

## Chapter 13. Airport Noise and Access Restrictions

**13.1. Introduction and Responsibilities.** This chapter contains guidance on the sponsor's responsibility with regard to restrictions on airport noise and access. Access restrictions have the potential to violate the federal obligation to make the airport available for public use on reasonable terms and without unjust discrimination as required by Grant Assurance 22, *Economic Nondiscrimination*.

It is the responsibility of the airports district offices (ADOs) and regional airports divisions to advise sponsors on the laws and policies that apply to access restrictions and to ensure that the sponsor extends equitable treatment to all of the airport's aeronautical users.



*Airport Noise and Capacity Act of 1990 (ANCA) requires airport sponsors proposing restrictions on operations by Stage 2 or Stage 3 aircraft to conform to 14 CFR Part 161 Notice and Approval of Airport Noise and Access Restrictions. (Photo: FAA).*

### 13.2. Background.

a. The legal framework with respect to abatement of aviation noise may be summarized as follows:

(1). 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 (AIP).

(2). Other powers and authorities to control aircraft 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.

(3). 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 paragraph (b)(2) below:

**b.** The authorities and responsibilities of the parties may be summarized as follows:

**(1).** 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 and efficiency. 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.

**(2).** Airport sponsors 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.

**(3).** 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.

**(4).** 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.

**(5).** 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.

**(6).** 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 aircraft noise, thus, should be aware of the potential effect of noise on their quality of life and act accordingly.

Airport sponsors have limited proprietary authority to restrict access as a means of reducing aircraft noise impacts in order to improve compatibility with the local community. To accomplish this, airport sponsors must comply with the national program for review of airport noise and access restrictions under the Airport Noise and Capacity Act of 1990 (ANCA). ANCA requires that certain review and approval procedures be completed before a proposed restriction that impacts Stage 2 or Stage 3 aircraft is implemented. The FAA regulation that implements ANCA is 14 Code of Federal Regulations (CFR) Part 161, *Notice and Approval of Airport Noise and Access Restrictions*. An airport sponsor may use an airport noise compatibility study pursuant to 14 CFR Part 150 to fulfill certain notice and comment requirements under ANCA.

**13.3. Overview of the Noise-Related Responsibilities of the Federal Government.** Responsibility for the oversight and implementation of aviation laws and programs is delegated to the FAA under the Federal Aviation Act of 1958 (FAA Act), as amended, 49 United States Code (U.S.C.) § 40101 et seq. The basic national policies intended to guide FAA actions under the FAA Act are set forth in 49 U.S.C. § 40101(d), which declares that certain matters are in the public interest. To achieve these statutory purposes, 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. Similarly, the FAA has exercised its aviation safety authority, including the certification of airmen, aircraft, air carriers, air agencies, and airports under 49 U.S.C. § 44701 et seq. by extensive federal regulatory action.

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. Under the legal doctrine of federal preemption, which flows from the Supremacy Clause of the Constitution, state and local authorities do not generally have legal power to act in an area that already is subject to comprehensive federal regulation.

Because of the increasing public concern about aircraft noise that accompanied the introduction of turbojet powered aircraft in the 1960s and 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.

This authority, codified at 49 U.S.C. § 44715, constitutes the basic authority for federal regulation of aircraft noise.

**13.4. Code of Federal Regulations (CFR) Part 36, Noise Standards for Aircraft Type and Airworthiness Certification.** Under 49 U.S.C. § 44715, the FAA may propose rules considered necessary to abate aircraft noise and sonic boom. Aircraft noise rules must be 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. On November 18, 1969, the FAA promulgated the first aircraft noise regulations, which were codified in 14 CFR Part 36. The new Part 36 became effective on December 1, 1969. It prescribed noise standards for the type certification of subsonic transport category airplanes and for subsonic turbojet powered airplanes regardless of category. Part 36 initially applied 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.

In 1973, the FAA amended Part 36 to extend the applicability of the noise standards to newly produced airplanes irrespective of type certification date. In 1977, the FAA amended Part 36 to provide for three stages of aircraft noise levels (Stage 1, Stage 2, and Stage 3), each with specified limits. This regulation required applicants for new type certificates applied for on or after November 5, 1975, to comply with Stage 3 noise limits, which were stricter than the noise limits then being applied. Airplanes in operation at the time that did not meet the Stage 3 noise limits were designated either as Stage 2 or Stage 1 airplanes.

In 1976, the FAA amended the aircraft operating rules in 14 CFR Part 91 to phase out operations in the United States, by January 1, 1985, of Stage 1 aircraft weighing more than 75,000 pounds. These aircraft were defined as civil subsonic aircraft that did not meet Stage 2 or Stage 3 Part 36 noise standards. Effectively, the Stage 1 category is composed of transport category and jet airplanes that cannot meet the noise levels required for Stage 2



*The Aviation Safety and Noise Abatement Act (ASNA) provided for federal funding and other incentives for airport operators to prepare noise exposure maps and noise compatibility programs voluntarily. Under ASNA, noise compatibility programs “shall state the measures the [airport] operator has taken or proposes to take to reduce existing noncompatible uses and prevent introducing additional noncompatible uses in the area covered by the [noise exposure] map” submitted by the airport operator. Aircraft noise compatibility planning is critical to prevent residential development too close to the airport, as shown above. (Photo: FAA)*



*In 1973, the FAA amended Part 36 to extend the applicability of the noise standards to newly produced airplanes irrespective of type certification date. In 1977, the FAA amended Part 36 again to provide for three stages of aircraft noise levels, each with specified limits. Those are referred as Stage 1, Stage 2, and Stage 3 aircraft; Stage 3 being the more recent and, generally, the quieter for a certain aircraft weight. The aircraft shown here – the Boeing 727 – is classified as a Stage 3 aircraft and is commonly seen at airports throughout the U.S. (Photo: FAA)*

or Stage 3 under Part 36, Appendix B. It also includes aircraft that were never required to demonstrate compliance with Part 36 because they were certificated prior to the requirement for Part 36 noise certification. Stage 1 aircraft include some corporate jets, some transport category turbo-prop, and some transport category piston airplanes. Aircraft certificated under Part 36 Subpart F, *Propeller Driven Small Airplanes and Propeller-Driven, Commuter Category Airplanes*, do not have a stage classification, and as such are referred to as nonstage. The vast majority of small general aviation (GA) aircraft and many propeller-driven commuter aircraft flying in the United States are nonstage aircraft. In addition, some aircraft to which Part 36 does not apply, regardless of method of propulsion, can be aircraft certificated in the experimental category. For example, most jet war birds, military aircraft types and World War II aircraft are also classified as nonstage aircraft.

As a result of congressional findings, ANCA revised CFR Part 91 to include the provision that no civil subsonic turbo aircraft weighing more than 75,000 pounds may be operated within the 48 contiguous states after January 1, 2000, unless it was shown to comply with the Stage 3 noise standards of CFR Part 36.

In July 2005, the FAA adopted more stringent Stage 4 standards for certification of aircraft, effective January 1, 2006. Any aircraft that meets Stage 4 standards will meet Stage 3 standards. Accordingly, policies for review of noise restrictions affecting Stage 3 aircraft may be applied to Stage 4 aircraft as well.

**13.5. The Aircraft Noise Compatibility Planning Program.** In 1979, Congress enacted the Aviation Safety and Noise Abatement Act (ASNA). In ASNA, Congress directed the FAA to: (1) establish a single system of noise measurement to be uniformly applied in measuring noise at airports and in surrounding areas for which there is a highly reliable relationship between projected noise and surveyed reactions of people to noise; (2) establish a single system for determining the exposure of individuals to noise from airport operations; and (3) identify land uses that are normally compatible with various exposures of individuals to noise. (See Table 1 of Part 150 at the end of this chapter.). FAA promulgated 14 CFR Part 150 to implement ASNA. Part 150 established the “day-night average sound level” (DNL) as the noise metric for determining the exposure of individuals to aircraft noise. It identifies residential land uses as being normally compatible with noise levels below DNL 65 decibels (dB). ASNA also provided for federal funding and other incentives for airport operators to prepare noise exposure maps voluntarily and institute noise compatibility programs. Under ASNA, noise compatibility programs “shall state the measures the [airport] operator has taken or proposes to take to reduce existing noncompatible uses and prevent introducing additional noncompatible uses in the area covered by the [noise exposure] map.”

**a.** Consistent with ASNA, Part 150 requires airport operators preparing noise compatibility programs to analyze the following alternative measures:

**(1).** Acquisition of land in fee, and interests therein, including but not limited to air rights, easements, and development rights;

(2). Construction of barriers and acoustical shielding, including the soundproofing of public buildings;

(3). Implementation of restrictions on the use of the airport by type or class of aircraft based on the noise characteristics of the aircraft;

(4). Implementation of a preferential runway system; use of flight procedures to control the operation of aircraft to reduce exposure of individuals or specific noise sensitive areas<sup>34</sup> to noise in the area around the airport;

(5). Other actions or combinations of actions that would have a beneficial noise control or abatement impact on the public; and

(6). Other actions recommended for analysis by the FAA for the specific airport.

b. Under Part 150, an airport operator “shall evaluate the several alternative noise control actions” and develop a noise compatibility program that:



*The FAA has continuously, consistently, and actively encouraged a balanced approach to address noise problems and to discourage unreasonable and unwarranted airport use restrictions. It is a long-standing FAA policy that airport use restrictions should be considered only as a last resort when other mitigation measures are inadequate to address the noise problem satisfactorily and a restriction is the only remaining option that could provide noise relief. A balanced approach in noise mitigation is important in part because new technology in aircraft and engine design, along with new noise certification and noise abatement procedures, have in many instances been extremely successful in reducing noise impacts at airports across the country. Voluntary measures, such as asking flight crews to expedite climbs (safely) or apply airport specific noise procedures are inherently reasonable elements of a balanced approach. (Photos: FAA)*



<sup>34</sup> These are land uses that may be adversely affected by cumulative noise levels at or above 65 DNL such as residential neighborhoods, educational, health, or religious structures or sites, and outdoor recreational, cultural and historic sites.

- (1). Reduces existing noncompatible uses and prevents or reduces the probability of the establishment of additional noncompatible uses;
- (2). Does not impose an undue burden on interstate and foreign commerce;
- (3). Does not derogate safety or adversely affect the safe and efficient use of airspace;
- (4). To the extent practicable, meets both local interests and federal interests of the national air transportation system; and
- (5). Can be implemented in a manner consistent with all of the powers and duties of the FAA Administrator.

As a matter of policy, FAA encourages airport proprietors to develop and implement aircraft noise compatibility programs under Part 150. Where an airport proprietor is considering an airport use restriction, Part 150 provides an effective process for determining whether the proposed restriction is consistent with applicable legal requirements, including the grant assurances in airport development grants. However, while a restriction might meet the Part 150 criteria, that does not necessarily mean it will meet the Part 161 criteria. ASNA and Part 150 set forth an appropriate means of defining the noise problem, recognizing the range of local and federal interests, ensuring broad public and aeronautical participation, and balancing all of these interests in a manner to ensure a reasonable, nonarbitrary, and nondiscriminatory result that is consistent with the airport proprietor's federal obligations. Accordingly, the FAA included in 14 CFR Part 161, the regulations that implement ANCA, an option to use the Part 150 process to provide public notice and opportunity to comment on a proposed Stage 2 or Stage 3 restriction. The FAA encouraged the use of Part 150 for meeting the notice and comment requirements of Part 161, noting that the Part 150 process "is more comprehensive in scope in that it includes compatible land use planning, as well as restrictions on aircraft operation." The FAA further noted, in the preamble to the Part 161 final rule, that a Part 150 determination "may provide valuable insight to the airport operator regarding the proposed restriction's consistency with existing laws, and the position of the FAA with respect to the restriction."

**13.6. Compliance Review.** As part of a Part 150 study, the FAA requires the sponsor to analyze fully the anticipated impact of any proposed restriction. The FAA must evaluate whether the restriction places an undue burden on interstate or foreign commerce or the national aviation system, and whether the restriction affects the sponsor's ability to meet its federal obligations. Certain restrictions may have little impact at one airport and a great deal of impact at others. Accordingly, the sponsor must clearly present the impact of the restriction at the affected airport. A sponsor with a multiple airport system may designate different roles for the airports within its system. That designation in itself does not authorize restrictions on classes of operations, and the sponsor should first present its plan to FAA to ensure compliance with grant assurances and other federal obligations.

**13.7. Mandatory Headquarters Review.** The FAA headquarters staff shall review proposed noise restrictions, especially those that are proposed without using the Part 150 process. Accordingly, if the ADOs or regional airports divisions identify a restriction that potentially

impacts the sponsor's federal obligations, it must coordinate its actions with the Airport Planning and Environmental Division (APP-400) through the FAA headquarters Airport Compliance Division (ACO-100).

**13.8. Balanced Approach to Noise Mitigation.** Proposed noise-based airport use restrictions must consider federal interests in the national air transportation system as well as the local interests they are intended to address.

**a. FAA Policy.** The FAA has encouraged a balanced approach to address noise problems and has discouraged unreasonable airport use restrictions. It is FAA policy that airport use restrictions should be considered only as a measure of last resort when other mitigation measures are inadequate to satisfactorily address a noise problem and a restriction is the only remaining option that could provide noise relief. This policy furthers the federal interest in maintaining the efficiency and capacity of the national air transportation system and, in particular, the FAA's responsibility to ensure that federally funded airports maintain reasonable public access in compliance with applicable law.

**b. Federal Methodology.** Failure to consider a combination of measures, such as land acquisitions, easements, noise abatement procedures, and sound insulation could result in a finding that a balanced approach was not used in addressing a noise problem. A sponsor's acceptance of federal funds places upon it certain federal obligations, which require it first to consider a wide variety of options to alleviate a local noise problem. Consistent with these federal requirements and policies, the FAA interprets the requirement in 49 U.S.C. § 47107(a)(1) that a federally funded airport will be "available for public use



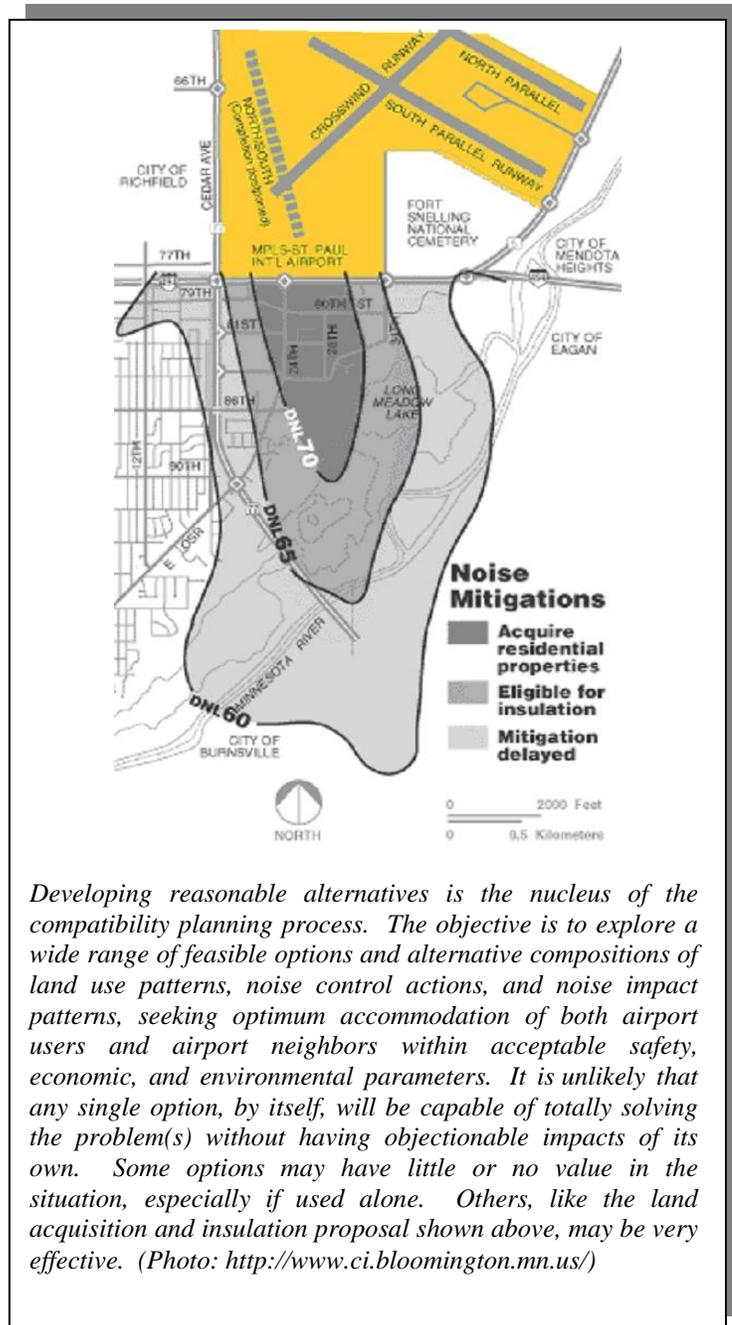
*Aircraft noise and access restrictions must comply with Grant Assurance 22, Economic Nondiscrimination, and similar requirements under 49 U.S.C. § 47152 (2), (3), Surplus Property Conveyances Covenants and section 516 of the Airport and Airway Improvement Act of 1982 (AIAA), section 23 of the Airport and Airway Development Act of 1970 (1970 Airport Act), and section 16 of the Federal Airport Act of 1946, Nonsurplus Conveyances Covenants. Under the prohibition on unjust discrimination in Grant Assurance 22 and similar requirements, a sponsor may not unjustly discriminate between aircraft because of propulsion system, weight, type, operating regulations, or any other characteristic that does not relate to actual noise emissions. For example, some first generation turboprop aircraft – such as the Fokker F-27 seen here below – and the DC-3/C-47 shown above are noisier than many jets. (Photo: Above, USAF; Below, Bob Garrard).*



on reasonable conditions” as requiring that a regulation restricting airport use for noise purposes: (1) be justified by an existing noncompatible land use problem; (2) be effective in addressing the identified problem without restricting operations more than necessary; and (3) reflect a balanced approach to addressing the identified problem that fairly considers both local and federal interests.

**c. The Role of ASNA and Part 150.** Aircraft under ASNA involves consideration of a range of alternative mitigation measures, including aircraft noise and other restrictions. For example, under Part 150, the airport operator could, among other things, recommend constructing noise barriers, installing acoustical shielding, and acquiring land, easements, air rights, and development rights to mitigate the effects of noise consistent with 49 U.S.C. § 47504. The FAA does not need to examine nonrestrictive measures to see if they are consistent with ANCA and Grant Assurance 22, *Economic Nondiscrimination*, or related federal obligations.

**d. Reasonable Alternatives.** Developing reasonable alternatives is the nucleus of the compatibility planning process. The objective is to explore a wide range of feasible options and alternative compositions of land use patterns, noise control actions, and noise impact patterns, seeking optimum accommodation of both airport users and airport neighbors within acceptable safety, economic, and environmental parameters. It is unlikely that any single option, by itself, will be capable of totally solving the problem(s) without having objectionable impacts of its own. Some options may have little or no value in the situation, especially if used alone. Realistic alternatives, then, will normally consist of combinations of the



various options in ways that offer more complete solutions with more acceptable impacts or costs.

A balanced approach – using a combination of nonrestrictive measures and considering use restrictions only as a last resort – is inherently reasonable and is used nationally and internationally. On the other hand, bypassing nonrestrictive measures and only relying on restrictive alternatives can be an inherently unreasonable approach to addressing a noise problem.

**13.9. Cumulative Noise Metric.** In ASNA, Congress directed the Secretary of Transportation to “establish a single system for determining the exposure of individuals to noise resulting from airport operations” and “identify land uses normally compatible with various exposures of individuals to noise.”

As directed by Congress in ASNA, the FAA has established DNL as the metric for “determining the exposure of individuals to noise resulting from airport operations.” Also in compliance with ASNA, the FAA has established the land uses normally compatible with exposures of individuals to various levels of aircraft noise. The FAA determined that residential land use is “normally compatible” with noise levels of less than DNL 65 dB. In other words, a sponsor should demonstrate that a proposed restriction will address a noise problem within the 65 dB DNL contour.

***Realistic alternatives will normally consist of combinations of the various options in ways that offer more complete solutions with more acceptable impacts or costs.***

A restriction designed to address a noise problem must be based on significant cumulative noise impacts, generally represented by an exposure level of DNL 65 dB or higher in an area not compatible with that level of noise exposure. A community is not precluded from adopting a cumulative noise exposure limit different than DNL 65 dB, but cannot apply a different standard to aircraft noise than it does to all other noise sources in the community. This is not common, and most noise mitigation measures can be expected to address cumulative noise exposure of DNL 65 dB and higher.

**13.10. General Noise Assessment.** In assessing the reasonableness and unjustly discriminatory aspect of a proposed noise restriction, FAA may need to answer the following:

- a. Is Part 150 documentation available for review and consideration? Has the sponsor completed the required analysis, public notice, and approval process under 14 CFR Part 161? Has the sponsor implemented the measures?
- b. Is the proposed restriction a rational response to a substantiated noise problem?
- c. Were nonrestrictive land use measures considered first?

- d. Is proper methodology being used in comparing alternatives?
- e. Is there consistency between guidelines governing the establishment of compatible land use and those governing an access restriction? Do they work together to solve the noise problem?
- f. Are existing local land use standards designed to achieve the same level of compatibility sought by the restriction (i.e., does the community tolerate a higher level of noise for nonaviation uses and place a higher burden of noise mitigation on the airport and its users than it does on other noise sources)?
- g. Are the restrictions intended to achieve noise reductions above 65 dB or below? Is guidance from the federal Interagency Committee on Aviation Noise (FICAN) being used?<sup>35</sup>
- h. Has the sponsor demonstrated any exposure to financial liability for noise impact as a result of a noise problem?
- i. Is the restriction based on a qualifier other than noise? For example, noise-based restrictions have to be justified on the grounds of aircraft noise. A restriction based on aircraft weight or any other qualifier other than noise emission might be unjustly discriminatory if the purpose is to address a noise problem.



**13.11. Residential Development.** In reviewing the reasonableness of airport access restrictions, the

*In reviewing the reasonableness of airport access restrictions, the FAA must consider whether the airport sponsor has taken appropriate action to the extent reasonable to restrict the use of land near the airport to uses that are compatible with airport operations. The airport sponsor is obligated under its federal grant assurances to address incompatible land use in the vicinity of the airport. These homes in the vicinity of an airport are a clear indication of the failure of local zoning to protect the airport. (Photos: FAA)*

<sup>35</sup> The Federal Interagency Committee on Aviation Noise (FICAN) was formed in 1993 to provide forums for debate over future research needs to better understand, predict, and control the effects of aviation noise, and to encourage new technical development efforts in these areas. Additional information may be available online.

FAA must consider whether the sponsor has fulfilled its responsibilities regarding compatible land use under Grant Assurance 21, *Compatible Land Use*. Airport sponsors are obligated to take appropriate action, including the adoption of zoning laws, to the extent reasonable to restrict the use of land next to or near the airport to uses that are compatible with normal airport operations. Local land use planning, as a method of determining appropriate (and inappropriate) use of properties around airports, should be an integral part of the land use policy and regulatory tools used by state and local land use planning agencies. Very often, such land use planning coordination is hampered by the fact that an airport can be surrounded by multiple individual local governmental jurisdictions, each with its own planning process. Some airport authorities have the authority to control land use, but many do not. If the airport sponsor does not have authority to control local land use, FAA will not hold the actions of independent land use authorities against the airport sponsor. However, FAA expects the airport sponsor to take reasonable actions to encourage independent land use authorities to make land use decisions that are compatible with aircraft operations. The airport sponsor should be proactive in opposing planning and proposals by independent authorities to permit development of new noncompatible land uses around the airport.

**13.12. Impact on Other Airports and Communities.** In evaluating the significance of a restriction, the FAA will consider the degree to which the restriction may affect other airports in two general ways: (1) whether it establishes a precedent for restrictions at more airports, possibly resulting in significant effects on the national air transportation system, and (2) whether other airports in the region will be impacted by traffic diverted from the restricted airport, either by shifting noise impact from one community to another or by burdening a hub airport with general aviation traffic that should be able to use a reliever airport.

**13.13. The Concept of Unjust Discrimination.** Grant Assurance 22, *Economic Nondiscrimination*, of the prescribed grant assurances implements the provisions of 49 U.S.C. § 47107(a)(1) through (6), and requires, in pertinent part, that the sponsor of a federally obligated airport will make its airport available as an airport for public use on reasonable terms, and without unjust discrimination, to all types, kinds, and classes of aeronautical activities, including commercial aeronautical activities offering services to the public at the airport.

Consistent with Grant Assurance 22, *Economic Nondiscrimination*, airport sponsors are prohibited from unjustly discriminating among airport users when implementing a noise-based restriction. The FAA has determined – and the federal courts have held – that the use of noise control regulations to ban aircraft on a basis unrelated to noise is unjustly discriminatory and a violation of the federal grant assurances and federal surplus property obligations.

For example, in *City and County of San Francisco v. FAA*, the airport adopted an aircraft noise regulation that resulted in the exclusion from the airport of a retrofitted Boeing 707 that met Stage 2 standards while permitting use of the airport by 15 other models of aircraft emitting as much or more noise than the 707. The Ninth Circuit Court of Appeals affirmed the FAA's determination that the airport regulation was unjustly discriminatory because it allowed aircraft that were equally noisy or noisier than the aircraft being restricted to operate at the airport and to increase in number without limit while excluding the 707 based on a characteristic that had no bearing on noise (date of type-certification as meeting Stage 2 requirements).

In *Santa Monica Airport Association v. City of Santa Monica*, the Court struck down the airport's ban on the operation of jet aircraft on the basis of noise under the Commerce and Equal Protection clauses of the U.S. Constitution. The Court found that, "... in terms of the quality of the noise produced by modern type fan-jets and its alleged tendency to irritate and annoy, there is absolutely no difference between the noise of such jets and the noise emitted by the louder fixed-wing propeller aircraft which are allowed to use the airport."

### **13.14. Part 161 Restrictions Impacting Stage 2 or Stage 3 Aircraft.**

**a. Stage 2 or 3 Aircraft.** Airport noise/access restrictions on operations by Stage 2 or Stage 3 aircraft must comply with ANCA, as implemented by 14 CFR Part 161.

ANCA does not require FAA approval of restrictions on Stage 2 aircraft operations; however, FAA determines whether applicable notice, comment, and analysis requirements have been met. The FAA also separately reviews proposed Stage 2 restrictions for compliance with grant assurance and surplus property obligations. For this purpose, the FAA relies upon the standards under ASNA, as implemented by 14 CFR 150.

ANCA prescribes a more stringent process for national review of proposed restrictions on Stage 3 aircraft operations, including either FAA approval or, alternatively, agreement by all operators at the airport. If FAA approval is required, then the process for review of restrictions on Stage 3 aircraft operations includes consideration of environmental impacts. The statutory criteria for FAA approval of Stage 3 restrictions includes the criteria used under 14 CFR Part 150 to determine compliance with the grant assurance and Surplus Property Act obligations. For Stage 3 restrictions, the ANCA review considers compliance with grant assurance and surplus property obligations.

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



*Aircraft certificated under Part 36 Subpart F "Propeller Driven Small Airplanes and Propeller-Driven, Commuter Category Airplanes" do not have a stage classification, and as such are referred to as nonstage. Most small general aviation aircraft and many commuter aircraft are nonstage aircraft. An example is the Beechcraft 58 Baron. (Photo: FAA)*

approved by FAA. To be approved, restrictions must meet the following six statutory criteria:

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

**b. ANCA Grandfathering.**

ANCA contains special provisions that “grandfather” restrictions on Stage 2 aircraft operations that were proposed before October 1, 1990. ANCA also grandfathers restrictions on Stage 3 aircraft that were in effect on October 1, 1990. Airport



*The variability in the way individuals react to noise makes it essentially impossible to predict with any accuracy how any one individual will respond to a given noise. For example, some people object to noise emitted by jets, regardless of the actual noise energy level, while others will only complain about helicopter noise. (Photos: FAA).*

sponsors who adopted restrictions before ANCA was enacted on November 5, 1990, may amend these restrictions without complying with ANCA provided the amendment does not reduce or limit aircraft operations or affect aircraft safety. However, amendments to existing restrictions and new restrictions are subject to review for compliance with the federal grant assurances and federal surplus property obligations.

**c. Consistency of Part 161 and Grant Assurance Determinations on Proposed Restrictions of Operations by Stage 2 Aircraft.** It is possible for a proposed Stage 2 restriction to meet the requirements of Part 161, which are essentially procedural, but fail to comply with the grant assurance requirements to provide access on reasonable terms without unjust discrimination. Accordingly, in reviewing a restriction on operations by Stage 2 aircraft, it is important that FAA regional airports divisions coordinate with the FAA headquarters Airport Compliance Division (ACO-100), the FAA Airport Planning and Environmental Division (APP-400), and to assure consistency between agency Part 161 and grant assurance determinations.

### **13.15. Undue Burden on Interstate Commerce.**

The FAA is responsible for reviewing and evaluating an airport sponsor's noise restrictions to determine whether there is an undue burden on interstate or foreign commerce contrary to the airport's federal requirements under the grant assurances, the Surplus Property Act, and ANCA.

**a. General.** An airport restriction must not create an undue burden on interstate commerce. The FAA will make the determination on whether it is an undue burden. While airport restrictions may have little impact at one airport, they may have a great deal of impact at others by adversely affecting airport capacity or excluding certain users from the airport. The magnitude of both impacts must be clearly presented. Any regulatory action that causes an unreasonable interference with interstate or foreign commerce could be an undue burden.

**b. Analysis and Process.** In all cases, it is essential to determine whether there are interstate operations into and out of the airport in question, as well as the level of air carrier service. For example, the airport may have Part 121 operations or others engaged in Part 135 commercial operations of an interstate commerce nature. While some kinds of operations may be entirely local, e.g., air tours or crop dusting, most commercial aviation will involve interstate commerce to some degree.

In determining whether a particular restriction would cause an undue burden on interstate commerce, it may be necessary to consider the total number of based aircraft and aircraft operations, the role of the airport, and the capabilities of other airports within the system (i.e., reliever airport, general aviation (GA), or commercial service airport), and the number of operators engaged in interstate commerce. The analysis of a proposed restriction should also quantify the economic costs and benefits and the regional impact in terms of employment, earnings, and commerce.

**13.16. Use of Complaint Data.** Complaint data (i.e., from homeowner complaints filed with the airport) are generally not statistically valid indicators or measurements of a noise problem. Therefore, complaint data is usually not an acceptable justification for a restriction. Congress, in

ASNA, directed the FAA to establish a single system of noise measurement to be uniformly applied in measuring noise at airports and in surrounding areas for which there is a highly reliable relationship between projected noise and surveyed reactions of people to noise.

In 14 CFR Part 150, the FAA adopted DNL to fulfill this statutory federal obligation. While complaints may be a valid indication of *individual* annoyance, they do not accurately measure *community* annoyance. Reactions of individuals to a particular level of noise vary widely, while community annoyance correlates well with particular noise exposure levels. As the FAA stated in a 1994 report to Congress on aircraft noise:

The attitudes of people are actually more important in determining their reactions to noise than the noise exposure level. Attitudes that affect an individual's reactions include:

- a. Apprehension regarding their safety because of the noise emitter,
- b. The belief that the noise is preventable,
- c. Awareness of non-noise environmental problems, and
- d. A general sensitivity to noise, and the perceived economic importance of the noise emitter.

The resultant variability in the way individuals react to noise makes it essentially impossible to predict with any accuracy how any one *individual* will respond to a given noise. For example, some people object to noise emitted by jets, regardless of the actual noise energy level, while others complain about helicopter noise only. When *communities* are considered as a whole, however, reliable relationships are found between reported annoyance and noise exposure. This relationship between community annoyance and noise exposure levels "...remains the best available source of predicting the social impact of noise on communities around airports ...". As the Federal Interagency Committee on Noise (FICON) noted in its 1992 report, "the best available measure of [community annoyance] is the percentage of the area population characterized as 'highly annoyed' (%HA) by long-term exposure to noise of a specified level (expressed in terms of DNL)."

**13.17. Use of Advisory Circular (AC) 36-3H.** Advisory Circular (AC) 36-3H provides listings of estimated airplane noise levels in units of A-weighted sound level in decibels (dBA), ranked in descending order under listed conditions and assumptions. A-weighted noise levels refer to the level of noise energy in the frequency range of human hearing, rather than total noise energy. The advisory circular provides data and information both for aircraft that have been noise type certificated under 14 CFR Part 36 and for aircraft for which FAA has not established noise standards.

While 14 CFR Part 36 requires turbojet and large transport category aircraft noise levels to be reported in units of Effective Perceived Noise Level in decibels (EPNdB) and the reporting of propeller-driven small airplanes and commuter category airplanes to be reported using a different method [A-weighted noise levels], many airports and communities use a noise rating scale that is stated in A-weighted decibels. For this reason, FAA has provided a reference source for aircraft noise levels expressed in A-weighted noise levels.

The noise levels in AC 36-3H expressed in A-weighted noise levels are estimated as they would be expected to occur during type certification. Aircraft noise levels that occur under uniform certification conditions provide the best information currently available to compare the relative noisiness of airplanes of different types and models. AC 36-3H should be used as the basis for comparing the noise levels of aircraft that are not subject to noise certification rules to aircraft that are certificated as Stage 1, Stage 2, or Stage 3 under 14 CFR Part 36.

***Advisory Circular (AC) 36-3H allows an “apple-to-apple” comparison among aircraft certificated under a variety of standards. It can easily be incorporated into an airport operator’s plan, and it is widely used and understood by the layman.***

Table 13.1 in AC 36-3H provides an example of comparisons of aircraft. AC 36-3H provides the data in dBA, which is the base metric for DNL. It tabulates noise levels for a broad variety of aircraft in A-weighted sound level, retaining the advantage of the Part 36 testing methodology

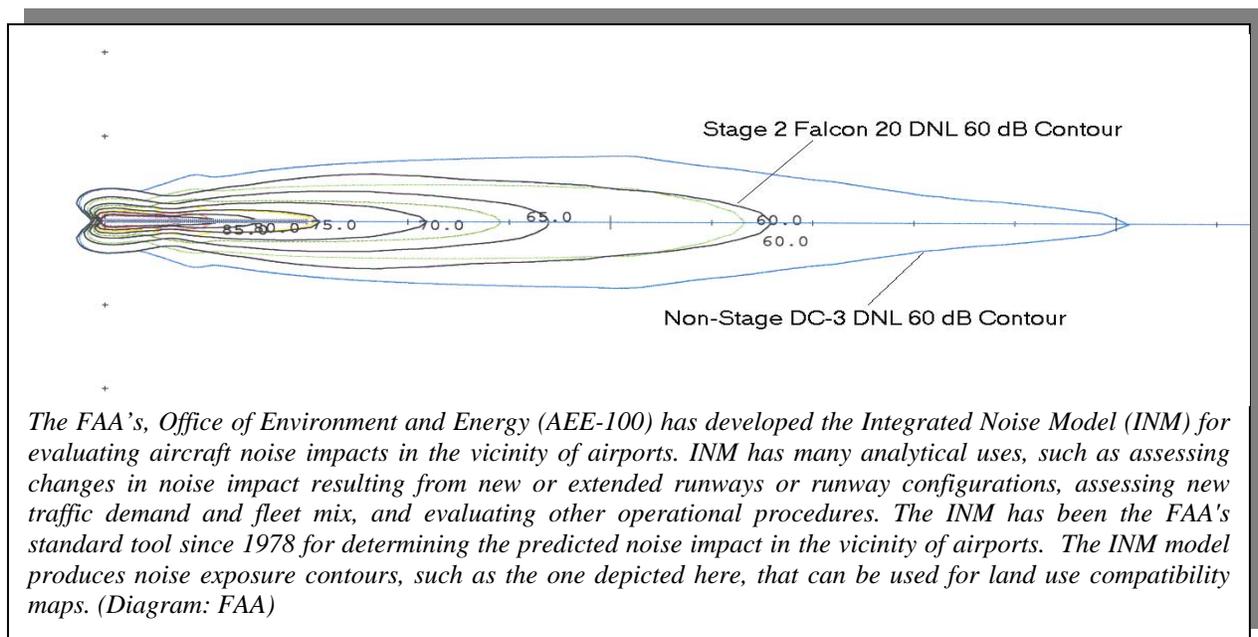
ESTIMATED MAXIMUM A-WEIGHTED SOUND LEVELS MEASURED IN ACCORDANCE WITH PART-36 APPENDIX -C- PROCEDURES						
MANUFACTURER	AIRPLANE	***TAKEOFF***			FLAPS	NOT
		ENGINE	TOGW 1000 LBS	EST DBA		
BEECH	35-C33A	IO-520-B	3.30	70.0	-	
BEECH	F33A	IO-520-B	3.40	70.0	-	
BEECH	K35,M35	IO-470-C	3.00	70.0	-	
CESSNA	182P	O-470-S	3.00	70.0	-	1
CESSNA	320C	TS10-470-D	5.20	70.0	-	
CESSNA	337H	IO-360-G	4.60	70.0	-	
PIPER	601P	IO-540-S1A5	6.00	70.0	-	
PIPER	PA-31-325	TIO-540-F2BD	6.50	70.0	-	
PIPER	PA-32R-301	IO-540-K1G5D	3.60	70.0	-	
PIPER	PA-46-31P MALIBU	TSJO-520-BE	4.10	70.0	-	
BOEING	B-757-200	PW-2037(BG-3)	220.00	69.9	5	
DASSAULT	FALCON 900	TFE731-5BR-1C	46.50	69.9	20	
FOKKER	F100	RR TAY MK650-15	98.00	69.9	-	
FOKKER	F100	RR TAY MK650-15	98.00	69.9	-	
AVRO	146-RJ 70	LF507-1F	84.00	69.8	18	8,1
AVRO	146-RJ 70	LF507-1F	84.00	69.8	18	8,1

**Table 13.1 Comparison of Aircraft Using Advisory Circular (AC) 36-3**

and procedures (standardization, repeatability). AC 36-3H allows an “apple-to-apple” comparison among aircraft certificated under a variety of standards. It can easily be incorporated into an airport sponsor’s noise compatibility plan, and it is widely used and understood in both the aviation industry and community planning agencies. However, the noise levels in AC 36-3H are not intended to determine what noise levels are acceptable or unacceptable for an individual community.

**13.18. Integrated Noise Modeling.** The FAA’s Office of Environment and Energy (AEE-100) has developed the Integrated Noise Model (INM) for evaluating aircraft noise impacts in the vicinity of airports. INM has many analytical uses, such as (a) assessing changes in noise impact resulting from new or extended runways or runway configurations, (b) assessing changes in traffic demand and fleet mix, and (c) evaluating other operational procedures. The INM has been the FAA's standard tool since 1978 for determining the predicted noise impact in the vicinity of airports. Requirements for INM use are defined in FAA Order 1050.1E, *Policies and Procedures for Considering Environmental Impacts*; FAA Order 5050.4B, *National Environmental Policy Act (NEPA) Implementing Instructions for Airport Projects*; and 14 CFR Part 150, *Airport Noise Compatibility Planning*.

The INM produces noise exposure contours that are used for land use compatibility maps. The INM program includes built-in tools for comparing contours; it also has features that facilitate easy export to a commercial geographic information system (GIS). The INM can also calculate predicted noise levels at specific sites of interest, such as hospitals, schools, or other noise-sensitive locations. For these grid points, the INM reports detailed information for the analyst to determine which events contribute most significantly to the noise level at that location. The INM supports 16 predefined noise metrics that include cumulative sound exposure, maximum sound



level, and time above metrics from the A-Weighted, C-Weighted, and the Effective Perceived

Noise Level families. The user may also create the Australian version of the Noise Exposure Forecast (NEF).<sup>36</sup>

**13.19. Future Noise Policy.** Federal policy on noise measurement methodology and noise mitigation is not static, but can change with new legislation or reconsideration of past agency policy. ACO-100 should be consulted when reviewing a proposed aircraft noise restriction to ensure that current policy is applied to the review.

**13.20. through 13.25 reserved.**

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<sup>36</sup> Additional information on the Integrated Noise Model (INM) and its use is available from the FAA Office of Environment and Energy (AEE-100) or online on the FAA web site.

**TABLE 1**  
**LAND USE COMPATIBILITY\* WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS**

<i>Land Use</i>	<i>Yearly Day-Night Average Sound Level (L<sub>dn</sub>) in Decibels</i>					
	<i>Below 65</i>	<i>65-70</i>	<i>70-75</i>	<i>75-80</i>	<i>80-85</i>	<i>Over 85</i>
<i>Residential</i>						
Residential, other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
<i>Public Use</i>						
Schools	Y	N1)1	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
<i>Commercial Use</i>						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail—building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
<i>Manufacturing And Production</i>						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
<i>Recreational</i>						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parentheses refer to notes.

\* The designations contained in this 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 properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

**KEY TO TABLE 1**

SLUCM	Standard Land Use Coding Manual.
Y (Yes)	Land Use and related structures compatible without restrictions.
N (No)	Land Use and related structures are not compatible and should be prohibited.
NLR	Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, or 35	Land used and related structures generally compatible; measures to achieve NLR or 25, 30, or 35 dB must be incorporated into design and construction of structure.

*In the Aviation Safety and Noise Abatement Act (ASNA), Congress directed the FAA, among other things, to identify land uses that are normally compatible with various exposures of individuals to noise. The result was Table 1 in 14 CFR Part 150, as depicted above. (Graphic: FAA)*

## NOISE ABATEMENT PROCEDURES

### Large (Greater Than 12,500 lbs.) and All Turbine Powered

#### RUNWAY 16:

**Departure:** Maintain runway heading and climb at (V2 + 20) not to exceed 190 KIAS. Upon reaching 800 ft. MSL turn to a 320 degree heading and set thrust to achieve 1,000 fpm climb rate to 2,500 ft. MSL. Use reduced climb power until reaching 3,500 ft. MSL.

**Eastbound:** Maintain runway heading and climb at (V2 + 20) not to exceed 190 KIAS. Upon reaching 1,000 ft. MSL set thrust to achieve 1,000 fpm climb rate. Use reduced climb power until reaching 3,500 ft. MSL.

**Arrival:** Maintain 2,500 ft. MSL or higher as long as practical. Intercept the final approach course at or beyond the ILS Outer Marker (5 DME). Use minimum flap setting and delay extending landing gear until established on the final approach. Use thrust reduction techniques and minimize rapid RPM changes.

#### RUNWAY 34:

**Departure:** Maintain runway heading and climb at (V2 + 20) not to exceed 190 KIAS. Upon reaching 1,000 ft. MSL turn to a 295 degree heading and set thrust to achieve 1,000 fpm climb rate to 2,500 ft. MSL. Use reduced climb power until reaching 3,500 ft. MSL.

**Arrival:** Maintain 2,500 ft. MSL or higher as long as practical. Intercept the final approach course over Long Island Sound. Use minimum flap setting and delay extending landing gear until established on the final approach. Use thrust reduction techniques and minimize rapid RPM changes.

Note: Inbound; avoid overflying shoreline communities.

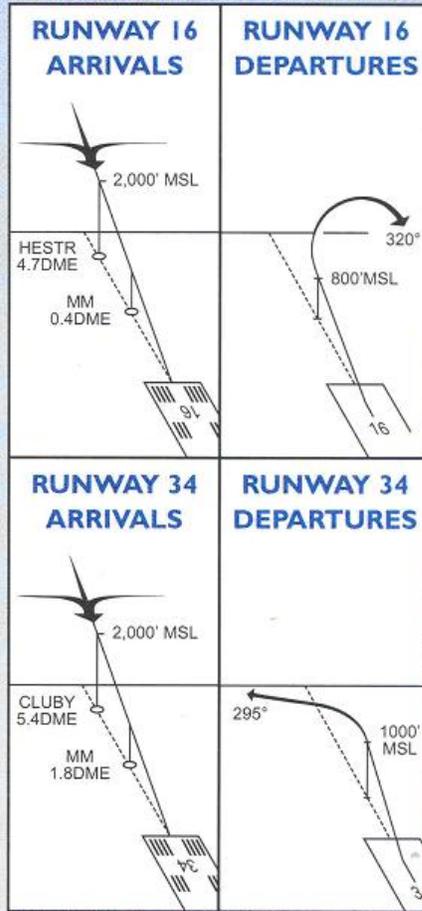
#### RUNWAY 11 AND 29:

**Departure:** Maintain runway heading and climb at (V2 + 20) not to exceed 190 KIAS. Upon reaching 1,000 ft. MSL set thrust to achieve 1,000 fpm climb rate to 2,500 ft. MSL. Use reduced climb power until reaching 3,500 ft. MSL.

**Arrival:** Maintain 2,500 ft. MSL or higher as long as practical. Use minimum flap setting and delay extending landing gear until beginning final descent to landing. Use thrust reduction techniques and minimize rapid RPM changes.

Note: Avoid making turns to a short final when possible.

Safety and ATC Instructions override Noise Abatement Procedures.



#### AIRPORT INFORMATION

Noise Abatement Office: 914-995-4861  
 Operations Office: 914-995-4850  
 Airport Manager: 914-995-4856  
 Control Tower: 914-948-6520  
 ATIS: 914-948-0130  
 ASOS: 914-288-0216  
 New York FSS: 1-800-VX-BRIEF

Runways:  
 16/34 6,548' X 150' (ASPH-GRVD)  
 11/29 4,451' X 150' (ASPH-GRVD)  
 Rwy 29: Threshold Displaced

*As mentioned in this voluntary noise abatement pilot handout, safety of flight and Air Traffic Control (ATC) instruction always override noise abatement procedures. (Source: Panorama Flight Service, Westchester County Airport, New York)*

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