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Environmental Mitigation and Aircraft Noise Abatement

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The Federal Aviation Administration ("FAA") began regulating civil jet aircraft noise in 1969 when it established noise certification standards for engines.[1] FAA's standards initially addressed new type designs only. In other words, certain aircraft manufactured after 1969 but pursuant to a type design that FAA had approved before 1969, *e.g.* Boeing 707s and Douglas DC-8s, were not initially required to comply with these early noise regulations.

In 1972, the Congress enacted the Noise Control Act of 1972, which gave greater authority to the FAA to establish limits for aircraft "source" noise. In 1973, the FAA amended the Federal Aviation Regulations to apply the 1969 noise standards to all newly manufactured aircraft, regardless of the date of the underlying type design approval.

In 1975, the FAA established yet more rigorous standards for new type designs, and in 1976, the agency banned all U.S. air carriers from operating Stage 1 aircraft at U.S. airports by requiring a gradual phase-out under 14 C.F.R. Part 91, to be completed by 1985.[2]

In 1977, the FAA amended the Federal Aviation Regulations to provide for three noise standards: Stage 1, Stage 2, and Stage 3. Aircraft that did not meet or exceed the 1969 noise standards were termed "Stage 1" aircraft. Aircraft manufactured pursuant to the 1969 noise standards, e.g. Boeing 727-200s, Boeing 737-100/200s, and Douglas DC-9s, were termed "Stage 2" aircraft, while aircraft manufactured pursuant to the 1975 standards were termed Stage 3 aircraft.

In 1980, the Congress enacted the Aviation Safety and Noise Abatement Act of 1979, which required the FAA to apply the 1976 Stage 1 operational ban to *both* U.S. and foreign air carriers.

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[1] These standards were codified at 14 C.F.R. Part 36. In 1971, the International Civil Aviation Organization ("ICAO"), an international treaty body tasked with aviation safety and regulation, implemented similar standards for international aircraft noise. *See* ICAO Annex 16. The ICAO's standards are referred to Chapters 1, 2, and 3 and the FAA's standards are referred to as Stages 1, 2, and 3. The FAA and ICAO, through extensive consultation undertaken by the ICAO's Committee on Aviation Environmental Protection, closely coordinate efforts to develop and implement standardized aircraft noise requirements.

[2] The Congress amended the Federal Aviation Act in 1979 to grant three-year exemptions from compliance with the Stage 1 ban, until January 1, 1988, for operations involving twin-engine aircraft with fewer than 100 seats.

Airport Noise and Capacity Act of 1990; the End of Stage 2

The enactment of the Airport Noise and Capacity Act of 1990 ("ANCA") significantly changed Federal regulation of aircraft noise in two important ways:

- First, ANCA effectively required air carriers to meet Stage 3 noise standards within one decade, i.e. December 31, 1999,[3] either by retiring certain Stage 2 aircraft from service, i.e. large jet subsonic aircraft weighing more than 75,000 pounds,[4] or retrofitting the engines of such aircraft with hushkits.[5]

- Second, ANCA compelled airport proprietors to follow Federal rules for new noise and access restrictions, thereby countering a growing patchwork of local airport regulations, particularly ordinances limiting Stage 2 aircraft operations. However, noise and access restrictions in effect at the time of ANCA's enactment were grandfathered. Examples of grandfathered schemes include caps on hourly operations for certain aircraft at Orange County's John Wayne Airport and Long Beach Airport.

i. ANCA's Stage 3 Mandate

ANCA provided both phase-out and phase-in compliance options. The phase-out option allowed air carriers to reduce the percentage of Stage 2 aircraft in their fleets according to the following schedule: 25% retired/retrofitted by the end of 1994; 50% by the end of 1996; 75% by the end of 1998; and 100% by the end of 1999. The phase-in option allowed air carriers to increase the percentage of Stage 3 aircraft in their fleets according to the following schedule: 55% new/retrofitted by the end of 1994; 65% by the end of 1996; 75% by the end of 1998; and 100% by the end of 1999.

ANCA's opponents argued that the cost of compliance would be prohibitively high, given the large number of Stage 2 aircraft in U.S. fleets, particularly 727-200s (workhorses for American's, United's, Continental's, and Delta's fleets) and DC-9s (comprising a large percentage of Northwest's, USAir's and TWA's fleets at the time). By way of example, although most U.S. air carriers supported Federal rules preventing airport proprietors from imposing new noise and access restrictions, the Air Transport Association of America ("ATA") predicted that compliance with mandatory Stage 3 noise standards by ANCA's deadline (December 31, 1999) would cost the industry $175 billion. Meanwhile, the General Accounting

[3] At about the same time that the Congress moved to phase out Stage 2 aircraft, the ICAO adopted regulations eliminating Chapter 2 aircraft, setting a similar compliance deadline, i.e. 2002.

[4] Aircraft noise design standards are set forth at Part 36, however ANCA's ban on Stage 2 flights were achieved through an operational restriction under 14 C.F.R Part 91.

[5] A hushkit reduces engine noise through a variety of means, including redesigned engine enclosures and replacement engine components, while retaining the aircraft's airframe. The "hushkitting" process may extend to the acquisition of new engines where economically feasible.

Office ("GAO") at the time predicted that compliance would cost the industry less than $5 billion.[6]

In 1999, shortly before the deadline, the ATA commissioned an economic analysis that placed industry compliance costs at $32 billion (in 1999 dollars). In 2001, after the compliance deadline had passed, GAO found that airline costs "directly attributable" to compliance were between $3.8 billion and $4.9 billion (in 2000 dollars).[7] The disparity in estimates was based on differing assumptions. The ATA sponsored study included the full cost of aircraft purchased as replacements for Stage 2 aircraft, while the GAO concluded that the true cost "was the cost for the conversion of an aircraft—that is, by hushkitting the engines—or the incremental capital cost of financing the early replacement of an aircraft, whichever cost was lower."[8]

The run up in fuel prices before the Persian Gulf War in 1991 and a sharp decline in traffic during the 1992 recession, i.e. events that would have occurred regardless of ANCA's passage, may have prompted some air carriers to accelerate the retirement of less fuel efficient Stage 2 aircraft well before the compliance deadline. Moreover, consumer preferences for younger aircraft fleets may have also contributed to accelerated retirements. Indeed, and notwithstanding the hushkit retrofit compliance option, between 2000 and 2007, the number of hushkitted aircraft in U.S. fleets fell by 70%.[9]

Importantly, ANCA provided for an extension of the deadline for compliance in the form of individual air carrier waivers. Petitioners were required to show that: (i) a waiver was in the public interest; and (ii) a good faith effort had been made to timely comply. Only air carriers that had achieved a fleet mix of at least 85% Stage 3 aircraft by July 1, 1999 were eligible to apply. Although the FAA received 10 such petitions (all from U.S. air carriers), it did not grant a single waiver. No foreign air carriers applied for waivers.[10]

In any event, by the time of ANCA's compliance deadline (2000), 100% of covered aircraft, i.e. civil jet aircraft weighing 75,000 pounds or more, were Stage 3 compliant.[11]

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[6] GAO Report, *Aviation Noise: Costs of Phasing Out Noisy Aircraft* (Jul. 1991).

[7] GAO Report, *Aviation and the Environment: Transition to Quieter Aircraft Occurred as Planned, but Concerns About Noise Persist* (Sep. 2001), at 16-17.

[8] *Id.* at 17. GAO's calculation assumed that the cost of capital to the airline industry in 1999 was 7.8%, applying a "weighted average of the costs of receiving financing from both the debt and equity markets where the weights are the proportion of total capital obtained from each." *Id.* at n31.

[9] STATEMENT OF CARL E. BURLESON, DIRECTOR, OFFICE OF ENVIRONMENT AND ENERGY, FAA, BEFORE THE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTEE ON AVIATION, HEARING ON AVIATION AND THE ENVIRONMENT: NOISE (OCT. 24, 2007), at Chart 5.

[10] GAO Report, *supra* note 2, at 23.

[11] In February 1999 the European Parliament adopted legislation to ban the addition of hushkitted Stage 3 aircraft into non-EU fleets, effective 2000. U.S. air carriers, aircraft manufacturers, and the Federal government all opposed the legislation. In March 2000, after U.S.-EU negotiations hit an impasse, the U.S. filed a formal complaint under ICAO Article 84, seeking relief from the EU regulation. The complaint alleged, *inter alia*, that the EU scheme: (1) did not comply with ICAO regulations; (2) discriminated against aircraft on the basis of

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ii. Local Noise and Access Restrictions; ANCA

One of the most significant challenges to airport expansion projects is continued community dissatisfaction with aircraft noise levels, particularly among residents living in proximity to airports, and the use of litigation to forestall or block projects. However, it is axiomatic that, "The Federal Government generally does not control land use—zoning authority is reserved to the States and their subdivisions."[12] Consequentially, the FAA incentivizes compatible land use through grant programs, such as the Airport Improvement Program and approval of passenger facility charges (the proceeds of which may be used to acquire incompatible land and insulate homes and schools).

iii. No Categorical Federal Preemption of Airport Noise Controls

The Congress "expressly provided that the proprietary powers and rights of municipal airport authorities are not preempted by Federal law,"[13] when it passed the Airline Deregulation Act of 1978. *See* 49 U.S.C. § 41713. Airport proprietors therefore have limited powers to regulate noise levels at their airports, provided such regulations do not impose an undue burden on interstate or foreign commerce, or unjustly discriminate between different categories of airport users. As the FAA has stated, "We have been urged to undertake—and have considered and carefully rejected—full and complete Federal preemption of the field of noise abatement. In our judgment the control and reduction of airport noise must remain a shared responsibility among airport proprietors, users, and governments."[14]

Nevertheless, the Federal Aviation Act expressly preempts laws enacted pursuant to State and local police powers (rather than local restrictions enacted by airport owners in their capacities as proprietors) in the areas of airspace use and management, air traffic control, safety and, most importantly, the regulation of aircraft noise at its source.[15]

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nationality of registry; and (3) had a disparate impact on U.S. interests, since all Stage 3 hushkitted aircraft were manufactured by US firms and, moreover, the overwhelming majority of companies providing hushkits were US firms. In August 2000 the EU denied that the ICAO had jurisdiction to resolve the dispute, and the European Commission implemented the ban. However, the EU subsequently rescinded the legislation in October 2001.

[12] *Aviation Noise Abatement Policy 2000*, 65 Fed. Reg. 43802, 43803 (Jul. 14, 2000).

[13] 65 Fed. Reg. 43816.

[14] 65 Fed. Reg. 43818.

[15] Put another way, local and municipal governments' may not rely on broad police powers, *e.g.* ordinances and zoning measures, to effectively impose bans at airports they do not own; such efforts will generally be set aside because Federal law and policy preempt non-proprietor based laws when they impinge upon airspace management, aircraft flights, and operations. *See, e.g. City of Burbank v. Lockheed Air Terminal*, 411 U.S. 624 (1973) (striking down local government's efforts to impose curfew on airport it did not own); *City of Burbank-Glendale Pasadena Airport Authority v. City of Los Angeles* 979 F.2d 1339 (9th Cir. 1992) (holding prior use and approval scheme for development of land within City's jurisdiction unconstitutional given Federal interest in aviation safety); *San Diego Unified Port District v. Gianturco*, 651 F.2d 1306 (9th Cir. 1981), *cert. denied* 45 U.S. 1000 (1982) (striking down State's effort to condition zoning variance on airport proprietor's extension of curfew hours).

iv. Airport Noise Regulation and ANCA

Although airport owners retain limited rights, as airport proprietors, to prescribe certain noise abatement regulations, the Congress sought to address an evolving patchwork of local noise abatement ordinances when it passed ANCA in 1990 by establishing: (1) procedural requirements for *new* local restrictions on Stage 2 aircraft access; and (2) procedural and substantive requirements for any Stage 3 restrictions. The FAA has implemented these requirements under 14 C.F.R. Part 161, Notice and Approval of Airport Noise and Access Restrictions. (Although large civil jet aircraft not meeting Stage 3 standards were phased out of U.S. fleets by 2000, many business jets that continue in operation today are not Stage 3 compliant.)

ANCA's procedural requirements, 49 U.S.C. § 47524, require proprietors to make proposed Stage 2 restrictions available for public comment at least 180 days before the effective date. The proposal must include: (1) a description of alternative restrictions, including measures that do not involve aircraft restrictions; and (2) cost-benefit analyses for the proposed restriction as well as alternative restrictions. The FAA reviews airport proposals to ensure compliance with the Part 161 implementing regulations.

For Stage 3 restrictions, ANCA established a considerably higher threshold for approval, limiting such restrictions to instances where either: (1) all operators at the airport consent to Stage 3 restrictions; or (2) the Secretary of Transportation finds, on the basis of substantial evidence, that:

> (A) the restriction is reasonable, nonarbitrary, and nondiscriminatory; (B) the restriction does not create an unreasonable burden on interstate or foreign commerce; (C) the restriction is not inconsistent with maintaining the safe and efficient use of the navigable airspace; (D) the restriction does not conflict with a law or regulation of the United States; (E) an adequate opportunity has been provided for public comment on the restriction; and (F) the restriction does not create an unreasonable burden on the national aviation system.

49 U.S.C. § 47524(c)(2). It should be noted that very few local restrictions on Stage 2 aircraft access have been successfully implemented since the passage of ANCA, and then only after extensive litigation before both the FAA and the U.S. Court of Appeals.[16] No local regulations have been successfully implemented to restrict Stage 3 aircraft.

[16] *City of Naples Airport Authority v. FAA*, 409 F.3d 431 (D.C. Cir. 2005). In January 2001, the City of Naples began enforcing a ban on Stage 2 aircraft following the public notice and comment period required under ANCA. The FAA challenged the ban through enforcement channels, claiming that the economic study required under ANCA was defective. Although the FAA dismissed its challenge after the City supplemented the study, the agency subsequently filed another challenge, seeking to withhold Federal grant money on the grounds that the access restrictions were unreasonable under the Airport and Airway Improvement Act ("AAIA"). (By way of background, the AAIA allows airport proprietors to receive grant funds in return for "grant assurances," including an assurance that "the airport will be available for public use on reasonable conditions and without unjust
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a. Post-ANCA Noise Developments; Other Matters

Since the FAA began regulating aircraft source noise, the number of Americans exposed to significant levels of aircraft noise—defined by the FAA as areas where Day-Night Average Sound level ("DNL") is 65 decibels or higher—has fallen dramatically. For example, in 1976, when the Department of Transportation and FAA issued a Federal noise abatement policy, between six and seven million Americans resided in areas where they were exposed to significant levels of aircraft noise, defined by the FAA as areas in which DNL noise levels equaled or exceeded 65 decibels.[17] By 2000, the number had fallen to 780,000.[18] Both the FAA and GAO have recently estimated the number at between 400,000 and 500,000.[19]

In June 2001, the ICAO approved new Chapter 4 noise standards. In December 2003, the FAA proposed similar Stage 4 noise standards and, in July 2005, implemented a final Stage 4 regulation. Under the new scheme, which became effective on January 1, 2006, all applications for a new type design must meet Stage 4 standards.[20] The scheme does not seek to "phase out" Stage 3 aircraft or otherwise require that such aircraft engines be retroactively modified to meet the new standards.

Notwithstanding the recent Chapter 4/Stage 4 standards, the ability of Federal regulators to significantly reduce human exposure to 65 DNL is limited because neither the ICAO nor FAA standards obligate operators to phase out Stage 3 aircraft. Furthermore, Stage 3 aircraft such as newer A320 family and "next generation" Boeing 737 aircraft already reflect significant airframe and engine manufacturing advances in the area of noise abatement.

Rather, further appreciable reduction in aircraft noise during the short-term may be better achieved through improvements to operational procedures, such as performance based navigation. By way of example, though the combined use of ground-based radio navigation,

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discrimination.") In filing its second complaint, the FAA necessarily found that ANCA had no effect on grant assurance obligations under the AAIA.

On petition for review, the D.C. Circuit found that ANCA was ambiguous on whether the statute superseded AAIA's reasonableness requirement, and that the FAA's interpretation, *i.e.* that ANCA had no effect on grant assurances under the AAIA, was permissible. Nevertheless, the appeals panel concluded that the City's ban on Stage 2 aircraft was reasonable under AAIA, and that the FAA's challenge was unlawful. For a critique of the D.C. Circuit's *City of Naples* decision, see Nellie Strong, "Aviation Law – D.C. Circuit Allows Stage 2 Noise Restriction Yet Defers to FAA's Interpretation of ANCA: City of Naples Airport Authority v. Federal Aviation Administration," 71 J. AIR L. & COMM. 83 (2006) (arguing that the Congress had intended ANCA to supersede AAIA and that the appeals panel erred in deferring to the FAA's interpretation).

[17] 65 Fed. Reg. 43803.

[18] GAO Report, *Aviation and the Environment: Impact of Aviation Noise on Communities for Airport Operations and Future Growth of the National Airspace System* (Oct. 2007), at 5.

[19] *Id.*

[20] The Stage 4 standards are roughly 10 decibels lower on a cumulative basis than the Stage 3 standards.

GPS, and onboard guidance systems, aircraft equipped for Required Navigation Performance ("RNP") can execute continuous decent arrivals ("CDAs"), rather than traditional "step downs" between intermediate flight level operations. The use of RNPs and CDAs has contributed to a demonstrable noise exposure reduction in areas surrounding airports.[21] As such, the continued publication of RNP procedures for airport terminals throughout the U.S., as well as the delivery of new aircraft with RNP guidance systems (and the retrofitting of older aircraft with such systems) may further reduce noise exposure levels.

[21] STATEMENT OF CARL E. BURLESON, *supra* note 8, at Chart 6 (disclosing reduction in noise exposure area following CDA demonstration project at Louisville International Airport).