for expansion; instead, such decisions are the primary responsibility of airport owners and operators. However, Federal authority to control the navigable airspace necessarily encompasses the placement, size, and configuration of runways. Likewise, the Airport and Airway Improvement Act of 1982 prescribes a dominant role for the FAA in airport development, which encompasses constructing, repairing, or improving public use airports, and imposes significant program responsibilities on the FAA. Non-proprietor jurisdictions have no role in determining the legal requirements for runway expansion and development within the boundaries of the existing airport. Federal aviation law preempts local ordinances designed to control and impede air navigation facilities, airport safety projects, or development projects on airport property at major airports as a means of controlling aircraft noise, and to otherwise control flight operations and impede safe and efficient airspace management. As a corollary of this principle, state and local governments may not use their police powers to require airport proprietors to exercise their proprietary powers to control aircraft noise at its source. The FAA is closely scrutinizing actions by state and local governments seeking to limit airport expansion, particularly of major metropolitan airports. FAA has and will continue to intervene in appropriate cases to assure that state and local governments exercise their authorities in full accord with the principles in *City of Burbank* and its progeny.

n6 See, e.g., *Dallas Ft. Worth International Airport Board v. City of Irving*, 854 S.W.2d 750 (Ct. of Appeals Texas 1993), writ denied, 894 S.W.2d 456 (Tex. App-Ft. Worth 1995); *City of New Orleans v. Kenner*, 1992 U.S. Dist. LEXIS 1046 (ED La 1992), rev'd-F.2d- (5th Cir. 8/6/92); *City of Cleveland v. City of Brook Park*, 893 F. Supp 742 (ND Ohio 1995); *City of Burbank v. BGPA* (85 Cal Rpt. 2d 28 (1999), review den., 1999 Cal. LEXIS 5393 (Cal Sup. Ct. 8/11/99).

In addition to established case law, Section 105 of the Airline Deregulation Act of 1978, 49 U.S.C. 41713 expressly provides that States, political subdivisions of States, and political authorities of at least two States, are prohibited from enacting or enforcing any law relating to a price, route, or

service of an air carrier. This statute was intended to ensure that States would not undo Federal deregulation with regulation of their own. This statute prohibits state laws or local noise ordinances that would constitute a direct or indirect regulation of a price, route or service of an air carrier. As noted in the Section entitled "Legal Responsibilities of Airport Proprietors," it preserves the authority of airport proprietors.

The FAA encourages local authorities to implement airport noise compatibility planning and protect their citizens from unwanted aircraft noise, principally through their powers of land use control. Control of land use around airports to ensure that only compatible development may occur in noise-impacted areas is a key tool in limiting [*43816] the number of citizens exposed to noise impacts, and it remains exclusively in the control of state and local governments. Occasionally, it is a power enjoyed by individual airport operators; some operators are municipal governments that can impose appropriate land use controls through zoning and other authority. But even where municipal governments themselves are operators, the noise impacts of their airports often occur in areas outside their jurisdiction. Other police power measures, such as requirements that noise impacts be revealed in real estate transactions, are also available to them. Other measures are also available to mitigate the effects of noise, such as by baffling existing noise or resetting those affected by noise. Finally, local governments have legal authority to take noise impacts into account in their own activities, such as their choice of location and design for new airports, new schools, hospital or other public facilities, as well as sewers, highways and other basic infrastructure services that influence land development.

3.3 Legal Responsibilities of Airport Proprietors

Under the Supremacy Clause of the U.S. Constitution, Federal law preempts state or local law when Congress expressly or impliedly indicates an intention to displace state or local law, or when that law actually conflicts with Federal law. As discussed above, in 1973, the Supreme Court held that the pervasive scope of Federal regulation of the airways implied a congressional intention to preempt municipal aircraft noise restrictions based upon the police power. The court left the door open to noise regulations imposed by municipalities acting as airport proprietors, n7 however, based on such municipalities legitimate interest in avoiding liability for excessive noise generated by the airports they own. After *Burbank*, Congress expressly provided that the proprietary powers and rights of municipal airport owners are not preempted by Federal law. 49 U.S.C. 41713 (section 105 of the Airline Deregulation Act of 1978). Thus, the task of protecting the local population from airport noise has fallen to the agency, usually the local government, that owns and operates the airport.

Subsequent to the *Burbank* decision, the courts have confirmed that Congress has reserved a limited role for local airport proprietors to regulate noise levels at their airports. Thus, the responsibilities of state and local governments as airport proprietors are less restricted than those of non-proprietor governments. The rationale for the airport proprietor exception is that airport proprietors bear monetary liability for excessive noise under the Supreme Court decision in *Griggs v. Allegheny County*, 369 U.S. 84 (1962). The Court found that because the airport proprietor had that liability, fairness dictated that airport proprietors must also have the power to insulate themselves from that liability. The proprietor, the court reasoned, planned the location of the airport, the direction and length of the runways, and has the ability to acquire more land around the airport. From this control flows the liability, based on the constitutional requirement of just compensation for property taken for a public purpose. The Court concluded: "Respondent in designing the Greater Pittsburgh Airport had to acquire some private property. Our conclusion is that by constitutional standards it did not acquire enough." The role of the proprietor described by the Court remains the same today.

n7 Traditionally, airport proprietors own and operate the airport, promote the airport, and have the legal power to acquire necessary approach easements.

In contrast, it is understandable that non-proprietor localities in the vicinity of major airports cannot be permitted an independent role in controlling the noise of passing aircraft. In the words of the Second Circuit Court of Appeals.

[t]he likelihood of multiple, inconsistent rules would be a dagger pointed at the heart of commerce- and the rule applied might come literally to depend on which way the wind was blowing. The task of

protecting the local population from airport noise has, accordingly, fallen to the agency, usually of local government, charged with operating the airport.

British Airways Board v. Port Authority of New York and New Jersey, 558 F.2d 75, 83 (2d Cir. 1977).

An airport proprietor's powers, however, are not unlimited. For example, Federal case law consistently holds that proprietors are vested only with the power to promulgate reasonable, nonarbitrary, and nondiscriminatory regulations establishing acceptable noise levels for the airport and its immediate environs that avoid the appearance of irrational or arbitrary action. *National Helicopter Corp. v. City of New York*, 137 F.3d 81, 89 (2d Cir. 1998); *British Airways Board v. Port Authority of New York and New Jersey*, 558 F.2d 75, 564 F.2d 1002 (2d Cir. 1977). The Department of Transportation's own policy statement similarly states that an airport owner's conduct is not preempted as an exercise of its proprietary powers when such exercise is reasonable, nondiscriminatory, nonburdensome to interstate commerce, and designed to accomplish a legitimate State objective in a manner that does not conflict with the provisions and policies of the aviation provisions of Title 49 of the United States Code. 14 CFR 399.110(f).

In the *British Airways* case, the Port Authority of New York and New Jersey banned the Concorde SST aircraft from using Kennedy International Airport pending a six-month study of operating experience at other U.S. airports. Rather than applying its 1951 noise standard to the new Concorde aircraft, the Port Authority banned the aircraft based on its low frequency sound. Air France and British Airways challenged the ban, arguing among other things, that the ban was preempted by DOT's authorization of Concorde landings at JFK and provision of detailed regulations for noise control at the airport, and that it was discriminatory and an undue burden on commerce. The Court of Appeals held that the Port Authority possessed the power and bore the responsibility to establish fair, even-handed and nondiscriminatory regulations designed to abate the effect of aircraft noise on surrounding communities and directed the lower court to conduct an evidentiary hearing on the reasonableness of the Port Authority's ban based upon low frequency sound.

Subsequent to the first ruling, the Port Authority resisted in responding to the airlines' desire to secure a fair test of their aircraft in New York. The Port Authority refused to accord landing rights an airplane that was capable of meeting its rule that had consistently been applied to all other aircraft for nearly 20 years-112 PNdB. As a result, the carriers brought suit again. In the second *British Airways* case, the Court of Appeals affirmed its prior ruling concerning the limitations of proprietary powers. The court then affirmed the enjoining of further prohibition of Concorde operations at Kennedy Airport until the Port Authority promulgated a reasonable, nonarbitrary and nondiscriminatory noise regulation that all aircraft were afforded the opportunity to meet. The action of the Port Authority purporting to exercise delegated authority to regulate noise was held to constitute unjust discrimination within the meaning of the AAIA when the action resulted in denial of use of the airport to aircraft that met noise standards applies to other aircraft allowed to use the airport.

The court pointed out that with respect to the reasonableness of airport [*43817] use restrictions, it is important that they be found on "definitive findings, based on substantial evidence, that the proposed use would jeopardize the health, safety, or welfare of the public." *British Airways*, 564 F.2d 102, 1014 (2d Cir. 1977).

A noise curfew prohibiting the arrival or departure on a non-emergency basis of any aircraft between the hours of 12 midnight and 7 a.m. applying to all aircraft regardless of the noise emission level of degree of noise produced was found to be an unreasonable, arbitrary, and discriminatory and overbroad exercise of power by the county in *U.S. v. Westchester*, 571 F. Supp. 786 (S.D.N.Y. 1983).

In *City and County of San Francisco v. FAA*, 942 F.2d 1391 (9th Cir. 1991), a city regulation was interpreted to ban a retrofitted Q-707 meeting Stage 2 standards from using the airport while other Stage 2 aircraft making similar levels of noise were permitted. The aircraft operator filed a complaint with the FAA alleging that exclusion of its retrofitted 707 was unjustly discriminatory in violation of the city's Airport Improvement Program grant assurances. A DOT law judge found that the city had breached its grant assurance that it would operate the airport without unjust discrimination. The FAA Administrator affirmed the law judge's finding because the city's noise regulation allowed

aircraft that were equally noisy or noisier than Q-707's to operate at the airport and increase in number without limit, while excluding the Q-707 based on a characteristic that had no bearing on noise (date of type-certification as meeting Stage 2 requirements). Thus, the regulation violated the statutory requirement and the city's grant assurance requirement that the airport would be available without unjust discrimination. The Ninth Circuit Court of Appeals upheld the FAA's interpretation of the statutory and grant assurance requirements as reasonable. This case, as in the *British Airways* cases, illustrates that use of noise control regulations by an airport proprietor to bar aircraft on a basis other than noise, or without a factual basis, was found to be inconsistent with a fair and efficient national air transportation system.

Airport proprietors are also prohibited from enacting noise restrictions that would impose an undue burden on interstate commerce. The Commerce Clause prohibits any state or local government actions that would unconstitutionally burden interstate commerce. For the most part, noise ordinances that would violate the Commerce Clause when the particular means chosen by the proprietor to achieve its goals are irrational, arbitrary or unrelated to those goals. For example, a court would likely strike down a noise ordinance if its purpose was in fact to disfavor interstate commerce, its benefits were illusory or insignificant, or impermissible parochial considerations unconstitutionally burdened interstate commerce. In *U.S. v. Westchester*, 571 F. Supp. 786 (S.D.N.Y. 1983), the court found that a blanket nighttime curfew regardless of noise emission had an adverse impact on the flow of air commerce because it interfered with and prevented the efficient use of the navigable airspace, resulting in bunching of flights, delays in flights not only at Westchester County Airport but at LaGuardia and other airports in the metropolitan area, and disruption in the flow of air traffic in the New York City metropolitan area. The curfew further represented an unlawful exercise of local police power by the County.

In *National Aviation v. Hayward*, 418 F. Supp. 417 (N.D. Cal. 1976), the court reviewed the constitutionality of an ordinance which prohibited the operation of aircraft between the hours of 11 p.m. and 7 a.m. by aircraft which exceeded a noise level of 75 dBA. The plaintiffs argued that the ordinance burdened interstate commerce by forcing them to make their flights from Oakland Airport rather than Hayward Air Terminal, thereby impairing their ability to deliver mail and newspapers to customers in California and other nearby states. The court upheld the airport's nighttime noise level limitation as a valid exercise of proprietary rights. On application of a balancing test under the Commerce Clause, the court found that the burden imposed on the flow of commerce was incidental and did not overcome the local interest in controlling noise levels at Hayward Air Terminal during late evening and morning hours. The nighttime noise level limitation did not sufficiently reduce the value of aircraft operator leases so as to be an unlawful taking under the 14th Amendment.

In *Santa Monica Airport association v. City of Santa Monica*, 659 F.2d 100 (9th Cir. 1981), the court struck down an airport ban on the operation of jet aircraft on the basis of noise under the Commerce and Equal Protection Clauses of the U.S. Constitution because the quality and quantity of noise emitted by the jets had no greater tendency to irritate and annoy than that emitted by permitted propeller-driven aircraft.

In *Alaska Airlines v. City of Long Beach*, 951 F.2d 977 (9th Cir. 1991), the City of Long Beach had enacted a curfew in 1981 which limited air carrier flights to 15 per day and required carriers to use quieter aircraft. The Court of Appeals overruled the district court's findings that the ordinance was preempted by Federal law, impermissibly burdened interstate commerce, violated equal protection principles, and was arbitrary and capricious, or otherwise not rationally related to legitimate governmental concerns. The Court of Appeals found that each of the challenged provisions of the ordinance was sufficiently supported by a reasonable and legitimate justification.

Airports that are recipients of Federal airport development grants have specific contractual duties, under the terms of their airport development grant agreements, to ensure that their facilities are available under equitable conditions. These obligations include the duty to ensure that the airport is available for public use on fair and reasonable terms and without unjust discrimination, and that no restriction results in the establishment of an exclusive right. The courts have made it clear that these contractual obligations are an important aspect of the limitations on an airport owner's authority to control aircraft noise, for example, in the issuance of curfews.

In *U.S. v. Westchester*, 571 F. Supp. 786 (S.D.N.Y. 1983), discussed in part above, the court also

found that the county had obligated itself by the FAA's grant assurances to make the airport available for public use on fair and reasonable terms, without unjust discrimination, and at all times. The court noted that failure to comply with the conditions of a grant authorized the FAA to suspend current grant payments and withhold future grants. The court held that Westchester's curfew on flight operations constituted a breach of the terms, conditions, and assurances set forth in the grant-in-aid agreements between the county and the FAA, and that the FAA properly refused to further grant monies to the county based on its failure to comply with grant conditions and assurances.

The power thus left to the proprietor to control what types of aircraft use its airports, to impose curfews or other use restrictions, and, subject FAA approval, to regulate runway use and flight paths-is not unlimited. Though not preempted, the proprietor is subject to two important Constitutional restrictions. It first may not take any action that imposes an undue burden on interstate or foreign commerce, and second may not unjustly discriminate between different categories of airport users. As discussed, **[*43818]** airport proprietors that are recipients of FAA airport development grants are subject to certain statutory and contractual obligations including that to make the airport available for public use on reasonable terms and conditions. Also, states, political subdivisions of states, and political authorities of at least two states may not enact or enforce a law, regulation, or other provision having the force and effect of law related to a price, route, or service of an air carrier, unless that law or regulation is consistent with the proprietary exception. See, 49 U.S.C. 41713.

Our concept of the legal framework underlying this Policy Statement is that proprietors retain the flexibility to impose such restrictions if they do not violate any Constitutional or statutory proscription. We have been urged to undertake-and have considered carefully and rejected-full and complete Federal preemption of the field of aviation noise abatement. In our judgment the control and reduction of airport noise must remain a shared responsibility among airport proprietors, users, and governments.

Summary

The legal framework with respect to noise may be summarized as follows:

- . The Federal Government has preempted the areas of airspace use and management, air traffic control, safety and the regulation of aircraft noise at its source. The Federal government also has substantial power to influence airport development through its administration of the Airport Improvement Program.
- . Other powers and authorities to control airport noise rest with the airport proprietor-including the power to select an airport site, acquire land, assure compatible land use, and control airport design, scheduling and operations-subject to Constitutional prohibitions against creation of an undue burden on interstate and foreign commerce, and unreasonable, arbitrary, and unjust discriminatory rules that advance the local interest, other statutory requirements, and interference with exclusive Federal regulatory responsibilities over safety and airspace management.
- . State and local governments may protect their citizens through land use controls and other police power measures not affecting airspace management or aircraft operations. In addition, to the extent they are airport proprietors, they have the powers described in the preceding section.

The authorities and responsibilities under the Policy may be summarized as follows :

- . The Federal Government has the authority and responsibility to control aircraft noise by the regulation of source emissions, by flight operational procedures, and by management of the air traffic control system and navigable airspace in ways that minimize noise impact on residential areas, consistent with the highest standards of safety. The Federal government also provides financial and technical assistance to airport proprietors for noise reduction planning and abatement activities and, working with the private sector, conducts continuing research into noise abatement technology.
- . Airport Proprietors are primarily responsible for planning and implementing action designed to

reduce the effect of noise on residents of the surrounding area. Such actions include optimal site location, improvements in airport design, noise abatement ground procedures, land acquisition, and restrictions on airport use that do not unjustly discriminate against any user, impede the Federal interest in safety and management of the air navigation system, or unreasonably interfere with interstate or foreign commerce.

. State and Local Governments and Planning Agencies should provide for land use planning and development, zoning, and housing regulations that are compatible with airport operations.

. Air Carriers are responsible for retirement, replacement or retrofit for older jets that do not meet Federal noise level standards, and for scheduling and flying airplanes in a way that minimizes the impact of noise on people.

. Air Travelers and Shippers generally should bear the cost of noise reduction, consistent with established Federal economic and environmental policy that the costs of complying with laws and public policies should be reflected in the price of goods and services.

. Residents and Prospective Residents in areas surrounding airports should seek to understand the noise problem and what steps can be taken to minimize its effect on people. Individual and community responses to aircraft noise differ substantially and, for some individuals, a reduced level of noise may not eliminate the annoyance or irritation. Prospective residents of areas impacted by airport noise thus should be aware of the effect of noise on their quality of life and act accordingly.

n1 See 14 CFR Parts 71, 73, 75, 91, 93, 95, and 97

n2 See 14 CFR Parts 21-43, 61-67, 91, 121 through 149.

n3 See 49 USC 40116, 14 CFR Part 158.

n4 *American Airlines v. Town of Hempstead*, 398 F.2d 369 (2d Cir. 1968) Town noise ordinance that prohibited overflights over the village by aircraft that did not meet certain noise standards held invalid because Congress had preempted the field of aircraft operation. Compliance with the ordinance would have required the alteration of FAA-promulgated flight patterns and procedures controlling aircraft in the New York City area; *American Airlines v. City of Audubon Park*, 297 F. Supp. 207, 407 F.2d 1306 (6th Cir. 1969) Court held that local ordinance conflicted with the glide slope which aircraft were required to follow in approaching the airport.

n5 See also, *Minnesota Public Lobby v. Metropolitan Airport Commission*, 520 N.W. 2d 388 (Minn. 1994) Minnesota Supreme Court held that the Metropolitan Airports Commission was not required to develop a plan to comply with state pollution control noise standards in operating Minneapolis-St. Paul International Airport. The State's noise standards as applied to MAC impinged on aircraft operations because (1) enforcement of the standards would severely limit the flexibility of the FAA in controlling aircraft flow and (2) compliance would be impossible without either substantially reducing aircraft operations, converting much of South Minneapolis and the surrounding suburbs to non-residential areas, or moving the airport. In the opinion of the court the State had no power to require an airport proprietor such as MAC to use its proprietary powers in certain ways that may have achieved compliance with the noise standards.

n6 See, e.g., *Dallas Ft. Worth International Airport Board v. City of Irving*, 854 S.W. 2d 750 (Ct. of Appeals Texas 1993), writ denied, 894 S.W. 2d 456 (Tex. App-Ft. Worth 1995); *City of New Orleans v. Kenner*, 1992 U.S. Dist. LEXIS 1046 (ED La 1992), rev'd-F.2d- (5th Cir. 8/6/92); *City of Cleveland v. City of Brook Park*, 893 F. Supp 742 (ND Ohio 1995); *City of Burbank v. BGPAA* (85 Cal Rpt. 2d 28 (1999), review den., 1999 Cal. LEXIS 5393 (Cal Sup. Ct. 8/11/99).

n7 Traditionally, airport proprietors own and operate the airport, promote the airport, and have the legal power to acquire necessary approach easements.

Section 4: Assessing Aviation Noise

4.1 Foundations

The Federal government's methods and standards for measuring and assessing noise impacts derive from scientific research and a series of interagency committee reviews.

Federal Interagency Committee on Urban Noise

In 1979 the Federal Interagency Committee on Urban Noise (FICUN) was formed to develop Federal policy and guidance on noise. The committee's membership included the Environmental Protection Agency (EPA), the FAA, the Federal Highway Administration, and the Departments of Defense (DOD), Housing and Urban Development (HUD), and Veterans Affairs (VA). Among other things, it developed consolidated Federal agency land use compatibility guidelines using Yearly Day-Night Average Sound Levels (DNL) as the common descriptor of noise levels. In order to develop the guidelines, it was also necessary to establish a correlation between land use and noise exposure classifications.

The FICUN issued its report entitled Guidelines for Considering Noise in Land Use Planning and Control in June 1980. This report established the Federal government's DNL 65 dB standard and related guidelines. The FICUN generally agreed that standard residential construction was compatible for noise exposure from all sources up to DNL 65 dB. Their land use compatibility guidelines for noise exposure between DNL 65-70 dB called for building codes to require at least 25 dB outdoor to indoor noise level reduction (NLR); between DNL 70-75 dB, at least 30 dB NLR.

The FICUN considered noise exposure above DNL 75 dB to be "incompatible" with all residential uses except transient lodging with NLR of at least 35 dB. The report contained a comprehensive guidelines table. This table contains the following footnote regarding residential and certain other noise-sensitive uses in the moderate exposure zone from DNL 55-65 dB:

The designation of these uses as "compatible" in this [moderate impact] zone reflects individual Federal agencies' consideration of general cost and feasibility factors as well as past community experiences and program objectives. Localities, when evaluating the application of these guidelines to specific situations, may have different concerns or goals to consider.

The designations contained in the FICUN's land use compatibility table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific [*43819] properties and specific noise contours rests with the local authorities.

Aviation Safety and Noise Abatement Act of 1979

The ASNA was the first Federal legislation specifically addressing airport noise compatibility. The FAA implemented the ASNA's provisions in Part 150. This regulation adopted the DNL metric and the 65 dB land use compatibility guideline. This Federal guideline has been widely accepted by airport proprietors as a threshold for limiting new residential development and for sound insulation where new development is permitted above this guideline. The subsection on Airport Noise Compatibility Planning in Section 2 addresses Part 150 provisions in greater detail.

Federal Interagency Committee on Noise

In 1991, the FAA and EPA initiated the Federal Interagency Committee on Noise (FICON) to review technical and policy issues related to assessment of noise impacts around airports. Membership included representatives from DOD, DOT, HUD, the Department of Justice, VA, and the Council on Environmental Quality. The FICON review focused, among other things, on the manner in which noise impacts are determined and described and the extent of impacts outside of DNL 65 dB that should be reviewed in a NEPA document. The FICON's findings and recommendations were published in an August 1992 report, Federal Agency Review of Selected Airport Noise Analysis Issues.

With respect to DNL, the FICON found that there are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric. It further recommended continuing the use of the DN metric as the principal means for describing long-term

noise exposure of civil and military aircraft operations. The FICON reaffirmed the methodology employing DNL as the noise exposure metric and appropriate dose-response relationships (primarily the Schultz curve for Percent Highly Annoyed) to determine community noise impacts.

Based on these findings, the FICON supported agency discretion in the use of supplemental noise analysis. It also recommended that further analysis should be conducted of noise-sensitive areas between DNL 60-65 dB having an increase of 3 dB or more if screening analysis shows that noise-sensitive areas at or above DNL 65 dB will have an increase of DNL 1.5 dB or more. The FICON decided not to recommend evaluation of aviation noise impact below DNL 60 dB because public health and welfare effects below that level have not been established.

The FICON strongly supported increasing research efforts on methodology development and on the impact of aircraft noise. It recommended a standing Federal interagency committee be established to assist agencies in providing adequate forums for discussion of public and private sector proposals identifying needed research and in encouraging research and development in these areas.

Federal Interagency Committee on Aviation Noise

The Federal Interagency Committee on Aviation Noise (FICAN) was formed in 1993 based on the FICON report's policy recommendation to form a standard interagency committee for facilitating research on methodology development and on the impact of aircraft noise. Membership includes representatives from DOD, HUD, DOT and the Department of the Interior, as well as NASA and the EPA. Each of the Federal agencies conducting significant research on aviation-related noise is represented on FICAN. Some member agencies, such as HUD and EPA, are not currently conducting research but have broad policy roles with respect to aviation noise issues.

The FICAN does not conduct or directly fund any research. Rather, it serves as a clearinghouse for Federal aircraft noise research and development (R&D) efforts and as a focal point for questions and recommendations on aviation noise R&D. Products include various reports, studies, analyses, findings, and conclusions. The FICAN holds periodic meetings, including a public forum, and issues a report on its activities annually. Since its inception in 1993, it has reached the following conclusions:

- . Interagency communication between researchers will help researchers to understand other agencies' goals and objectives in their research programs; afford the opportunity for researchers to discuss the projects ongoing at their own or other agencies; and result in more efficient use of Federal funds by reducing redundancy of research, increasing collaboration, and pooling the talents of various agency scientists.
- . The public forum is a valuable mechanism for soliciting input from interested members of the aviation profession and community members.
- . The Acoustical Society of America should form a working group tasked with development a revised standard for predicting noise-induced sleep disturbance.

Current and future FICAN activities include:

- . Working with researchers to develop individual agency priorities for research to address issues regarding overflight noise in parks and wilderness areas.
- . Publishing technical positions on aviation noise topics based on definitive research by member agencies. Such topics include noise-induced sleep disturbance, non-auditory health effects, and land use compatibility guidelines.

4.2 Assessment Methodologies

Yearly Day-Night Average Sound Levels (DNL)

The FAA and other Federal agencies use DNL as the primary measure of noise impacts on people and land uses. This cumulative metric is the Federal standard because it:

- . Correlates well with the results of attitudinal surveys of residential noise impact;
- . Increases with the duration of noise events, which is important to people's reaction;
- . Takes into account the number of noise events of the full 24 hours in a day, which also is important to people's reaction;
- . Takes into account the increased sensitivity to noise at night by including a 10-dB nighttime penalty between 10:00 p.m. and 7:00 a.m. to compensate for sleep disturbance and other effects;
- . Allows composite measurements of all sources of community noise; and
- . Allows quantitative comparison of noise from various sources with a community.

DNL is the only metric backed with a substantial body of scientific survey data on the reactions of people to noise. It provides a simple method to compare the effectiveness of alternative airport scenarios. Land use planners have acquired over 20 years of working experience applying this metric to make zoning and planning decisions. DNL is a sound and workable tool for land use planning and in relating aircraft noise to community reaction. Experience indicates that DNL provides a very good measure of impacts on the quality of the human environment, forming an adequate basis for decisions that influence major transportation infrastructure projects. In an August 1992 report, the FICON reaffirmed both DNL as the appropriate metric for measuring aviation noise exposure and DNL 65 dB as the Federal Government's level of significance for assessing noise impacts. [***43820**]

Some people challenge the use of DNL to assess aviation noise because it is a measure of exposure from cumulative events over time rather than a measure of exposure from a single noise event. Commonly cited as potential alternative metrics are the Sound Exposure Level (SEL), which describes cumulative noise exposure from a single event, and Maximum Level (L[max]), the highest level during a single event. Although sometimes useful as supplemental measures of noise exposure, single event metrics pose problems. They present neither an accurate picture of noise exposure nor the overall impact of noise on a community. Because single event metrics by definition are not composites of cumulative events, 100 aircraft operations a day would be no worse than one operation. Similarly, one event at 90 dB would be assessed as worse than 100 events at 89 dB. These effects clearly do not reflect noise impacts or annoyance reactions accurately. Alternatively, DNL increases with the number of operations, while single event measures do not. DNL combines the number of operations with the loudness of each operation into a cumulative noise dose. The resulting values correlate well with independent tests of annoyance from all sources of noise.

Human response to noise involves both the maximum level and its duration, so the maximum sound level alone is not sufficient to evaluate the effect of noise on people. Clearly, people are bothered by individual noise events, but their sense of annoyance increases with the number of those noise events, and with those that occur late at night. The DNL metric provides a combined measure of these factors that can be used to evaluate existing and predicted future conditions on an unambiguous, single-number basis. Although DNL is an average of cumulative noise levels, sound levels of the loudest events control the DNL calculation. Both L[max] and SEL measure individual sound events that may occur only once, or may occur several times during the day. The number of times these events occur and when they occur are important in measuring the noise environment. DNL is a time-average of the total sound energy over a 24-hour period, adjusted by providing a 10 dB penalty to sound levels occurring between 10PM and 7AM. This 10 dB penalty means that one nighttime sound event is equivalent to 10 daytime events of the same level. Accordingly, DNL combines both the intensity and number of single noise events with a nighttime weighting factor in a manner that is strongly influenced by maximum sound levels.

Recognizing that DNL often is criticized based on perceptions of community annoyance, the FICON reaffirmed that complaints are an inadequate indicator of the full extent of noise effects on a population. The DNL 65 dB level of significance does not mean that no one is annoyed below that level. Extensive research has been conducted to evaluate annoyance. In an attempt to meet demand for a usable and uniform relationship between noise and annoyance, T.J. Schultz reviewed the results of 161 social surveys where data were available to make a consistent judgment

concerning what percent of the population was "highly annoyed" (%HA). The surveys were of community reactions to several types of transportation noises such as road traffic, railroad, and aircraft noises. The results agreed fairly well with one another, and Schultz developed an equation for describing the relationship between the level of exposure (in DNL) and percent of population highly annoyed. Schultz published the results of the surveys in 1978 in "Synthesis of Social Surveys on Noise Annoyance." In 1992, the US Air Force updated Schultz's research with a total of 400 surveys. Comparison of the original and updated results indicate that they differ by less than two percent in the DNL range from 45 to 75 dB. The following chart presents the relationship between % HA and DNL:

See Shultz Curve - Day-Night Average Sound Level in dB on Page 43820 of Original Document.

The Schultz curve indicates that about 12 percent of people living at DNL 65 dB report themselves to be "highly annoyed" by transportation noise. About 3 percent are highly annoyed at a DNL of 55 dB.

Noise Analysis Criteria for Changes in DNL

The DNL 65 dB contour remains the FAA's lower limit for defining significant noise impact on people. For a variety of reasons, noise predictions and interpretations are frequently less reliable below DNL 65 dB. DNL prediction models tend to degrade in accuracy at large distances from the airport. Smaller proportions of the population are highly annoyed with successive decreases in noise levels below DNL 65 dB. The FICON studied criteria for predicting changes in community annoyance below DNL 65 [*43821] dB. It found that a DNL 3 dB increase at the DNL 60 dB level is generally consistent with the existing DNL 1.5 dB screening criterion at the DNL 65 dB level. This finding was based on using the Schultz curve to relate changes in impact level with changes in DNL. Increases of 5 dB at DNL 55 dB, 3 dB at DNL 60 dB, and 1.5 dB at DNL 65 dB all resulted in a three percent increase in %HA.

For airport development and other actions in the vicinity of an airport, the FAA guidelines for screening based on changes in aviation noise impacts above and below DNL 65 dB follow:

DLN 65 dB and above-An increase in noise exposure of 1.5 dB or more at these levels is considered a significant addition of noise. A Federal action resulting in such an increase would require an environmental impact statement (EIS).

DLN 60-65 dB-Increases in noise of 3 dB or more that remain between DNL 60-65 dB do not result in significant exposure but can be noticeable and may be highly annoying to some people. The FAA will consider mitigation options but would not require an EIS in noise-sensitive areas between DNL 60-65 dB that are projected to have an increase of 3 dB or more as a result of the proposed changes.

For air traffic changes farther away from an airport, FAA recognizes that some actions in areas below DNL 60 dB may produce noticeable noise increases and generate adverse community reaction. Although increases in noise in these areas are well below the standard criteria for significant impact, the FAA's air traffic screening procedures provide mechanisms to identify whether there are extraordinary circumstances warranting an EA.

Supplemental Metrics

The FICON recognized that DNL can be supplemented by other metrics on a case-by-case basis, but advised continued agency discretion in the use of supplemental noise analysis. It found that the use of supplemental metrics is limited because threshold levels of significant impact have not been established and there is no accepted methodology for aggregating these values into a cumulative impact description. Supplemental metrics can be useful in characterizing specific events and enhancing the public's understanding of potential effects resulting from proposed changes in aircraft operations. Supplemental single event analysis sometimes is conducted to evaluate sleep disturbance and, less frequently, specific speech interference issues. For proposed FAA actions in the vicinity of national parks in pristine areas and land uses such as wildlife refuges where the Part 150 land use compatibility guidelines bear little relevance, the FAA supplements DNL noise analysis with

other metrics on a case-by-case basis. The following metrics are useful for site-specific applications on a case-by-case basis:

Equivalent Sound Level (L[eq]) is a cumulative metric that can be appropriate where aircraft noise can affect activity periods of less than 24-hour duration.

Maximum Sound Level (L[max]) is a single event metric that can be used to describe the greatest sound level in decibels during a given time period at a noise-sensitive location.

Sound Exposure Level (SEL) is a single event metric that can be used to describe noise exposure at noise-sensitive locations. This metric can be expressed both in terms of maximum levels and number of occurrences at varying levels.

Time Above dBA Threshold (TA) is a metric that can be used in the same situations as L[eq], such as measuring noise exposure within specific time periods. The designation of threshold to be used in supplemental TA measurements may be defined with respect to speech interference or the ambient (background) noise level.

4.3 Aircraft Research in National Parks

In 1987, the U.S. Congress enacted Public Law (PL) 100-91, the National Parks Overflight Act, which called for the NPS to recommend to the FAA actions for the substantial restoration "natural quiet" to the Grand Canyon National Park (GCNP). One year later, the FAA issued the Special Federal Aviation Regulation (SFAR) 50-2, creating a Special Flight Rules Area, flight-free zones, and defined routes for commercial air tours and sightseeing within the GCNP. Another milestone occurred in 1995 when the NPS presented a report to Congress on aircraft noise in national parks.

The FAA and the NPS initiated a model validation process. In August 1999, the agencies hosted a two-day meeting at Grand Canyon National Park of eight internationally recognized acoustics experts (the Technical Review Committee (TRC)). Representatives from Harris, Miller, Miller and Hanson; Volpe National Transportation System Center; and Wylie Laboratories worked with the TRC to develop a protocol that would measure the output of various acoustic models against the actual acoustic environment in the Grand Canyon National Park. The desired outcome of the process is a level of confidence in the ability of the tested models to replicate the conditions found in the park. The on-site data was collected during the month of September 1999 and a Spring 2000 report is planned. The TRC will be asked to review and comment on the results.

4.4 Research on Low Frequency Noise

The issue of low frequency aircraft noise and its impact on structural integrity and human health was explored in detail as part of the environmental assessment of the introduction of Concorde supersonic transport operations into the United States. Potential impacts were found to be negligible. Field studies found that the noise-induced vibrations as a result of Concorde operations cause no structural damage. In addition, the Concorde sound pressure levels at low frequencies were found to be well below the EPA threshold for potential health impact. As a result of these findings, the FAA concluded that low frequency noise of subsonic aircraft in a typical airport environment had no significant impact on structures or human health. This does not mean that there may not be some noticeable vibration in certain cases.

Human annoyance resulting from the effects of aircraft noise induced structural vibration is a recently raised concern. Low frequency noise and perceptible vibration may be experienced when aircraft noise levels are high (near the start of takeoff roll) and there are many aircraft events. This same combination of factors also tends to lead to high DNL levels (generally within the 65 DNL contour or higher). However, unlike the widely accepted relationship between aircraft noise exposure in DNL and community annoyance, there does not currently exist a scientific consensus or Federal guidelines on the human annoyance effects of noise-induced structural vibration.

Overall evidence recently evaluated by the FAA suggests low frequency noise is not a separate impact phenomenon, but rather is connected to high cumulative aircraft noise exposure levels. It may be of concern under certain conditions in areas already within the 65 DNL contour due to higher

frequency noise. Perceptible vibration due to low frequency noise may be a secondary effect under certain conditions (e.g., home location relative to takeoff roll and aircraft fleet composition) in homes that are exposed to high levels of aircraft noise as calculated with the DNL metric. The [*43822] FAA supports and promotes further research on this issue through FICAN.

Section 5: Source Noise Reduction

Commercial air transportation became a major factor in the U.S. economy with the introduction of jet-powered civil transport aircraft into passenger service in the early 1960's. The economic vitality of jet service triggered explosive growth both in the air transportation industry and in those cities and industries it serviced. However, as airports grew in size and importance, the areas adversely impacted by aviation noise also expanded. Despite economic and transportation benefits, as air service expanded to new communities and flight frequencies increased, complaints about aviation's noise impact became common.

As noise became a major concern, both the Federal government and the aviation industry sponsored research into ways to resolve noise problems. In the 1960's, aircraft and engine manufacturers jointly developed the first generation of low-bypass ratio turbofan engines that were both lower in noise and more fuel-efficient than the turbojet engines then in use. In the early 1970s, another major technological advancement occurred with the introduction of the second generation of high-bypass turbofan engines. These research efforts contributed to considerable progress in aircraft noise reduction through quiet engine designs.

5.1 Aircraft Source Noise Standards

On July 21, 1968, Congress passed the Aircraft Noise Abatement Act of 1968 (49 U.S.C. 44709, 44715), giving the FAA its first express authority to regulate aircraft noise through the establishment of aircraft noise standards. Beginning in 1968, the FAA developed certification standards, first for measuring and then for limiting aircraft noise at the source. These certification standards, which paralleled technological improvements in airplane engine designs, are codified in 14 CFR Part 36. The adoption of Part 36 in 1969 prohibited the further escalation of aircraft noise levels of subsonic civil turbojet and transport category airplanes, and required new airplane types to be markedly quieter than the generation of turbojets that were developed in the late 1950's and early 1960's.

The historical evolution of the FAA's certification standards from Stage 1 to Stage 2 to Stage 3 assisted U.S. airframe manufacturers in gaining a competitive advantage by providing the quietest and most fuel-efficient airplanes available. Effective December 1, 1969, the first U.S. aircraft noise regulations in Part 36 set a limit on noise emissions of large aircraft of new design by establishing Stage 2 certification standards. Stage 2 criteria served as the basic standard for engine noise and were based on then-current technology and initially applied only to new types of airplanes. Under the Noise Control Act of 1972, the FAA was given broader authority to set limits for aircraft noise emissions. This authority is codified in 49 U.S.C. 44715.

On February 25, 1977, the FAA amended Part 36 to establish three levels (or stages) of aircraft noise with specified limits, and prescribed definitions for identifying those airplanes classified under each stage. It also required applicants for new type certificates applied for on or after November 5, 1975, to comply with what are now known as Stage 3 noise standards, and to prescribe the acoustical change requirements for airplanes in each noise level stage under Part 36. The amendment was "intended to encourage the introduction of the newest generation of airplanes, as soon as practicable" and provide a compliance schedule to maximize the incentive to replace rather than retrofit older aircraft. This amendment prescribed the noise level standards for that "newest generation of airplanes." The three stages of aircraft noise established in Part 36 have been used as the noise operating limits for civil subsonic turbojet aircraft in the phaseouts of both Stage 1 and Stage 2 airplanes.

5.2 Airplane Operating Noise Limits--Stage 1 Phaseout

When the 1976 Policy was published, it announced a program which would ultimately prohibit operation within U.S. airspace of any civil, subsonic turbojet airplanes with a standard airworthiness

certificate and with maximum takeoff weights of more than 75,000 pounds that had not been shown to meet the Stage 2 noise standards contained in Part 36. In accordance with the 1976 Policy, the FAA adopted regulations that in part established a phased compliance program for U.S. domestic operations to reduce aircraft noise. Subpart 1 of Part 91 required that civil subsonic airplanes with a gross weight of more than 75,000 pounds comply with Part 36 Stage 2 or Stage 3 noise levels by January 1, 1985, in order to operate in the United States. Compliance could be achieved by (1) replacing the older fleet with new, quieter airplanes; (2) re-engining the aircraft; or (3) using noise reduction technology, such as hushkits, that has been shown to be technologically feasible and economically reasonable for use on older turbojets.

On February 18, 1980, the Congress enacted the Aviation Safety and Noise Abatement Act of 1979 (ASNA). Title III of that Act required the FAA to promulgate regulations extending application of the January 1, 1985, cut-off date for turbojet aircraft to U.S. and foreign international operators if no international agreement could be achieved on a compliance deadline. Since no such agreement could be reached, on November 28, 1980, the FAA amended § 91.303 to make it applicable to all operators for their operations in the U.S. The ASNA also mandated that certain civil two-engine turbojet airplanes with 100 or fewer seats be given exemptions from the noise rule until January 1, 1988 (the so-called "small community service" exemptions). The FAA implemented the "service to small community" exemption for two-engine subsonic airplanes in § 91.307.

5.3 Airplane Operating Noise Limits--Stage 2 Phaseout

Through passage of the Airport Noise and Capacity Act of 1990 (ANCA), Congress directed that domestic and foreign civil subsonic turbojet airplanes with maximum weight of more than 75,000 pounds must meet Stage 3 standards to operate within the contiguous United States after December 31, 1999. In implementing this statutory requirement, the FAA promulgated a rule in 14 CFR Part 91, Subpart I, requiring that domestic and foreign airplanes that do not meet Part 36 Stage 3 noise levels either be retired or modified to meet those levels. To bring about the earliest feasible reduction of noise levels, interim compliance deadlines for phaseout of Stage 2 and transition to Stage 3 airplane fleets were established on the basis of technological and economic reasonableness. Interim compliance options and related deadlines are:

Phaseout Method

An operator could choose to reduce the number of Stage 2 airplanes it maintains on its operations specifications for operation in the contiguous United States to the required percentage of its established base level number on each compliance date as follows:

After December 31, 1994, 75 percent of its base level;

After December 31, 1996, 50 percent of its base level; and

After December 31, 1998, 25 percent of its base level. **[*43823]**

Fleet Mix Method

An aircraft operator could choose to increase the number of Stage 3 airplanes it maintains on its operations specifications for operation in the contiguous United States so that its fleet consists of:

Not less than 55 percent Stage 3 airplanes after December 31, 1994;

Not less than 65 percent Stage 3 airplanes after December 31, 1996; and,

Not less than 75 percent Stage 3 airplanes after December 31, 1998.

New Entrant Compliance

A new entrant air carrier (a domestic or foreign air carrier beginning service in the contiguous United States after November 5, 1990) must increase the number of Stage 3 airplanes it maintains on its operations specifications for operation in the contiguous United States so that its fleet consists of:

At least 25 percent Stage 3 airplanes after December 31, 1994;

At least 50 percent Stage 3 airplanes after December 31, 1996; and

At least 75 percent Stage 3 airplanes after December 31, 1998.

The regulations require all operators of subject airplanes to report compliance progress to the FAA annually. They also provide separate criteria for interim and final compliance waivers. As prescribed in ANCA, a final compliance waiver may only be granted by the Secretary of Transportation (through delegation, by the FAA) to a domestic air carrier for no more than 15 percent of its fleet and that has achieved a fleet mix of at least 85 percent Stage 3 airplanes by July 1, 1999. Any final compliance waiver granted may not extend beyond December 31, 2003.

5.4 Potential Gains From Source Noise Reduction Research

Federal policy recognizes noise impacts on populations and emphasizes source reduction to alleviate those impacts. This policy initiated the Stage 1 phaseout, which subsequently was codified into Federal law. It also resulted in the establishment of Stage 3 standards. In conjunction with additional Federal legislation, the Federal government's aviation noise policy facilitated the phaseout of Stage 2 airplanes by the year 2000. In keeping with this policy, the FAA places a high priority on developing future aircraft noise reduction technology to support the continued expansion of the national aviation system.

In early 1992, the FAA and NASA began sponsorship of a multiyear program focused on achieving significant noise reduction technology advances. In October 1992, Congress mandated that the FAA and NASA jointly conduct an aircraft noise reduction research program, the goal of which is to develop, by the year 2001, technologies for subsonic jet aircraft to operate at reduced noise levels. Current and projected funding of this project in the FAA's and NASA's co-sponsored research program will exceed \$ 200 million by the year 2000. The project's stated goal is to develop technology to reduce the community noise impact of the future subsonic airplanes by 10 dB (relative to 1992 technology).

Future Noise Standards

The FAA is a major participant on an ICAO Committee on Aviation Environmental Protection (CAEP) technical working group that is formulating proposals for an increase in stringency of the international noise standard for subsonic jet and large propeller-driven airplanes. The FAA plans to set new Stage 4 standards by early in the next century. New standards would result in a future timed transition to a generation of airplanes quieter than Stage 3, similar to source-noise reduction transitions that have been implemented since the 1976 Policy.

The Secretary of Transportation's flagship initiative supports the development of more stringent aircraft noise standards. FAA is aggressively pursuing the development of international certification noise standards for turbojet airplanes that will be more stringent than the current Stage 3 standards; and, developing models to assess new noise abatement technologies that will encourage introduction of quieter planes.

Source Noise Reductions for Aircraft Under 75,000 lbs.

Commercial and business aircraft of not more than 75,000 pounds gross weight make a significant contribution to aviation in the United States. They often provide the bridge between smaller communities and the major air carrier airports. Generally, this task is performed by commuter aircraft and specialized air traffic services. Privately owned business aircraft also make a contribution to the system by providing specialized point-to-point service for corporate executives and staff. This service saves valuable time and relieves hub congestion while providing increased aircraft capacity to the system. Each of these classes of smaller aircraft makes its unique contribution to the overall efficiency of aviation. Together, they extend air service to many smaller outlying areas, both rural settings and suburban.

Airport Noise and Capacity Act of 1990 (ANCA) (49 U.S.C. 47521-47533).

National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321 *et seq.*)

Regulations in 14 CFR

Part 36, Noise Standards: Aircraft Type and Airworthiness Certification.

Part 91, General Operating and Flight Rules; Subpart I, Operating Noise Limits.

Part 150, Airport Noise Compatibility Planning.

Part 161, Notice and Approval of Airport Noise and Access Restrictions.

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