



# **TECHNICAL INFORMATION PAPER**

---

## **Federal Aviation Noise Regulations**

# TECHNICAL INFORMATION PAPER

## FEDERAL AVIATION NOISE REGULATIONS



*As air travel expanded, residents living in close proximity to the nation's airports became increasingly concerned. Citizens began to form activist groups and take action against local policy makers and airport operators.*

In the early days of commercial aviation, communities close to an airport were not greatly affected by the occasional propeller aircraft overflight. However, in the late 1960s and early 1970s, the problem of aircraft noise became increasingly apparent with the beginning of the jet age. The Deregulation Act of 1978 intensified the issue of airport noise as the act allowed for a more competitive environment between air carriers and the routes that they served. The increased competition brought better and more affordable services, an increase in demand, and an increase in jet noise.

As air travel expanded, residents living in close proximity to the nation's airports became increasingly concerned. Citizens began to form activist groups and take action against local policy makers and airport operators. With the increasing concerns, complaints and environmental awareness, the airport noise issue became a serious problem between the airports, airlines, and the residents living close to the nation's airports.

From a national perspective, aircraft noise became a concern in 1970 when federal agencies began studying the problem and developing planning guidelines. The National Environmental Policy Act of 1969 (NEPA) was the first act of federal legislation that required airport operators to study and analyze aircraft noise impacts





*Reduction of aircraft noise impacts is a complex issue with several parties sharing in the responsibility: the federal government, state and local governments, planning agencies, the airport proprietor, airport users, and local residents.*



before undertaking major development or improvement projects. For airport operators to gain approval for major projects, they had to develop an Environmental Impact Statement (EIS) that outlined the potential noise impacts of any proposed project on residents surrounding the airport.

After the NEPA was passed, the Department of Transportation (DOT) and the Federal Aviation Administration (FAA) adopted the Aviation Noise Abatement Policy (ANAP) in 1976. The ANAP clearly identified aircraft noise responsibilities for the FAA, air carriers, airport operators, and local jurisdictions.

The importance of airport noise impacts was first recognized at a national level in the *Aviation Safety and Noise Abatement Act of 1979*. This act required the FAA to adopt regulations establishing a single system of measuring aircraft noise and determining the exposure of individuals to noise in the vicinity of airports.

Reduction of aircraft noise impacts is a complex issue with several parties sharing in the responsibility: the federal government, state and local governments, planning agencies, the airport proprietor, airport users, airport manufacturers, and local residents. The purpose of this technical information paper is to provide a summary of the aviation noise regulations and responsibilities at the federal level.

## **FEDERAL REGULATIONS**

Aviation plays a vital role in interstate commerce. Recognizing this, the federal government has assumed the role of coordinator and regulator of the nation's aviation system. Congress has assigned administrative and regulatory authority to the Federal Aviation Administration (FAA) whose responsibilities include:

- The regulation of air commerce in order to promote its development, safety, and to fulfill the requirements of national defense.
- The promotion, encouragement, and development of civil aeronautics.



*Congress passed legislation and the FAA established regulations governing the preparation of noise compatibility programs. Laws and regulations were also implemented that required the conversion of the commercial aircraft fleet to quieter aircraft.*



- The control of the use of navigable airspace and the regulation of civil and military aircraft operations to promote the safety and efficiency of both.
- The development and operation of a common system of air traffic control and navigation for both military and civil aircraft.

The FAA also administers a program of federal grants-in-aid for the development of airport master plans, the acquisition of land, and for planning, design, and construction of eligible airport improvements. In addition, Congress passed legislation and the FAA established regulations governing the preparation of noise compatibility programs. Laws and regulations were also implemented that required the conversion of the commercial aircraft fleet to quieter aircraft. The following sections summarize these regulations.

### **F.A.R. Part 150 Noise Compatibility Studies**

The *Aviation Safety and Noise Abatement Act of 1979* (ASNA, P.L. 96-193), signed into law on February 18, 1980, was enacted, “. . . to provide and carry out noise compatibility programs, to provide assistance to assure continued safety in aviation, and for other purposes.” The FAA was vested with the authority to implement and administer the Act.

Federal Aviation Regulation (F.A.R.) Part 150, the administrative rule promulgated to implement the Act, sets requirements for airport operators who choose to undertake an airport noise compatibility study with federal funding assistance. Part 150 provides for the development of two final documents: the Noise Exposure Maps and the Noise Compatibility Program.

**Noise Exposure Maps.** The Noise Exposure Maps (NEM) document describes existing and future noise conditions at the airport. It can be thought of as a baseline analysis defining the scope of the noise situation at the airport and including maps of noise exposure for the current year, five-year, and long-range forecasts. The noise contours are depicted on various land use maps to reveal areas of non-compatible land use. Included in the document is detailed supporting information which explains the methods used to develop the maps.





*Part 150 establishes guidelines for the identification of land uses which are incompatible with different noise levels.*



F.A.R. Part 150 requires the use of standard methodologies and metrics for analyzing and describing noise. It also establishes guidelines for the identification of land uses which are incompatible with different noise levels. Airport proprietors are required to update noise exposure maps when changes in the operation of the airport would create any new, substantial non-compatible use. This is defined as an increase in the yearly day-night average sound level (DNL) of 1.5 decibels over non-compatible land uses.

A limited degree of legal protection can be afforded to the airport proprietor through preparation and submission of noise exposure maps. Section 107(a) of the ASNA Act provides that:

*No person who acquires property or an interest therein . . . in an area surrounding an airport with respect to which a noise exposure map has been submitted . . . shall be entitled to recover damages with respect to the noise attributable to such airport if such person had actual or constructive knowledge of the existence of such noise exposure map unless . . . such person can show -*

- (i) A significant change in the type or frequency of aircraft operations at the airport; or*
- (ii) A significant change in the airport layout; or*
- (iii) A significant change in the flight patterns; or*
- (iv) A significant increase in nighttime operations occurred after the date of acquisition of such property . . .*

The ASNA Act provides that "constructive knowledge" shall be attributed to any person if a copy of the noise exposure map was provided to him at the time of property acquisition, or if notice of the existence of the noise exposure map was published three times in a newspaper of general circulation in the area. In addition, Part 150 defines "significant increase" as an increase of 1.5 DNL. (See F.A.R. Part 150, Section 150.21 (d), (f), and (g); and *Airport Environmental Handbook*, Order 5050.4A, 47e(1)(a).) For purposes of this provision, FAA officials consider the term "area surrounding an airport" to mean an area within the 65 DNL contour.



*A Noise Compatibility Program (NCP) includes provisions for the abatement of aircraft noise through aircraft operating procedures, air traffic control procedures, airport regulations, or airport facility modifications.*



Acceptance of the noise exposure maps by the FAA is required before it will approve a noise compatibility program for the airport.

**Noise Compatibility Program.** A Noise Compatibility Program (NCP) includes provisions for the abatement of aircraft noise through aircraft operating procedures, air traffic control procedures, airport regulations, or airport facility modifications. It also includes provisions for land use compatibility planning and may include actions to mitigate the impact of noise on noncompatible land uses. The program must contain provisions for updates and periodic revisions.

F.A.R. Part 150 establishes procedures and criteria for FAA evaluation of noise compatibility programs. Among these, two criteria are of particular importance: the airport proprietor may take no action that imposes an undue burden on interstate or foreign commerce, nor may the proprietor unjustly discriminate between different categories of airport users.

With an approved noise compatibility program, an airport proprietor becomes eligible for funding through the Federal Airport Improvement Program (AIP) to implement the eligible items of the program.

In 1998, the FAA established a policy for Part 150 approval and funding of noise mitigation measures which stated that the FAA will not approve measures in Noise Compatibility Programs that propose corrective noise mitigation actions for new, non-compatible development, which is allowed to occur in the vicinity of airports after October 1, 1998, the effective date of the policy. Therefore, corrective noise mitigation measures for non-compatible development that occurs after October 1, 1998 is not eligible for AIP funding under the noise set-aside regardless of previous FAA approvals under Part 150. This policy increased the incentives for airport operators to discourage the development of new non-compatible land uses around airports, and to assure the most cost-effective use of federal funds spent on noise mitigation measures.



*The FAA has required reduction of aircraft noise at the source through certification, modification of engines, or replacement of aircraft.*



## **F.A.R. Part 36 Federal Aircraft Noise Regulations**

The FAA has required reduction of aircraft noise at the source through certification, modification of engines, or replacement of aircraft. F.A.R. Part 36 prohibits the further escalation of noise levels of subsonic civil turbojet and transport category aircraft and also requires new airplane types to be markedly quieter than earlier models. Subsequent amendments have extended the noise standards to include large and small, propeller-driven airplanes and supersonic transport aircraft.

F.A.R. Part 36 has three stages of certification. Stage 3 is the most rigorous and applies to aircraft certificated since November 5, 1975; Stage 2 applies to aircraft certificated between December 1, 1969 and November 5, 1975; and Stage 1 includes all previously certificated aircraft.

On December 1, 2004 the FAA issued for public review proposed Stage 4 aircraft noise certification standards for large jet aircraft which would set the standard at a total of 10 decibels below the Stage 3 standards. Within the Notice of Proposed Rulemaking (NPRM) FAA acknowledged that the proposed Stage 4 standard will have "minimal, if any" impact on improving airport noise problems. The new standard is intended to bring U.S. standards in line with the International Civil Aviation Organization "Chapter 4" standard. There is no planned phase-out of Stage 3 aircraft in this NPRM.

## **F.A.R. Part 91 Federal Aircraft Noise Regulations**

F.A.R. Part 91, Subpart I, commonly known as the "Fleet Noise Rule," mandated a compliance schedule under which Stage 1 aircraft were to be retired or refitted with hush kits or quieter engines by January 1, 1988. A very limited number of exemptions have been granted by the U.S. Department of Transportation for foreign aircraft operating into specified international airports.

Pursuant to the Congressional mandate in the Airport Noise and Capacity Act of 1990 (ANCA), FAA has established amendments to F.A.R. Part 91 by setting





*Neither F.A.R. Part 36 nor Part 91 apply to military aircraft. Nevertheless, many of the advances in quiet engine technology are being used by the military as they upgrade aircraft to improve performance and fuel efficiency.*

December 31, 1999 as the date for discontinuing use of all Stage 2 aircraft exceeding 75,000 pounds. Stage 2 aircraft over 75,000 lbs. utilized for non-revenue flights can operate beyond the December 31, 1999 deadline for the following purposes:

- To sell, lease, or scrap the aircraft;
- To obtain modifications to meet Stage 3 standards;
- To obtain scheduled heavy maintenance or significant modifications;
- To deliver the aircraft to a lessee or return it to a lessor;
- To park or store the aircraft;
- To prepare the aircraft for any of these events; or
- To operate under an experimental airworthiness certificate.

Neither F.A.R. Part 36 nor Part 91 apply to military aircraft. Nevertheless, many of the advances in quiet engine technology are being used by the military as they upgrade aircraft to improve performance and fuel efficiency.

### **F.A.R. Part 161**

#### **Regulation Of Airport Noise And Access Restrictions**

F.A.R. Part 161 sets forth requirements for notice and approval of local restrictions on aircraft noise levels and airport access. F.A.R. Part 161, which was developed in response to the Airport Noise and Capacity Act of 1990, applies to local airport restrictions that would have the effect of limiting operations of Stage 2 or 3 aircraft. Restrictions regulated under F.A.R. Part 161 include direct limits on maximum noise levels, nighttime curfews, and special fees intended to encourage changes in airport operations to lessen noise.

In order to implement noise or access restrictions on Stage 2 aircraft, the airport operator must provide public notice of the proposal and provide at least a 45-day comment period. This includes notification of FAA and







*Noise or access restrictions on Stage 3 aircraft can be implemented only after receiving FAA approval. Before granting approval, the FAA must find that the six conditions specified in the statute are met.*



publication of the proposed restriction in the Federal Register. An analysis must be prepared describing the proposal, alternatives to the proposal, and the costs and benefits of each.

Noise or access restrictions on Stage 3 aircraft can be implemented only after receiving FAA approval. Before granting approval, the FAA must find that the six conditions specified in the statute, and listed below, are met.

- (1) The restriction is reasonable, non-arbitrary, 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.

In its application for FAA review and approval of the restriction, the airport operator must include an environmental assessment of the proposal and a complete analysis addressing the six conditions. Within 30 days of the receipt of the application, the FAA must determine whether the application is complete. After a complete application has been filed, the FAA publishes a notice of the proposal in the Federal Register. FAA must approve or disapprove the restriction within 180 days of receipt of the completed application. Very few Part 161 studies have been undertaken since the enactment of ANCA. **Table 1A** summarizes the studies that have been done to date. Currently, only one F.A.R. Part 161 Study, in Naples, Florida, has been deemed complete by FAA. However, FAA has also ruled that the restriction is a violation of grant assurances Naples signed when accepting federal funds.

Airport operators that implement noise and access restrictions in violation of F.A.R. Part 161 are subject to termination of eligibility for airport grant funds and authority to impose and collect passenger facility charges.

**SUMMARY OF F.A.R. PART 161 STUDIES**

AIRPORT	YEAR		COST	PROPOSAL, STATUS
	STARTED	ENDED		
Aspen-Pitken County Airport, Aspen, Colorado	N.A.	N.A.	N.A.	The study has not yet been submitted to FAA.
Kahului Airport, Kahului, Maui, Hawaii	1991	1994	\$50,000 (est.)	Proposed nighttime prohibition of Stage 2 aircraft pursuant to court stipulation. Cost-benefit and statewide impact analysis found to be deficient by FAA. Airport never submitted a complete Part 161 Study. Suspended consideration of restriction.
Minneapolis-St. Paul International Airport, Minneapolis, Minnesota	1992	1992	N.A.	Proposed nighttime prohibition of Stage 2 aircraft. Cost-benefit analysis was deficient. Never submitted complete Part 161 study. Suspended consideration of restriction and entered into negotiations with carriers for voluntary cooperation.
Pease International Tradeport, Portsmouth, New Hampshire	1995	N.A.	N.A.	Have not yet submitted Part 161 Study for FAA review.
San Francisco International Airport, San Francisco, California	1998	1999	\$200,000	Proposed extension of nighttime curfew on Stage 2 aircraft over 75,000 pounds. Started study in May 1998. Submitted to FAA in early 1999 and subsequently withdrawn.
San Jose International Airport San Jose, California	1994	1997	Phase 1 - \$400,000 Phase 2 - \$5 to \$10 million (est.)	Study undertaken as part of legal settlement agreement. Studied a Stage 2 restriction. Suspended study after Phase 1 report showed costs to airlines at San Jose greater than benefits in San Jose. Never undertook Phase 2, systemwide analysis. Never submitted study for FAA review.
Burbank-Glendale-Pasadena Airport	2000	Ongoing	Phase 1 - \$1 million (est.)	Proposed curfew restricting all aircraft operations from 10:00 p.m. to 7:00 a.m.
Naples Municipal Airport Naples, Florida	2000	2000	Currently over \$730,000  Expect an additional cost of \$1.5 to \$3.0 million in legal fees due to litigation	Enactment of a total an on Stage 2 general aviation jet aircraft under 75,000 pounds (the airport is currently restricted to aircraft under 75,000 pounds.) Airport began enforcing the restriction on March 1, 2002. FAA has deemed the Part 161 Study complete; however, FAA has not ruled on federal grant assurance violations.

N.A. - Not available.

Sources: Telephone interviews with Federal Aviation Administration officials and staffs of various airports.





**KANSAS CITY**  
**(816) 524-3500**

---

237 N.W. Blue Parkway  
Suite 100  
Lee's Summit, MO 64063

**PHOENIX**  
**(602) 993-6999**

---

4835 E. Cactus Road  
Suite 235  
Scottsdale, AZ 85254