Regulation of Aircraft Noise at Major Airports: Past, Present, and Future

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I. INTRODUCTION

Aircraft noise at major airports has been a serious problem in the United States for many years. Although there have been numerous attempts to reduce the amount of noise emitted by aircraft and to make the noise more acceptable to airport neighbors, the problem persists. It is becoming worse as the airline industry grows and as the number of airline and other flight operations in the United States increases.

Since the beginning of the problem, legal and regulatory issues have

been important in determining how it is dealt with and why there has not been more success in lessening the problem. It is the purpose of this paper to explain what the noise problem is, who is responsible for it, the solutions available to solve the problem, liability and recovery for noise-related damages, and local government, airport proprietor, and federal regulation of aircraft noise, and to draw some conclusions relative to future government policy on the matter.

II. The Extent of the Aircraft Noise Problem

Among the nuisances and environmental issues associated with transportation operations in the United States, perhaps none has received as much attention or been so emotional as that of aircraft noise at major airports. The problem began to develop in a serious way in the 1960's as jet aircraft replaced piston-engine aircraft and airlines rapidly became primarily jet aircraft operators. At the same time, the number of airline flight operations (a flight operation is one takeoff or one landing) increased. Many aircraft noise battles, involving airport neighbors and airport operators, were fought around the country in the 1960's and 1970's.

Although various steps were taken to somewhat reduce the amount of noise emitted by individual aircraft, federal economic deregulation of air transportation in the late 1970's made the problem worse because it resulted in rapid expansion of the route systems of existing carriers, entry of some new carriers and the number of carriers and flight operations at major airports increased dramatically. At the same time, there was a sharp increase in the amount of passenger and freight traffic carried in the 1970's and 1980's, as seen in Table 1, which also contributed to the increase in the number of flight operations. The total number of passengers, passenger-miles, mail, express, and freight ton-miles, and flight operations of scheduled United States airlines are shown in the table for the years 1969, 1976, and 1986.

The total number of passengers carried by the scheduled airline industry increased by 143.5 percent between 1969 and 1986, the number of passenger-miles increased by 192 percent, and the number of mail, freight, and express ton-miles increased by 92.2 percent. The number of flight operations actually decreased by 10.1 percent between 1969 and 1976, the increased traffic being carried by larger aircraft, thus requiring a smaller number of flight operations. After 1976, however, as deregulation began to take hold and traffic volume increased, the number of scheduled carrier flight operations increased by 33.8 percent to almost thirteen million in 1986. At the Minneapolis-St. Paul International Airport, for example, there was a large increase in the number of airlines serving the airport and the number of passenger airline flight operations per year

TABLE 1
Traffic and Flight Operations of United States Scheduled Airlines*
1969, 1976, and 1986

Year	Passengers (000)	Passenger-Miles (000)	Mail, Express, and Freight Ton-Miles (000)	Flight Operations**
1969	171,898	125,420,120	4,690,355	10,756,686
1976	223,318	178,988,026	6,210,421	9,665,328
1986	418,493	366,283,158	9,017,136	12,930,220

* Includes domestic and international United States scheduled airlines.
** A flight operation is one takeoff or landing.

Source: Air Transport Association.

grew from about 178,000 in 1980 to 283,000 in 1987. Total flight operations of passenger and freight airlines, general aviation, and military aircraft were 374,000 in 1987, 81 percent of which were air carrier operations.[1] The total number of aircraft operated by both scheduled and non-scheduled United States airlines in 1986 was 4,431, 91.7 percent of which were turbine aircraft, almost all of them pure jets as opposed to turboprop aircraft.[2] It can easily be seen why there is a noise problem at major airports.

Complaints about aircraft noise are usually directed at jet aircraft. The main sources of jet aircraft engine noise are the roar of the jet exhaust and the whine of the compressor and fan. The roar of the jet exhaust is of concern primarily during the takeoff phase. The whine of the compressor and fan is of concern primarily during the landing approach, particularly from a point some five miles from touchdown.

III. Measurement of Aircraft Noise

The severity of the noise problem on the ground is determined by the intensity of the sound, the duration of exposure to the sound, and the number of occurrences at different times of day and under various atmospheric conditions. As to the frequency of exposure, four noisy flights per hour over a given location may be acceptable or tolerable but, as the

1. Minneapolis-St. Paul Metropolitan Airports Commission. For a discussion of the airport noise problem of the early 1970's and the case of Minneapolis-St. Paul, see Harper, *The Dilemma of Aircraft Noise at Major Airports*, 10 TRANSP. J. 5 (1971). Some of the material in the early part of this paper is drawn from that article.

2. In addition to airline and military aircraft, there were 210,000 airplanes operated in general aviation in 1986, about 5 percent of which were turbine aircraft. Data from Air Transport Association.

number of such flights increases per hour, the total noise impact increases substantially and rapidly becomes intolerable. Therefore, air traffic volume as well as the kind of aircraft used is an important element in the aircraft noise problem.

There is disagreement as to how much noise is necessary to create a noise problem. Different people have different noise sensitivity and the effects on different people of a given noise level and frequency of noise vary and there is disagreement as to how excessive noise affects human beings and whether or not it can be dangerous to health.[3] For some persons, excessive noise can actually cause measurable medical effects. For others, extreme and frequent noise is no more than a minor irritation.[4]

Sound travels through the air in the form of small waves of tiny air pressure fluctuations to which the ear responds. Although there is no generally accepted definition of what constitutes excessive noise, the most common noise yardstick is the decibel (db) scale which is an expression of the sound pressure that moves the ear.[5] The decibel scale begins with one db, the weakest sound that can be picked up by a normal ear. The scale is expressed in logarithmic form, however, so that ten times the minimum that can be heard is ten db and one thousand trillion the minimum is 150 db. The listener's perception of sound increases on a sharply accelerating scale and the sensation of loudness doubles with each 10 db increase—a 50 db sound is twice as loud as one of 40 db's and four times as loud as one of 30 db's. This means that a 20 db change in aircraft noise from about 110 to 90 would be very noticeable. At the same time, a change in db's of three or four would not be very noticeable.[6]

The "Perceived Noise Decibel" (PNdB) scale, under which aircraft noise is frequently reported, has been widely adopted as the standard

3. Among the medical consequences of excessive noise that have been suggested are contraction of arteries, increase in heart beat, dilation of pupils of the eyes, heart disease, mental illness, stomach ulcers, allergies, enuresis (involuntary urination), spinal meningitis, excessive cholesterol in the arteries, indigestion, loss of equilibrium, impaired vision, nausea, high blood pressure, damage to unborn children, changes in blood chemistry, loss of hearing, extreme exhaustion, impaired sexual ability, weight loss, colitis, and migraine headaches.

4. For a discussion of how noise affects different people, see Kryter, *Evaluation of Psychological Reactions of People to Aircraft Noise*, in Jet Aircraft Noise Panel, *Alleviation of Jet Aircraft Noise Near Airports* (1966) (U.S. Government Printing Office, Washington, D.C.), p. 5. *See also, Note, Jet Noise in Airport Areas: A National Solution Required*, 51 MINN. L. REV. 1087, 1097-1100 (1967); and Frankel, *Regulating Jet Noise from Illinois Airports*, 43 ILL. BUS. REV. 3, 4-6 (1986) (College of Commerce and Business Administration, University of Illinois at Urbana-Champaign).

5. A decibel is one tenth of a "bel," a unit of measurement of sound pressure.

6. A good discussion of noise measurement may be found in U.S. Department of Transportation, *Transportation Noise and Its Control*, (1972) (U.S. Government Printing Office, Washington, D.C.), Appendix A.

measure of the subjective loudness of noise. There is evidence that with aircraft noise below 90 PNdB, there are almost no complaints. Between 90 and 105 PNdB there are some, but not many, complaints. Above 105 PNdB, the volume of complaints increases rapidly with increasing PNdB levels.[7] Many experts believe that 100 PNdB is the maximum noise tolerable because, above that level, hostility to the noise source rises rapidly.[8]

However, as previously noted, the aircraft noise problem increases with the frequency of flight operations and the average level of noise tolerated from each aircraft substantially decreases. Vigorous complaints about noise can increase even if the noise produced per flight operation drops if the number of flight operations increases.

Landings represent the major noise problem for many airports. This is because landing approaches are generally less steep than climbouts after takeoffs and greater land area is exposed to low-altitude noise for a longer period of time.

IV. Responsibility for the Aircraft Noise Problem

The responsibility for causing the aircraft noise problem at public airports rests with airport operators, the Civil Aeronautics Board (CAB), the Federal Aviation Administration (FAA), aircraft and engine manufacturers, airlines and other aircraft operators, local government, real estate developers, and land owners.

A. Airport Operators

The first step toward creating the aircraft noise problem was taken unknowingly by airport operators when they made decisions as to where the major scheduled airline airports were to be located. Many of the major airports in the United States were located long before the jet age and the planners were unable to visualize the noise problem that would eventually develop. Consequently, airport location decisions were not made on the basis of noise pollution considerations of any major degree. A second step in creating the noise problem was the failure of airport operators (and local and state government) to zone the land around major airports to control the use of land to prevent noise-sensitive land users from acquiring such land.

Whatever might have been the airport operator's role in creating the aircraft noise problem, it finds itself today as the chief target of anti-noise groups and the lawsuits involving the noise question usually are filed against the local airport.

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7. Kryter, *supra* note 4, at 5.
8. Minn. L. Rev., *supra* note 4, at 1098 n.59.

B. The Civil Aeronautics Board

The CAB, defunct since January 1985, did not choose to use its authority to grant operating certificates to airline companies to get involved in the noise issue. This was of particular importance in the 1960's when the first and second generations of jet aircraft were introduced to the United States airline fleet. The CAB's role is discussed in a later section of this paper.

C. The Federal Aviation Administration

The FAA, by not using its authority to certify new engines and aircraft in the early years of jet aircraft (1960's) to control noise emitted helped to create the noise problem that exists today. By delaying its meaningful intervention into the issue until 1976, and not taking an aggressive position on the matter since then, the FAA has allowed the noise problem to continue. The role of the FAA is discussed in more detail below.

D. Aircraft and Engine Manufacturers and Airlines

Because the CAB and FAA decided to not play a role in the noise controversy and local government and airport proprietors were limited in what they were willing and able to do, the aircraft and engine manufacturers were left to emphasize cost, speed, and efficiency factors rather than environmental factors when developing new aircraft. The airlines and other aircraft operators had little incentive to insist on quiet aircraft. As a result, they purchased what was available, and what was available was noisy.

One could argue that if the manufacturers and airlines were really interested in the welfare of the public they could have worked on the noise problem without the compulsion of legislation or regulation. The fact is that some of these companies did try to develop quieter aircraft. Others, however, expressed interest in reducing aircraft noise but neglected to do anything because technological change in aircraft engines to reduce noise would be too costly to them. This latter view demonstrates why the failure of the federal government to act on the noise question proved to be so important.

E. Other Contributors to the Aircraft Noise Problem

Most major airports, when originally constructed, were located in sparsely settled areas without close neighbors in any significant number. An opportunity was available to zone the land around most of these airports to prevent land use by noise-sensitive users such as schools, home owners, hospitals, rest homes and churches. The airport operators could have accomplished this zoning by acquiring the land in question and then

restricting its use to non-noise-sensitive uses. As indicated above, this usually was not done so it was then up to local (and state) government to control the use of the land. This also was generally not done and the result was that houses, churches, schools, etc. were allowed to be built right up to the airport fences.

Contributing to the problem were real estate developers who were more interested in the sale of the land than in environmental questions. In addition, no attempt was usually made by them to provide special insulation or other soundproofing for the new buildings near airports. Perhaps it is too much to expect that real estate developers have any responsibility for such environmental concerns.

Lastly, the individual home owner, school district, church congregation, etc. is also at fault for not knowing better than to build or buy in a noise-sensitive area, although real estate developers and agents are partly at fault here, at least in the case of the residential problem, for falsely minimizing the noise problem in their sales messages and showing property only when the "other" runway was being used or on a particularly "quiet" day.

V. Solutions to the Aircraft Noise Problem

A. Noise Reduction Technology

The simplest solution in terms of least disruption of existing ways of doing things would seem to be to make the aircraft quiet by somehow muffling the noise emitted by the jet engines. This would mean that aircraft still to be built would be built with quieter engines. The aircraft now in use would be retrofitted by acoustic treatment of the engine nacelles, by nacelle redesign, by engine modification, or they would be reengined with quieter engines. The obvious difficulties in using a technology approach is the high cost of doing so and the question of whether or not the needed technology is available.

As to the latter point, numerous advances have been made in retrofit technology since the federal government began to impose noise standards on aircraft operators. Retrofit technology of various kinds was used successfully to meet the first set of noise standards established by the FAA (now referred to as Stage II—see discussion below) and such devices to further reduce the noise emitted by Stage II aircraft are becoming available. Aircraft and engine manufacturers have been able to produce new aircraft that meet the FAA's second set of noise standards (Stage III). If there is an economic incentive for the aircraft manufacturing industry to develop noise-reduction devices for existing and new aircraft it will no doubt be done.

Further progress in retrofitting or replacing aircraft to reduce aircraft

noise depends to a great extent on the position the federal government takes with respect to imposing more stringent regulation of aircraft noise and its willingness to play some role in financing compliance. These subjects are discussed later in this paper. Even with added regulation, however, the changeover will take several years to accomplish so that the current noise problem will not be solved for some time.

B. Noise-Abatement Flight Procedures

Certain noise-abatement flight procedures can be followed to reduce the amount and frequency of noise although not eliminating it or even making it completely acceptable. Noise-abatement flight procedures include (1) using "preferred" or "preferential" runways—those that cause the least noise problem and the fewest complaints—whenever wind conditions permit; (2) requiring turns away from noise-sensitive neighborhoods after takeoff and/or sharp cutback in thrust during the climb; (3) requiring the steepest landing glide slopes that are consistent with safe operation to increase the altitude of aircraft over a given location; (4) reduction in gross weight which reduces the amount of power needed; (5) requiring pilots to use low power at low altitudes; and (6) the removal of flight training from noise-problem airports.

Such procedures are the responsibility of the FAA and the airlines and can be encouraged by local airport management as well as by anti-noise groups, property owners, etc. They can and do have some impact on the noise problem but in themselves cannot solve the problem. Airline pilots are not in agreement with some of the procedures because of their safety implications. Such procedures are, of course, not used when weather or other conditions do not permit their safe use.

C. Regulation of Noise by Government and Airport Proprietors

Local government, airport owners, and the federal government have all to some degree been involved in trying to regulate aircraft noise with the objective of reducing its impact on airport neighbors. These are discussed later in this paper.

D. Control of Land Use

A solution is to move the people away from the airport and the noise. For existing airports, this means either zoning of unused land areas to prevent residential and other noise-sensitive uses or purchase of land already occupied by noise-sensitive users and turning the land over to non-sensitive use.

In the case of most major airports it is too late to zone most of the adjacent land area because it is already in use, and re-zoning would be

difficult. However, where some unoccupied land does exist it can be taken over by the airport itself or can be zoned by local government to prevent noise-sensitive use. Unfortunately, local government did not show much interest in this king of zoning until it was too late—the land involved was already occupied by noise-sensitive users.

The other land-use alternative is for the airport operator or the local government to purchase the occupied noise-sensitive land area adjacent to the airport and convert the land to non-sensitive use. This has been done to some degree in Los Angeles, Minneapolis-St. Paul, and several other cities. Unfortunately, the value of the land adjacent to airports is often quite high (some of the country's best residential neighborhoods are involved) and the amount of land involved is large—the noise sensitive area can extend from five to ten miles from the end of a runway and is several thousand feet wide. Consequently, the amount of money needed is great and airport operators and local governments do not have access to those kinds of funds.

In any event, land use control at existing major airports can be accomplished only to a limited degree. Therefore, land-use control can be an important solution primarily at new major airports rather than at existing airports. In selecting a site for a new major airport, care should be taken to consider carefully the noise consequences, to design the airport to minimize the noise problem, to locate the airport where land around it is not yet developed, and to provide for local government or airport operator control over land use around the airport.

E. Move the Airport

A drastic solution to the noise problem that is often advocated by anti-noise groups is to close down the airport and/or move airline traffic to a different location. However, although an eventual long-term solution may be to move the noisy air traffic to a new airport, the investment in major airports is so great that it is unlikely that a decision would be made to close down completely or to bar airline traffic if noise is the only problem. If the airport is obsolete and/or excessively congested, however, then the noise problem can add incentive to move to a new location and can, in fact, help in getting such a decision made. Whatever the condition of the existing airport, the financial and environmental barriers to opening a new airport are so great (nobody wants an airport for a neighbor) that it is not reasonable to expect much activity in this direction. A new major airport has not been opened in the United States since 1974 (Dallas-Fort Worth) in part because of financial and environmental barriers. In addition, even when a decision to move to a new site is made, noise relief is not immediate because it takes seven to ten years to build a new airport from scratch.

F. Other Solutions

Additional solutions that have been offered are appropriate mainly for existing airports. One is to soundproof existing and newly constructed buildings, including underground construction. Another is that shrubbery and trees around buildings can be used to muffle aircraft sound. The construction of sound barriers around airports has also been suggested. All of the above have been tried to a limited degree at some airports. Another proposal is to have the airport purchase the right to make noise—noise easements would be purchased from homeowners. These proposals do not offer solutions to the noise problem but rather are an attempt to make aircraft noise more acceptable.

VI. Liability and Recovery for Damages Related to Aircraft Noise

Many lawsuits have been filed against major public airports by neighboring residents. A common complaint is that aircraft noise has made it difficult to sell their homes and that when they can sell their homes the price is below that which they would get if there were no noise problem. Because of the multitude of factors that determine the value of residential property, including such things as availability of local public transportation, proximity to shopping facilities, accessibility to parks and other recreational facilities, the age and physical characteristics of the house, and distance to schools, it is always difficult to isolate the effects of one factor, such as aircraft noise.[9] Actually, while it is true that a major airport can have a negative effect on residential property in the noise-sensitive area, it can also raise the value of commercial land in that same noise-sensitive area, and substantially raise the value of all real estate that is near the airport but not in the noise-sensitive area.

A. Injunctions

In dealing with lawsuits filed by airport neighbors, all courts agree that some residents aggrieved by substantial noise from nearby public airports should have a legal remedy but that the proper remedy is not an injunction preventing airport operations. This is based on the reasoning that the general social need for public airport operations is a paramount interest. An exception is an early case in which the plaintiff was successful in stopping the construction of a privately owned airport near Cleveland.[10] The remaining possibilities for the unhappy airport neighbor are relief on the basis of trespass, nuisance or inverse condemnation.

9. The effect of aircraft noise on residential property values is discussed in Frankel, *supra* note 4, at 6-7.

10. Swetland v. Curtiss Airports Corp., 41 F.2d 929 (N.D. Ohio 1930).

B. The Trespass Approach

Trespass has not been a satisfactory approach for the airport neighbor. If he or she sues on the basis of flights through the airspace above his or her land, the plaintiff is thwarted by the Congressional doctrine that the landowner does not own the navigable airspace above the property. Under the federal Air Commerce Act of 1926 and succeeding legislation, the United States has "complete and exclusive national sovereignty in the airspace" over the country. "Navigable airspace" is airspace above the minimum safe altitudes of flight prescribed by the FAA. Also, since complaining property owners who reside up to several thousand feet from either side of takeoff or approach paths cannot allege any property rights in these paths, no trespass is committed against them.

C. The Nuisance Approach

The nuisance approach has also usually been unsatisfactory. Property owners have brought many suits against airport operators based upon the nuisance argument. In most situations, public airports are considered to be of sufficient value to the general good to be regarded as legalized or privileged nuisances and this status provides immunity from both injunctions and some or all damage actions. The rights of property owners are deemed to be outweighed by the public interest.[11] The identity of the defendant, a public airport, has a lot to do with this. Such airports are generally created via statutory authorizations. They are publicly owned. The operations of the airlines using the airports are regulated by the federal government. For these reasons jet noise will not generally support a nuisance claim. Legal actions based upon nuisance have usually resulted in the granting of relief only where there was a decrease in the value of the property. The nuisance approach in itself has had little success.

An exception was a combination nuisance-inverse condemnation case in California in which the state supreme court upheld an award of damages to homeowners on the basis of the nuisance caused them by aircraft operations at Los Angeles International Airport in the form of noise, smoke, and vibration. The court ruled that a statutory sanction of an activity such as airport operation does not grant the right to create a nuisance unless the statute involved specifically authorized the creation of the nuisance in question or that such authorization can be plainly implied from the powers expressly conferred by the statute so that it can be stated that the legislature contemplated the doing of the act which causes

11. Virginians for Dulles v. Volpe, 344 F. Supp. 573 (E.D. Vir. 1972), *aff'd in part & rev'd in part*, 541 F.2d 442 (4th Cir. 1976). *See also* Brooks v. Patterson, 31 So. 2d 472 (Fla. 1947) and Loma Portal Civil Club v. American Airlines, Inc., 394 P.2d 548 (Cal. 1964).

injury, i.e., there is an unequivocal legislative intent to sanction a nuisance. In addition, the court said that the Los Angeles airport operator had authority and responsibility to acquire adequate noise easements from neighbors and to institute noise abatement procedures to reduce the negative impact of aircraft operations. Therefore, the argument that, because aviation and noise are necessarily inseparable, governmental approval and encouragement of aviation activity necessarily implies legislative approval of aviation noise which results in interference with neighboring land use, was rejected by the court.[12]

In another California case, the state supreme court stated that airport noise is a classic example of a continuing nuisance, rather than one wherein by one act a permanent injury is done. With a continuing nuisance, successive actions may be brought by those harmed by it with recovery limited each time to actual injury suffered prior to commencement of each action.[13]

D. Inverse Condemnation

The most successful legal approach has been that based on the theory of inverse condemnation or constitutional taking. Under this theory it is claimed that aircraft noise has resulted in the taking of a property right for a public use without paying just compensation and that this violates either the Fourteenth or the Fifth Amendment of the U.S. Constitution or a similar provision in a state constitution. The damages recoverable are limited in such cases to the loss in market value of the plaintiff's property. In the case of *United States v. Causby*,[14] the United States Supreme Court recognized the lack of airspace property rights but held that the flights in question (as low as 67 feet above the property owner's house—noise from military overflights destroyed chicken business) were not within the reasonable airspace because the continuous invasion of the adjacent airspace had affected the use of the surface of the land itself. This decision combined elements of trespass with elements of nuisance and marked the advent of the theory of inverse condemnation.[15]

In *Griggs v. County of Allegheny*[16] the United States Supreme Court

12. Greater Westchester Homeowners Ass'n v. City of Los Angeles, 603 P.2d 1329 (Cal. 1979), *cert. denied*, 449 U.S. 820 (1980). Another case involving both nuisance and inverse condemnation was Luedtke v. County of Milwaukee, 521 F.2d 387 (7th Cir. 1975). *See also* Aaron v. City of Los Angeles, 40 Cal. App. 3d 471, 115 Cal. Rptr. 162 (1974), *cert. denied*, 419 U.S. 1122 (1975).

13. Baker v. Burbank-Glendale-Pasadena Airport, 705 P.2d 866, 870 (Cal. 1985), *cert. denied*, 475 U.S. 1017 (1986).

14. 328 U.S. 256 (1946).

15. See Soenksen, *Airports: Full of Sound and Fury and Conflicting Legal Views*, 12 TRANSP. L.J. 325, 331 (1982).

16. 326 U.S. 84 (1962).

decided that noise from commercial landings and takeoffs depreciated property value. The case also established that neither the airlines nor the federal government are liable but that liability rests with the local airport proprietor which picks the site of the airport. This ruling, which is still applicable, places the financial burden of aircraft noise on the segment of the aviation industry that can do the least about it. It also gave the responsibility for controlling aircraft noise to the proprietor without providing guidance as to what could legally be done in controlling such noise. Airport proprietors and/or neighboring property owners have, without success, in some situations attempted to shift liability for damages to airlines, aircraft manufacturers, and the federal government.[17]

Although many American courts agree that inverse condemnation is an appropriate theory upon which to proceed, they disagree as to whether all residents who are substantially injured should recover or whether a method limiting the number who may recover should be used. In some courts the flights must be directly over the subject property to constitute taking. In others an overflight is not required. In the two cases decided by the United States Supreme Court cited above, overflights were involved.[18] Some state courts have allowed recovery only to those property owners located directly below the flight path. In other state courts all that is necessary is that the flights are close enough, whether or not directly overhead, to interfere substantially with the complainant's use and enjoyment of the property.[19]

There are several unanswered questions associated with inverse condemnation. One is whether a given property owner should be compensated more than once if aircraft noise damage continued for a certain length of time, or does a given damage award cover all future as well as past damage? What if the damage becomes more severe as a result of increased volume and frequency of air traffic?[20] Pursuing relief via the inverse condemnation route is difficult. It is a time consuming and expensive process and it is not easy to prove property value loss. For example,

17. *See* City of Los Angeles v. Japan Air Lines Co., 36 Cal. App. 3d 361, 116 Cal. Rptr. 69 (1974); Luedtke v. County of Milwaukee, *supra* note 12; Aaron v. City of Los Angeles, *supra* note 12; State of Illinois v. Butterfield, 396 F. Supp. 632 (N.D. Ill. 1975); and San Diego Unified Port District v. Superior Court (Britt), 136 Cal. Rptr. 557 (1977), *cert. denied*, 434 U.S. 859 (1977). For discussion of these cases, see Bennett, *Airport Noise Litigation: Case Law Review*, 47 J. AIR L. & COM. 449, 458-464 (1982).

18. *See* Batten v. United States, 306 F.2d 580 (10th Cir. 1962) for a lower federal court decision based on direct overflight.

19. *See*, for example, Thornburg v. Port of Portland, 376 P.2d 100 (Ore. 1962); Martin v. Port of Seattle, 391 P.2d 540 (Wash. 1964), *cert. denied*, 379 U.S. 989 (1964); Alevizos v. Metro. Airports Comm., 216 N.W.2d 651 (Minn. 1974); and Aaron v. City of Los Angeles, *supra* note 12.

20. *See* Baker v. Burbank-Glendale-Pasadena Airport, *supra* note 13 for a discussion of continuing nuisance which might also be applied to inverse condemnation.

in a case in Minnesota, a suit was filed in 1970 as a class action against the Minneapolis-St. Paul Metropolitan Airports Commission on behalf of 27,565 south Minneapolis property owners asking that the court award money to compensate for a loss of property values caused by aircraft noise. The case went to the Minnesota Supreme Court three times including twice when the court ruled that the suit could not be pursued as a class action because individual action would be a more efficient method of seeking relief.[21] In 1979, a Hennepin County court judge ruled that the property owners suffered substantial invasion of their privacy but that they had not proven that their property had lost value. On appeal, the state supreme court in 1982 ruled that the suit should be tried before a jury.[22] The jury trial had not yet been held at the time of this writing.

VII. LOCAL REGULATION OF AIRCRAFT NOISE

The question of whether a *local or state government* can regulate aircraft noise at an airport has arisen many times. In addition, because airports have been subjected to numerous lawsuits and have often been held to be responsible and liable for damages caused by such noise, the issue of regulation of aircraft noise by *airport operators* (who are often also local governments) becomes relevant. The local government issue is a matter of the right of a local or state *government* to regulate via its police power. The airport operator issue is a matter of the right of the owner or the *proprietor* of an airport to regulate.

A. REGULATION BY LOCAL GOVERNMENT

As to the proper role of local government in regulating aircraft noise, some communities have attempted to deal with the aircraft noise problem by passing laws that limit or prohibit flights over a given area or limit or prohibit flights below a certain altitude over a given area or prohibit flights at certain times of the day or night. Sometimes maximum noise levels permitted have been established. Courts have found most of the local ordinances to be unenforceable, however, on the ground either that the regulation of airspace has been "preempted" by the federal Congress under the federal constitution and/or that the local regulation is in conflict with federal law or regulation.[23]

21. Alevizos v. Metro. Airports Comm., *supra*, note 19 and Ario v. Metro. Airports Comm., 367 N.W.2d 509 (Minn. 1985).

22. Alevizos v. Metro. Airports Comm., 317 N.W.2d 352 (Minn. 1982).

23. Examples are Allegheny Airlines v. City of Cedarhurst, 238 F.2d 812 (2d Cir. 1956); American Airlines v. City of Audubon Park, 407 F.2d 1306 (6th Cir. 1969); and American Airlines, Port of New York v. Town of Hempstead, 398 F.2d 369 (2d Cir. 1968), *cert. denied*, 393 U.S. 1017 (1969).

In the *Burbank*[24] case in 1973, the owner (Lockheed) of a private airport opposed a city ordinance that prohibited takeoffs of jet aircraft between the hours of 11:00 p.m. and 7:00 a.m. The United States Supreme Court viewed the city's action as an attempt to exercise its police power and applied the preemption doctrine and disallowed the regulation but stated that the court did not consider what limits, if any, apply if a city owns an airport and acts as the proprietor of the airport, rather than as a government, to regulate aircraft noise. This left open the question as to whether and to what extent an airport owner can regulate aircraft noise.[25]

B. Regulation by Airport Proprietors

Since the *Burbank* case, and because the airport proprietor is liable for damages caused by aircraft noise, the courts have recognized the right of the proprietor to protect itself from such damages by restricting the use of the airport so long as such actions are justified by the need to respond to a demonstrable noise problem. The question of the degree to which regulatory power can be exercised by airport owners has been decided on a case by case basis, with no general rule applicable to all situations. The question is to what degree the regulation has been preempted by the federal government, is in conflict with federal law or regulations, burdens or interferes with interstate commerce, or is discriminatory in its effects. Court decisions are influenced by the fact that federal airport grant agreements require the airport to be open to all kinds and classes of aeronautical users on fair and reasonable terms and without unjust discrimination.[26]

In the *Air Transp. Assoc. of Am. v. J.R. Crotti,*[27] a federal district court reviewed a 1970 California law[28] and its implementing regulations that required the California Department of Aeronautics to set noise regulations for the operation of all aircraft at all airports in California, including both private and government-owned airports, except those airports operated by the federal government. The counties where the airports are located were made responsible for enforcing the noise regulations adopted by the Department. The airports were to be responsible for monitoring and measuring noise emissions. Community Noise Equivalent Levels would establish maximum levels of airport noise around residential com-

24. City of Burbank v. Lockheed Air Terminal, 411 U.S. 624 (1973).

25. For a discussion of the role of local government and the airport proprietor in regulating aircraft noise see Muss, *Aircraft Noise: Federal Pre-Emption of Local Control, Concorde and Other Federal Cases*, 43 J. Air L. & Com., 753 (1977).

26. 49 U.S.C. 2210(a) (1982). *See* E. Ellett, *The National Air Transportation System: Design by City Hall?* 53 J. Air L. & Com. 1, 7 (1987).

27. 389 F. Supp. 58 (N.D. Cal. 1975).

28. Cal. Pub. Util. Code, Sec. 21669 to 21669.4.

munities. Single Event Noise Exposure Levels would establish maximum noise emission levels for an individual aircraft directly in flight.

In its opinion the court discussed the role of the proprietor in regulation of aircraft noise, saying that the proprietor of the airport is responsible for the consequences of the airport's operation (liable to be sued under the *Griggs* decision) and, thus, has the right to determine the kind of air service to be provided as well as the kind of aircraft to use the facility. The responsibility includes proprietors who are also government agencies. The court then ruled that the state's Community Noise Levels regulations were constitutional because they did not at that point attempt to regulate aircraft in flight, which is preempted by the federal government.[29] However, the Single Event regulations were found to be unconstitutional because they would prescribe noise levels for individual aircraft in direct flight and were an unlawful exercise of police power into the exclusive federal domain of control over aircraft flights in interstate commerce. Thus, the preemption doctrine was applied. Although the court recognized the difference between government as a regulator of aircraft noise and as an airport proprietor, and the court recognized the right of the state and airport proprietors to impose Community Noise Levels, the court treated the Single Event regulation as a government regulation and not a proprietor regulation and ruled that the governmental police power was being abused.

In 1976 in *Nat'l Aviation v. City of Hayward*[30] a federal district court upheld a regulation almost identical to the ordinance in Burbank. Because the FAA had not yet exercised the power to establish curfews, it had not preempted the regulation. The interference with interstate commerce would not be excessive and the regulation was enacted by the city in its role as the proprietor of the airport, not as part of its police power as a municipality.

In the mid 1970's, the controversy over permitting the supersonic transport Concorde to land at John F. Kennedy Airport (Kennedy) in New York involved the question of proprietary control over access to the airport. The initial decision made by a federal district court was that the ban of the Concorde for noise reasons was prohibited because the regulation of aircraft in flight was preempted by the federal government.[31] Indeed, U.S. Secretary of Transportation, William T. Coleman, Jr., in February 1976, had already authorized the Concorde to land at New York and Washington, D.C. in a sixteen month demonstration period. The district court decision was reversed and remanded by a federal court of appeals

29. No airports had yet tried to impose a community noise level.

30. 418 F. Supp. 417 (N.D. Cal. 1976).

31. British Airways v. Port Authority of N.Y. & N.J., 431 F. Supp. 1216 (S.D. N.Y. 1977).

and the Port Authority (the proprietor) was given an opportunity to establish noise rules equally applicable to all aircraft.[32] However, the Port Authority did not do so and the district court again entered a judgment against the Port Authority and fixed Kennedy's long-standing noise limitation of 112 PNdB (a "voluntary" limit in that no penalties were incurred for non-compliance) as the only possible standard against which the Authority could legally measure permissible noise of supersonic aircraft.[33] The Port Authority had refused to set any specific standard for the Concorde to meet—the airplane would have met the 112 PNdB limit that already applied at the airport but the Authority had banned the Concorde anyway. Next, the appeals court authorized the Authority to adopt new, uniform, and reasonable noise standards in the future if it determined that the long-standing noise limitation was inadequate. The court enjoined further prohibition of Concorde operations at Kennedy until the Port Authority promulgated a reasonable, nonarbitrary, and nondiscriminatory noise regulation that all aircraft are afforded a reasonable opportunity to meet.[34] The Port Authority did not establish the new standards asked for by the court so that the prohibition of its ban of the Concorde remained in force and the Concorde was allowed to serve Kennedy beginning in the fall of 1977.[35]

The federal government at the time made it clear that, although it opposed the local airport's ban on the Concorde, it did not want to try to preempt the airport operator's right to regulate noise. This point was apparently made to emphasize the government's position that it did not want *Griggs* reversed as to the issue of federal liability. A finding that the federal government had completely preempted the aircraft noise field would reverse *Griggs* and make the federal government liable for all inverse condemnation "takings" rather than the proprietor which owns and operates the airport.[36]

In 1981, the Ninth Circuit heard a case involving a general aviation airport owned by the city of Santa Monica, California. The court upheld a United States District Court decision and ruled that a city-owner of an airport can impose reasonable noise control, including a maximum single-event noise exposure level of 100 db, a night curfew on takeoffs and landings, a weekend and holiday ban on practice operations, and a prohibition of helicopter flight training. The court said that Santa Monica should

32. British Airways v. Port Authority of N.Y. & N.J., 558 F.2d 75 (2d Cir. 1977).

33. British Airways v. Port Authority of N.Y. & N.J., 437 F. Supp. 804 (S.D. N.Y. 1977).

34. British Airways v. Port Authority of N.Y. & N.J., 564 F.2d 1002 (2d Cir. 1977).

35. For discussions of this case *see* Donin, *British Airways v. Port Authority: Its Impact on Aircraft Noise Regulation*, 43 J. AIR L. & COM. 726 (1977) and Wetmore, *Concorde JFK Service to Begin Nov. 22*, AVIATION WEEK & SPACE TECH., Oct. 24, 1977, at 30.

36. Soensken, *supra* note 15, at 341.

be allowed to enact noise ordinances under the municipal-proprietor exemption if it had a rational belief that the ordinances would reduce the possibility of liability or enhance the quality of the city's human environment. Contrary to the *Crotti* decision, the court upheld the single-event regulation saying that it had not been preempted by the federal government because it was not regulation of airspace or flight and that it did not amount to a substantial burden on interstate commerce. The court decided also that the single-event regulation would not cause pilots to engage in unsafe practices in order to avoid exceeding the 100 db level and, even if it did, the federal government could prevent safety violations via its power to regulate safety. Further, the court said that, although there was some effect of the set of regulations on interstate commerce, it was indirect and not substantial. However, the city-owner's blanket ban of all jet aircraft from the airport was ruled discriminatory and an impermissible burden on interstate commerce because some excluded jets were more quiet than some permitted propeller aircraft.[37]

The *Santa Monica* case illustrates the uneven authority of airport proprietors in the regulation of aircraft noise and really does not clarify the role of the proprietor. The single-event noise limit and night curfew were found to be acceptable by the court but, had the airport been an airline airport and not a general aviation airport, the court may have found an unacceptable burden on interstate commerce. The court allowed a single-event noise limit to be imposed but also said that the federal government could override such noise limit if necessary to provide air safety. Finally, the court invalidated Santa Monica's attempt to ban all jet aircraft on the ground that it would be discriminatory and an undue burden on interstate commerce. It would be difficult to draw definite conclusions as to what this decision means relative to the authority of major airport proprietors to regulate aircraft noise.

An interesting aspect of the case was the fact that the federal government generally sided with the airport proprietor. It followed its usual policy of discouraging any court ruling that would bar the proprietor from regulating aircraft noise on the ground that it is exclusively a federal government responsibility. Otherwise the federal government would be liable for damages in suits brought by property owners claiming loss of property value.

In the *Global* case,[38] several airlines sought to prevent the implementation of an "interim" rule of the Port Authority of New York and New Jersey that limited the proportion of total flight operations of Stage I air-

37. Santa Monica Airport Association v. City of San Monica, 481 F. Supp. 927 (C.D. Cal. 1979), *aff'd*, 659 F.2d 100 (9th Cir. 1981).

38. Global Int'l Airways Corp. v. Port Authority of N.Y. & N.J., 727 F.2d 246 (2d Cir. 1984) and 731 F.2d 127 (2d Cir. 1984).

craft (aircraft that did not comply with the initial FAA noise rules) at the Authority's airports at a time when the FAA had required a *gradual* phasing out over time of Stage I aircraft that had not yet taken full effect. By limiting the proportion of flight operations of Stage I aircraft, the local rule required stricter standards than did the federal rule. A federal Court of Appeals found that the local rule was not preempted by the federal government and did not conflict with or present an obstacle to the federal noise control program. The reasoning was that the Port Authority rule restricted the cumulative number of flight operations while the federal rules dealt with the composition of the airline fleet and the local rule did not necessarily cause a change in fleet composition. Only an airline-by-airline study could show the effect of the Port Authority rule on the fleet composition of each carrier. The decision reaffirmed the right of airport proprietors to establish requirements as to the level of permissible noise created by aircraft using their airports.

In another New York case, the same Stage I rule was involved. The plaintiff air carrier asked for an exemption from the rule and argued that the rule caused an undue burden because it would alter the carrier's market and cause economic harm. A federal district court decided that the rule was not preempted by the federal government and that the burden on interstate commerce was only incidental because other carriers could provide the service in question and at the same time comply with the rule. And, since the rule was consistent with federal noise policy, it was not subject to the Commerce Clause even if it did amount to more than an incidental effect on interstate commerce. The court also ruled that the refusal to grant an exemption was not done in a discriminatory manner—only one exemption had been given to a carrier under highly specialized circumstances.[39]

Finally, since the FAA continues to rely on noise rules it prescribed in the 1970's, a situation is developing where an airport proprietor is attempting to take the lead in control of aircraft noise. In 1988, the San Francisco Airport Commission adopted a ban on night flights at San Francisco International Airport to begin in January 1989. Stage II aircraft (those meeting the first noise standards prescribed by the FAA in 1969) would be banned between 1:00 a.m. and 6:00 a.m. with the hours of the ban extended each year through January 1993. In addition, by January 1, 1989, one-fourth of all flights at the airport were to be made with Stage III (the most stringent standards required by the FAA) aircraft, rising to 50 percent on January 1, 1994 and 75 percent on January 1, 1999. Further, the Commission was to set, by January 1992, a time limit for the phase-

39. Arrow Air, Inc. v. Port Authority of N.Y. & N.J., 602 F. Supp. 314 (S.D.N.Y. 1985).

out of all Stage II aircraft using the airport.[40] The proposal is an indication of the frustration felt by airport proprietors with what they believe is a lack of sufficient federal action on the subject. If allowed to stand, regulation such as that proposed in San Francisco will force the noisy aircraft to other airports, shifting the noise problem elsewhere. At the time of this writing, the FAA had not as yet officially reacted to the plan. Its reaction is likely to be negative.

If the FAA chooses to challenge a restriction such as the one in San Francisco, it has two options available. One is to initiate or support a direct challenge in court, requesting that the court enjoin implementation of the restriction. The second option is to decline to enter into new grant agreements with the airport and/or to withhold funds payable under any existing grant agreements until the proprietor modifies or eliminates the restriction to suit the FAA. At major airports there can be airport user opposition as well as FAA opposition, the user opposition mainly coming from airline companies with general aviation interests playing a minor role. At airports that are primarily for general aviation use, however, general aviation users can play an active role.

C. Conclusion on Local Regulation of Aircraft Noise

Although the federal government has sufficient power under the federal Constitution to take over regulation of airport noise at the local level, it has chosen to share responsibility for noise control with local authorities.[41] The federal government has not prohibited proprietor regulation or preempted the entire area of aircraft noise control because to do so would make it liable for any "takings" that occur under inverse condemnation.[42]

The partial role that the federal government has chosen to play has resulted in conflict and uncertainty regarding the role of airport proprietors in regulating aircraft noise, partly because the federal government has not provided sufficient guidance in the area. Because of the lack of federal direction, the courts have become the rulemakers to determine, on a case-by-case basis, how close the local restrictions come to encroaching upon an area historically perceived to be federally preempted[43] or otherwise invalid.

It is clear that local *government* regulation under their police power is

40. *S.F. to Curtail Flights of 'Stage 2' Aircraft*, Traffic World, Feb. 1, 1988, at 29.

41. For a discussion of this *See* Bennett, *supra* note 17, at 452-53, and Blackman & Freeman, *The Environmental Consequences of Municipal Airports: A Subject of Federal Mandate?* 53 J. Air L. Com. 375, 381-89 (1988).

42. This is discussed in Schlesinger, *Airport Noise: The Proprietor's Dilemma*, 16 Transp. L.J. 333, 334-35 (1988).

43. Bennett, *supra* note 17, at 489.

not possible because of the preemption, conflict with federal regulation, and interstate commerce doctrines. This makes some sense because if the legality of local ordinances were upheld a patchwork of conflicting regulations could be imposed around the country which aircraft operators would have difficulty complying with, perhaps seriously disrupting air traffic and having serious economic and social consequences for the communities involved. The worst case would probably be where a given airport is subjected to the inconsistent regulations of several different neighboring communities that it serves.

On the other hand, court decisions to date seem to allow airport *proprietors* to engage in some regulation of noise, provided it is not an action preempted by federal law or regulation, does not conflict with federal regulation, does not result in an unacceptable burden on interstate commerce, and is non-discriminatory.

However, the airport proprietor is caught in the middle between those who want to maintain a high level of aircraft operations because of convenience and economic and social benefits to the local community and those who want to lower the level of operations to reduce aircraft noise. At the same time, as we have seen, the proprietor is limited as to the types of restrictions it can impose, and yet it is liable for any damages caused by noise.[44] As stated by one author,

> ". . . the law remains in the same ambivalent and somewhat contradictory state; airport proprietors are at once told that their noise abatement authority has not been preempted, and at the same time warned to tread delicately so that their standards and procedures do not create an actual conflict with FAA regulation in the . . . noise control field, are not unreasonable or unjustly discriminatory, and do not impose an undue burden on interstate or foreign commerce."[45]

The problem created by this is that it is unclear to what degree airport owners can really regulate aircraft noise but, even in the best case, their power is very limited because of the obstacles they face. Each situation must be examined separately to determine whether the regulation is reasonable, not an interference with federal regulation, not an unlawful burden on interstate commerce, and non-discriminatory. The failure of the federal government to take the lead has left the burden of defining what airport operators can do to control aircraft noise to the courts. Because airport owners are unsure of their jurisdiction and are concerned about lawsuits on behalf of the federal government and loss of federal funds, their tendency is to move carefully in regulating aircraft noise and, where they do try to regulate, the impact of such regulation on the amount of

44. *See* Ellett, *supra* note 26, at 14-18 for a discussion of these issues and how airport proprietors view their role.

45. Donin, *supra* note 35, at 726.

noise is, by necessity to avoid being found unlawful, very limited.[46]

It seems reasonable to conclude that the area of regulation of aircraft noise is in desperate need of a national system of uniform regulation.

D. Kinds of Regulatory Actions Taken by Airport Operators

Airport proprietors are the chief targets of anti-noise groups and, as noted above, the lawsuits involving the noise question are filed against the local airport. However, they cannot solve the noise problem themselves because much of the problem is beyond their control. Airport operators do not decide what kinds of aircraft will be purchased by airlines, the number of airlines that will be authorized to serve a given airport (although airport operators historically have encouraged additional service to their airports), the flight procedures followed by the airlines and the FAA, or, in many cases, the use of land around airports. Operators do not have full control even over the configuration of their own airports. Runway layout is determined primarily by the direction of the prevailing winds.

The previous discussion has indicated the difficult legal situation that airport proprietors find themselves in when regulating aircraft noise. A principal area of control that the airport operator does have is over the procedures followed by the airlines and others in operating their aircraft when on the ground. Unfortunately, regulation of ground operations can have only a limited impact on the total noise problem.

Despite these difficulties, some airport owners have been active in regulating noise and have had some degree of success. The kinds of things done include: setting noise standards, both overall standards and those that apply to individual flight operations; banning or limiting flights at certain hours; regulating ground operations to reduce the amount of noise produced; banning or limiting training flights by aircraft operators; barring certain aircraft from using an airport; limiting growth in the total number of flights by a specific aircraft operator and/or requiring that an increase be accomplished only with a certain kind of aircraft; banning certain noisy aircraft entirely; requiring new airlines serving an airport to meet certain noise standards; and requiring gradual phase out of noisy aircraft. These measures must not be deemed to have been preempted by the federal government, must not be in conflict with federal regulations, must not cause an undue burden on interstate commerce, and must not be discriminatory in their effect on different aircraft operators in order to avoid

46. However, according to one author, the cumulation of independently derived and uncoordinated airport access and aircraft use restrictions inevitably will cause the national air transportation system to become so inefficient and costly to operate that it will cease to exist as we know it today. *See* Ellett, *supra* note 26, at 21. This argument is denied in Blackman and Freeman, *supra* note 41.

legal difficulty. In some cases, as we have seen, the courts have ruled against the proprietors' regulations, sometimes at the request of the FAA. In other situations, the federal government via the FAA has decided to let a questionable regulation stand in order to avoid "taking over" responsibility for noise regulation and the resulting liability for damages caused by noise. In still other cases, the federal government has not yet decided what to do.

A new development in proprietor regulation of aircraft noise has been the use of "noise budgets." A noise budget establishes a maximum amount of total aircraft noise that is allowed at an airport and each airline is assigned a share of the total budget and that carrier is not to exceed the amount of noise allocated to it. Some form of this concept has been adopted at Denver[47] (required of the carriers), Boston (required), and at Minneapolis-St. Paul[48] (voluntary). Success in reducing overall noise has been reported at Denver[49] and Minneapolis-St. Paul.[50] At the time of this writing, the FAA had not yet interfered with these programs.

VIII. Federal Regulation of Aircraft Noise

A. *Civil Aeronautics Board*

Until January 1985, the CAB was responsible for carrying out federal economic regulation of air transportation, which included controlling entry into the industry by for-hire air carriers. Although the CAB could attach terms, conditions, and limitations that "the public interest may require" to the certificates of public convenience and necessity it issued, the CAB chose not to do so in terms of noise abatement. The CAB did not believe that economic regulation included regulation of noise produced by the airlines certificated by the CAB and that aircraft noise had to do mainly with the character of the aircraft, an FAA problem, rather than with whether or not a given airline should serve a given point. This was despite the fact that, by having control over the number of *air carriers* serving an airport, the CAB also had control over the number of *flights* in and out of a given airport because the more carriers that serve a given point, the more flights there will be.[51] In any event, the refusal of the CAB to participate in regulation of aircraft noise left the problem to the other federal agency concerned with aviation, the FAA.

47. *See FAA Assessing Impact of Regulation Setting Airline Noise Budget at Denver's Stapleton Airport*, Aviation Week & Space Tech., Mar. 30, 1987, at 33 and Schlesinger, *supra* note 42, at 339-42.

48. *See* Schlesinger, *id.*

49. *Aircraft Noise Limitation Program*, Aviation Week & Space Tech., Mar. 7, 1988, at 65.

50. Minneapolis-St. Paul Metropolitan Airports Commission, *supra* note 1.

51. The CAB did not, however, ever regulate the number of flights directly.

B. Federal Aviation Administration

1. Certification Authority Prior to 1968

As one of its responsibilities under the Federal Aviation Act of 1958, the FAA has the authority to issue "type" certificates for aircraft, aircraft engines, and propellers if it is found that such aircraft, aircraft engine, or propeller is of proper design, material, specification, construction, and performance for safe operation. The FAA may also prescribe in the certificates issued any terms, conditions, and limitations as are required in the interest of safety.[52] The FAA also has the authority to certify the airworthiness of aircraft. Such certificate shall be issued by the FAA if the aircraft conforms to the type certificate therefor and the aircraft is in condition for safe operation. The FAA may also prescribe any terms, conditions, and limitations as are required in the interest of safety.[53]

It is clear that the Federal Aviation Act of 1958 (Act) empowers the FAA to determine which aircraft and aircraft engines shall be permitted to be used in the United States. The objective of such control is safety. As the noise problem developed in the 1950's and 1960's, the FAA believed that aircraft noise was not a safety factor and, therefore, it was not authorized under the Act to accept or reject aircraft and aircraft engines on the basis of noise considerations. Consequently, until 1969, the noise factor was not part of FAA deliberations on any jet aircraft or engine that was put into service. It preferred to handle the noise problem through voluntary cooperation among the aircraft and engine manufacturing industry, the airlines, and airport operators, and by conducting research. In 1967 the FAA created the Office of Noise Abatement to handle its noise-abatement program. The Office was to design new noise-abatement flight procedures that would reduce the noise impact on surrounding communities.

This means that an important method of controlling aircraft noise was not used.[54] If the FAA could have and would have used its certification power to require that aircraft and engines be relatively quiet, the aircraft and engine manufacturing industry and the airlines would have had incentive to try to produce quieter aircraft than existed in the 1960's and 1970's. In the absence of such control by the FAA, however, engines were designed and built on the basis of efficiency and economy with no important consideration of the noise problems they would bring about.

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52. 49 U.S.C. § 1423(a) (1982).

53. 49 U.S.C. § 1423(c) (1982).

54. Federal officials, including those at the CAB and FAA, had been aware of the seriousness of the aircraft noise problem for many years. They received a warning in the President's Airport Commission Report (Doolittle Report) of 1952 entitled *The Airport and Its Neighbors* (U.S. Gov't Printing Office, Washington, D.C.). However, most government officials did not show much interest in the subject until the late 1960's. *See* Sherrill, *The Jet Noise is Getting Awful*, N. Y. Times Mag., Jan. 14, 1968.

A question is whether the FAA had the power to consider the noise factor in its certification process. It is clear that the emphasis in the certification section of the Federal Aviation Act was on safety and not on nuisance factors such as noise. However, if there had been a genuine interest in the noise problem on the part of the FAA, that agency might have at least tried to construe its powers to include noise abatement. The certification section of the Act could possibly have been interpreted to include noise as a certification factor since noisy aircraft lead to the use of noise-abatement flight procedures such as steeper glide paths on landings, sharp turns on takeoffs, and using crosswind runways on occasion, that many airline pilots claim are unsafe procedures. Therefore, the use of noise as a certification factor could result in elimination of "unsafe" noise-abatement procedures and hence be interpreted to be in the interest of safety and thus a valid exercise of the powers given to the FAA under the certification provision of the Act.

Even if the FAA did not wish to use the certification section of the Act, it might have recognized that the part of the Act that deals with the general powers and duties of the FAA specifically states that the FAA is authorized and directed to prescribe air traffic rules and regulations for various purposes including the protection of persons and property on the ground.[55] "Protection of persons and property on the ground" might be interpreted to mean protection from excessive noise. Thus, the FAA may have been able to use this power to try to do something about aircraft noise when exercising its certification power.

2. *LEGISLATION OF 1968*

The FAA was brought in as a direct participant in the noise regulation issue when Congress, in 1968, to a great extent as a result of efforts by a study group established by President Lyndon B. Johnson,[56] enacted into law an amendment to the 1958 Federal Aviation Act that specifically gave to the FAA the authority to consider noise as a certification factor.[57] The law required the FAA to prescribe and amend standards for the measurement of aircraft noise and prescribe and amend such rules that it may find necessary to provide for the control and abatement of aircraft noise. The law specifically authorized the FAA to use noise reduction as a criterion for issuance and revocation of certificates relating to aircraft. There is a requirement that the FAA weigh any proposed regulation on three main counts. These are (1) whether it is technically practicable, (2) whether it

55. 49 U.S.C. § 1348(c).

56. *See* President L. Johnson, *Message on Transportation to Congress* (Mar. 2, 1966) (U.S. Gov't Printing Office, Washington, D.C.). *See* 112 CONG. REC. S4629 (daily ed. March 7, 1966).

57. An Act to Amend the Federal Aviation Act of 1958 to Require Aircraft Noise Abatement Regulation and for Other Purposes, Pub. L. No. 90-411, July 21, 1968, 49 U.S.C. § 1431 (1982).

is consistent with the highest degree of safety, and (3) whether it is "economically reasonable."[58]

The general exemption authority of the FAA applies to noise regulation, meaning that the FAA may grant exemption from any rule or regulation prescribed under the Federal Aviation Act if it would be in the public interest.[59] Since 1972, the Federal Aviation Act has provided that the FAA may not grant any exemption from noise regulations established unless the FAA first consults with the federal Environmental Protection Agency (EPA).[60]

3. *FAA Regulations of 1969*

In November 1969, the FAA issued its first regulations under its new authority, referred to as Federal Aviation Regulations, Part 36—NOISE STANDARDS: AIRCRAFT TYPE CERTIFICATION,[61] commonly known as FAR 36. The regulations required that applicants for new type certificates must show compliance with the noise standards established in the new regulations. As to previously certificated aircraft, aircraft with high bypass ratio engines[62] and for which application was made prior to January 1, 1967, were to meet the new noise standards *or* show that the noise generated was reduced to the lowest levels that were economically reasonable, technologically practicable, and appropriate to the particular type design. For aircraft with high bypass ratio engines for which application was made on or after January 1, 1967, it was to be shown that the noise levels produced are no greater than the standards set forth in the ruling. These provisions applied to the wide-bodied jets being developed at the time—the Boeing 747, Douglas DC-10 and Lockheed L-1011. However, the regulations did not apply to the first version of the Boeing 747 because the airplane was already in production at the time. The Boeing 747 only had to meet the above-stated provision requiring that its noise output be reduced to the lowest levels that were "economically reasonable, technologically practicable, and appropriate to the particular type of de-

58. 49 U.S.C. § 1431(d) (1982). *See Aircraft Noise Abatement Bill Awaits LBJ Signature: 'Retrofit' to be Required*, TRAFFIC WORLD, July 20, 1968, at 84.

59. 49 U.S.C. § 1421(c) (1982).

60. 49 U.S.C. § 1431(b) (1982).

61. *Adoption of Noise Type Certification Standards and Procedures*, 34 Fed. Reg. 18,355 (1969) (to be codified at various sections of 14 C.F.R. §§ 21 & 36).

62. Bypass ratio has to do with the flow of air through a jet engine. A bypass ratio of 2 means that, of total entering airflow, twice as much air discharges through the fan duct as through the core engine. The higher the bypass ratio, the less noise will be produced. Some aircraft engines being developed in the late 1980's for use in the future have extremely high bypass ratios and are referred to as "ultrahigh bypass ratio engines." In addition to less noisy engines, newer aircraft also emit less noise because of a steeper takeoff angle.

sign." However, later versions of the 747 were required to comply with the new noise standards.

For aircraft that did not have high bypass ratio engines, i.e., the Boeing 707, 720, 727, and 737, Douglas DC-9, General Dynamics Convair-990, and British Aircraft Corporation BAC 111, for which application was made before December 1, 1969, it was to be shown that the lowest noise levels reasonably obtainable were achieved. For those for which application was made on or after December 1, 1969, it was to be shown that the noise levels did not exceed the standards set forth in the new regulations.

This meant that all previously certified and pre-existing aircraft were exempt from the new rules and that they applied only to the new wide-bodied jets for which certificate application had been made on or after January 1, 1967. This was a primary reason why the new rules were found to be generally disappointing to anti-noise groups.

Depending upon the weight of the aircraft, a maximum of 93 to 108 "Effective Perceived Noise Decibels" (EPNdB)[63] were to be allowed at specific takeoff and approach path and sideline points where noise measurements were to be taken (93 to 108 on takeoffs and 102 to 108 on approaches). The noise measurement point for takeoffs was to be 3.5 nautical miles from the start of the takeoff roll on the extended centerline of the runway. For approaches, the measuring point was to be one nautical mile from the threshold on the extended centerline of the runway. The sideline points were to be 0.25 nautical miles from the extended center line of the runway for aircraft with three or less engines, and 0.35 nautical miles for aircraft with four engines. In 1978, the FAA modified the noise measurement point requirements by changing the distances slightly. Thus, for takeoffs the previous 3.5 nautical miles distance from the start of the roll was increased by 59 feet to 21,325 feet (6,500 meters). For approaches, the one nautical mile distance from the threshold was increased by 486 feet to 6,562 feet (2,000 meters). The 0.25 sideline point distance from the extended center line of the runway was decreased by 43 feet to 1,476 feet (450 meters). The 0.35 distance was not changed.[64]

The 1969 ruling provided that, for the takeoff runway centerline measuring point, the maximum allowed noise level was 108 EPNdB for maximum weights of 600,000 pounds or more, less 5 EPNdB per halving of the 600,000 pound maximum weight down to 93 EPNdB for maximum weights of 75,000 pounds and under. For the approach centerline measuring point and for sideline points for both approaches and takeoffs, the

63. EPNdB is a computed value taking into account the actual sound pressure level on the human ear, plus the duration of the noise, and the pure tones, including particularly annoying sounds, such as the screeching noises jet engines make.

64. *Noise Limits and Acoustical Change Requirements for Subsonic Transport Category Large Airplanes and Turbojet Powered Airplanes*, 43 Fed. Reg. 8,722 (1978).

noise levels were not to exceed 108 EPNdB for maximum weights of 600,000 pounds or more, less 2 EPNdB per halving of the 600,000 pound maximum weight down to 102 EPNdB for maximum weights of 75,000 pounds or under.

Since noise generation doubles with each additional 10 EPNdB, the regulations could reduce the noise generated by one-half the noise level produced by the earliest four-engine narrow bodied aircraft of 110 to 120 EPNdB at takeoff and landing runway centerline measuring points. A lesser or no reduction would occur with the newer jet aircraft then in operation.[65] However, because the regulations did not apply to aircraft already in service (there was no retrofit requirement), there was no immediate noise reduction as a result of the FAA rules. A major barrier to the FAA going any farther than it did was the fact that the FAA must weigh any noise control requirement on the basis of whether it will be "economically reasonable." This factor had a lot to do with exempting the 747 from the rules and the unwillingness to require retrofitting of narrow-bodied aircraft since the cost of doing so would be quite high.

The new regulations were criticized by anti-noise interests because they did not apply to all aircraft, they did not require the development of new noise reduction technology, and their effect could be counteracted by the increase in airline traffic and flight operations that was anticipated. At the same time, there was erroneous optimism on the part of some experts based on the fact that the newly introduced wide-bodied aircraft were quieter than their predecessors and the expectation that their growing use would solve the noise problem.[66]

4. *Role of the Environmental Protection Agency*

Meanwhile, the FAA discussed various proposed changes in the rules but no action was actually taken. In the Noise Control Act of 1972,[67] Congress brought the EPA into the aircraft noise controversy, apparently in response to "foot dragging" by the FAA.[68] Although the Act required the FAA to consult with the EPA before establishing noise regulations, the role of the EPA turned out to be minimal. The Act instructed the EPA to conduct a nine-month study of the adequacy of FAA noise regulations and to recommend noise control rules to the FAA. However, the FAA was to have the right to decide to accept or reject the recommendations. An

65. *See* U.S. Department of Transportation, *Transportation Noise and Its Control* (1972) (U.S. Government Printing Office, Washington, D.C.), at 3-10.

66. *See* Vittek, J., *Airport Noise Control—Can Communities Live Without It? Can Airlines Live With It?*, 38 J. Air. L. & Com. 473, 517 (1972).

67. Pub. L. No. 92-574, 49 U.S.C. § 1431 (1982).

68. Muss, *Aircraft Noise: Federal Pre-emption of Local Control, Concorde and Other Recent Cases*, 43 J. Air L. & Com. 753, 773 (1977).

FAA veto of recommended regulations was permitted if safety would be compromised or because the standards were technologically or economically not feasible. The FAA was required to either promulgate the EPA suggested regulation(s) within a reasonable period of time or to publish notice declining to adopt the regulation(s) and explaining why.[69]

5. FAA REGULATIONS OF 1973

In 1973 the FAA made the FAR Part 36 regulations applicable to most older designed aircraft with maximum weights of over 75,000 pounds (such as the Boeing 727) to be manufactured after December 1, 1973.[70] This meant that narrow-bodied aircraft produced before December 1, 1973, were still not required to meet the 1969 noise standards.

The first energy crisis of the 1970's occurred in 1973, sharply increasing the price of jet fuel and adding incentive to aircraft engine manufacturers to improve engine fuel efficiency and giving airlines an incentive to purchase aircraft equipped with such engines. If such engines could also be less noisy than their predecessors, an opportunity to improve the noise situation was developing.

However, by the mid-1970's the FAA was being accused of "regulatory paralysis"[71] because it had failed to act with respect to most aircraft that were already in service. Several states filed lawsuits against the federal government for failure to implement EPA recommendations on aircraft noise regulation.[72] In the mid-1970's, only about 20 percent of the United States airline fleet met FAR Part 36 standards.[73] At the same time the airline industry was complaining about lack of standardization in noise regulation caused by the diverse approaches to noise control exercised by local governments and airport operators. Federal standards that would apply to all airports were preferable to the carriers, provided that they were not overly severe from their point of view. Several versions of more stringent noise regulations were recommended by the EPA. Others were generated by the FAA on its own in the period after 1972 but none were adopted by the FAA. Bills to require stronger regulation were con-

69. *See Noise Regulations for Propeller-Driven Small Airplanes Submitted to the FAA by the Environmental Protection Agency; Notice of Decision*, 41 Fed. Reg. 56,056 (Dec. 28, 1976) and FAA Disposition of EPA Proposals; Decision, 43 Fed. Reg. 28,421 (June 29, 1978).

70. December 31, 1974 for aircraft with maximum weights of 75,000 pounds or less. Those aircraft with Pratt and Whitney JT3D series engines were given until December 31, 1974 to comply. *See Noise Standards for Newly Produced Airplanes of Older Type Design*, 38 Fed. Reg. 29,569 (1973) (codified at 14 C.F.R. § 21.183(e) and 14 C.F.R. § 36.1(a)(d)(1-3)).

71. North, *Current State of the Law in Aircraft Noise Pollution Control*, 43 J. AIR L. & COM. 799, 814-15 (1977).

72. *U.S. Studies State Suit Seeking Mandatory Response on Noise*, AVIATION WEEK & SPACE TECH., Nov. 1, 1976, at 29.

73. North, *supra* note 71, at 815.

sidered in Congress. A major factor in the discussions was the matter of cost—who would pay for retrofitting old aircraft or acquiring new aircraft if stiffer rules were set forth. The fact that airlines were in poor financial condition at that time led many people to believe that the airline industry could not be expected to pay for the changeover itself. Various proposals to have the federal government help finance the noise-reduction steps were made by interested parties. They included using general taxation to help pay for the changeover, levying an additional tax or a surcharge on airline passengers and air freight shippers as a source of revenue, perhaps by setting up a special fund, making use of surplus money in the Airport and Airway Trust Fund, imposition of a noise pollution tax on noisy aircraft, and federal government loan guarantees for the purchase of replacement aircraft.

6. *FAA 1976 Noise Regulations*

At the insistence of President Gerald R. Ford, Secretary of Transportation William T. Coleman, Jr. (the FAA is a unit in the U.S. Department of Transportation) finally took action in the matter in December 1976, and ordered that aircraft used by United States carriers in domestic service gradually meet the 1969 FAR Part 36 standards by January 1, 1985, either through replacement of the aircraft or through retrofitting.[74]

The new regulations were allowed to remain in effect by the incoming administration of President Jimmy Carter. They required that domestic commercial turbojet aircraft in excess of 75,000 pounds that did not meet FAR Part 36 standards must be retired from the fleet or modified to meet the standards according to a specific eight-year time table. The first generation four-engine jets (Boeing 707, McDonnell Douglas DC-8, and General Dynamics Convair-990) had to meet the standards by January 1, 1985 with one-quarter of them to be in compliance in four years and one-half to be in compliance in six years. The second generation two- and three-engine jets (Boeing 727, McDonnell Douglas DC-9, Boeing 737, and British Aircraft Corporation BAC 111) were given until January 1, 1983, for full compliance, with one-half of the fleet to be in compliance in four years. The wide-bodied jets (Boeing 747, McDonnell-Douglas DC-10, and Lockheed L-1011) were also given until January 1, 1983, with one-half to be in compliance in four years (the DC-10 and L-1011 already met the standards). The rules did not apply to United States aircraft in international service nor to aircraft of foreign carriers. The FAA stated that at the time 1,600 of the 2,100 large jet aircraft in the United States fleet

74. *Phased Compliance With Part 36 Noise Limits by Turbojets With Maximum Weights Greater than 75,000 Pounds*, 41 Fed. Reg. 56,046 (Dec. 23, 1976). *See also* U.S. Department of Transportation, Federal Aviation Administration, *Aviation Noise Abatement Policy* (1976) (U.S. Department of Transportation, Washington, D.C.).

did not comply with FAR Part 36 standards and that one-half of these would still be in service by 1990 if no change were made in the noise regulations.

7. FAA 1977 AND 1978 NOISE REGULATIONS

In February 1977, the FAA issued new noise regulations which applied to aircraft to be certified in the future and established three noise level categories for aircraft—Stages I, II, and III—effective October 1, 1977.[75]

The Stage I noise level is a level above the FAR Part 36 standards established by the FAA in 1969. The Stage II noise level is the FAR Part 36 level established in 1969.

The Stage III noise level is the level newly established in the 1977 regulations and was to be required of turbojets with high or low bypass ratio engines that apply for certificates on or after November 5, 1975. Stage III requirements varied depending upon the weight of the aircraft and the number of engines. Minor changes were made in the Stage III limits in February 1978, effective April 3, 1978. Under the modified and still current rules, the takeoff range for aircraft with more than three engines is from 89 to 106 EPNdB depending upon the weight of the aircraft. For aircraft with three engines the takeoff range is now from 89 to 104 EPNdB, while the takeoff limits for aircraft with less than three engines remains at a range of 89 to 101.

The approach limits were made the same for all aircraft, regardless of the number of engines, with a range of 98 to 105 EPNdB, depending upon the weight of the aircraft. Sideline points limits were made the same for all aircraft, regardless of the number of engines, with a range of 94 to 103, depending upon the weight of the aircraft.[76] As noted earlier, the measuring point distances were modified slightly. A provision was made for exceeding the Stage III limits at some measuring points if it could be offset by less than allowable noise readings at other points ("tradeoff" provision).

Recall that the Stage II (original FAR Part 36 established in 1969) limits are 93 to 108 for takeoffs, 102 to 108 for approaches, and 102 to 108 for sideline points. See Table 2 for a comparison of Stage II and Stage III limits. Thus, the reduction in the noise levels allowed in 1977 and 1978 appear to be moderate when compared with the 1969 rules.

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75. *Noise Level Limits and Acoustical Change Requirements for Subsonic Transport Category Large Airplanes and for Subsonic Turbojet Powered Airplanes*, 42 Fed. Reg. 12,360 (Mar. 3, 1977) (codified at 14 C.F.R. § 36.101).

76. *Noise Limits and Acoustical Change Requirements for Subsonic Transport Category Large Airplanes and Turbojet Powered Airplanes*, 43 Fed. Reg. 8,722 (Mar. 2, 1978) (codified at 14 C.F.R. § 36.101).

TABLE 2
Stage II and Stage III Aircraft Noise Limits*

	Stage II Limits	Stage III Limits		
	All Aircraft	Aircraft With:		
		4 or more Engines	3 Engines	Less Than 3 Engines
Takeoff Extended Runway Centerline Measuring Point	93-108	89-106	89-104	89-101
Takeoff Sideline Measuring Point	102-108	94-103	94-103	94-103
Approach Extended Runway Centerline Point	102-108	98-105	98-105	98-105
Approach Sideline Measuring Point	102-108	94-103	94-103	94-103

* Ranges in EPNdB's depending on the weight of the aircraft with first number applying to the lowest weight.
Sources: For Stage II limits: *Adoption of Noise Type Certification Standards and Procedures*, 34 Fed. Reg. 18,355 (Nov. 18, 1969) (codified at 14 C.F.R. pt.36). For Stage III limits: *Noise Limits and Acoustical Change Requirements for Subsonic Transport Category Large Airplanes and Turbojet Powered Airplanes*, 43 Fed. Reg. 8,722 (Mar. 2, 1978) (to be codified at 14 C.F.R. § 36.201).

The greatest impact of the 1977-1978 regulations was on sideline point limits, changing the range of 102 to 108 EPNdB to a range of 94 to 103 for all aircraft. For takeoff and approach extended runway measuring points, the changes between the 1969 limits and the 1977-1978 limits are less, the difference varying by aircraft. For takeoffs of four-engine aircraft the maximum allowed is reduced only from 108 to 106. For three-engine aircraft, it is reduced from 108 to 104. However, for takeoffs of aircraft with less than three engines, the maximum limit is reduced from 108 to 101, so that significant noise reduction can result with such airplanes on takeoff. The Stage III rules have the least impact on approaches, the

maximum allowed reduced from 108 to 105 for all aircraft.[77]

In its discussion of the 1977 regulations, the FAA said that, despite the previous noise regulation of the federal government, aircraft noise was still a "significant annoyance" for six to seven million persons in the United States with 600,000 persons severely impacted.[78] Noise-interested groups usually claim that the noise problem is more serious than the FAA reports. The FAA also said that the short-term noise reduction would remain small as long as the aircraft fleets did not contain a significant number of Stage III aircraft.[79] The reader is reminded that Stage III noise levels are required only of aircraft that applied for certification on or after November 5, 1975.

To summarize, these regulatory steps created three categories of aircraft in respect to their noise emissions. Stage I aircraft were those aircraft that did not meet the 1969 standards and were to be eliminated or retrofitted by 1985. Stage II aircraft are those that meet the 1969 standards. Stage III aircraft are those that meet the lower noise levels set forth in 1977 and 1978 for newly certified airplanes.

The issue of how compliance with the noise regulations would be paid for was not decided by the FAA or any other government agency. Concern was expressed in Congress and elsewhere principally over whether the airlines could meet the deadlines set forth in the 1976 regulations, particularly, how they would pay for retrofitting or replacing aircraft. The federal government did not come forward with a plan to help finance the changeover. However, as airlines became increasingly profitable in the late 1970's, the idea of some sort of government financial support was abandoned and the carriers were left to finance the changeover themselves. By this time the price of energy had risen dramatically and gave the carriers an additional incentive to make the investment required to comply with the noise regulations—the replacement aircraft would be more energy efficient.

8. *Aviation Safety and Noise Abatement Act of 1979*

After the 1976 noise rules setting forth the 1985 time table were adopted by the FAA, various attempts were made in Congress to enact legislation that would make the rules less stringent in one way or another and to assist the airlines in paying for retrofitting or acquiring new aircraft. As noted above, the attempts to provide government aid to finance the changeover disappeared when airlines became very profitable beginning

77. Some experts state that changes of 5 or fewer EPNdB are not noticeable to the human ear, U.S. Department of Transportation, *Aviation Noise Abatement Policy*, *supra* note 74, at 14.

78. 42 Fed. Reg. 12,360, *supra* note 75, at 12,362.

79. *Id.* at 12,370.

in 1978. However, in early 1980, Congress reacted to pressure to liberalize the rules of 1976 by incorporating into the Aviation Safety and Noise Abatement Act of 1979[80] (the 1979 Act) a modification of those rules. The 1979 Act extended the deadline for two-engine aircraft for 100 percent compliance from January 1, 1983 to January 1, 1985, for aircraft with 100 or more seats, and January 1, 1988 for those with fewer than 100 seats. This was referred to as the small community service exemption.[81] The law also modified the requirements for both two-engine and three-engine aircraft of any seat capacity if the operator had, by January 1, 1983, made arrangements for replacement of the aircraft with an airplane that would meet the noise requirements. In such cases, the deadline for noise compliance was extended to January 1, 1985 for three-engine aircraft and to January 1, 1986 for two-engine aircraft.[82]

In addition, the 1979 Act provided that the FAA require United States and foreign air carriers engaged in foreign air transportation to comply with noise standards set forth in FAA regulations or with International Civil Aviation Organization (ICAO) noise standards, if any, that are substantially compatible with FAA noise standards.[83] By November 1980, the ICAO had done nothing to establish noise standards so the FAA ruled that its noise regulations would apply to aircraft in foreign commerce, although they were made subject to the January 1, 1985, deadline without the phase-in feature.[84]

Among other things, the 1979 Act also provided for a system whereby airport operators could, if they wish, request federal approval of airport proprietor anti-noise programs involving such things as the use of preferential runways, restrictions on the use of certain classes or types of aircraft, the construction of barriers and acoustical shieldings (including soundproofing of buildings), the use of flight procedures to control the operation of aircraft, and the acquisition of land so as to assure the use of property for purposes that are compatible with airport operations.

9. *Exemptions from Compliance*

As the January 1, 1985, deadline approached for the first generation of narrow-bodied, four-engine aircraft, the FAA began to use its exemption power permitted under the original Federal Aviation Act and the 1968

80. Pub. L. No. 96-193, 94 Stat. 50 (1980) (codified at 49 U.S.C. § 2121 (1982)).

81. 49 U.S.C. § 2124 (1982).

82. 49 U.S.C. § 2123 (1982).

83. 49 U.S.C. § 2122 (1982).

84. *Operating Noise Limits for Certain Turbojet Airplanes Engaged in Domestic or Foreign Air Commerce in the United States*, 45 Fed. Reg. 79,302 (Nov. 28, 1980) (codified at 14 C.F.R. pt. 91, Subpt. E).

Noise Regulation Act[85] to exempt some of these aircraft from the deadline. It used as criteria for exemption, five criteria suggested by Congress for consideration in the House-Senate conference report on the 1979 law.[86] These were that the applicant for exemption must be a smaller carrier, that it must have made good faith compliance efforts, that the carrier would suffer financial havoc without an exemption, that the travelling and shipping public would be deprived of a vital service, and that the retrofit technology ("hush kits") for the aircraft was either delayed or unavailable (there was a problem involving the availability of hush kits in 1984 and 1985).

To add to the exemption puzzle, the Act of 1979 was amended by Congress in October 1984, (Hawkins-Chiles Amendment) to eliminate four of the five suggested exemption criteria the FAA had been using, leaving only the criteria of having made a good faith compliance effort (in the form of a contractual commitment to retrofit or replace a noncomplying aircraft).[87] This encouraged exemptions to be given. In addition, the Hawkins-Chiles Amendment exempted four-engine aircraft operating international flights out of either Miami International Airport or Bangor, Maine from compliance with the January 1, 1985, deadline. This was done on behalf of the large number of air freight carriers operating out of those airports, primarily Miami.

In 1984 and 1985, the FAA granted a series of exemptions to operators of four-engine aircraft and issued a larger number of denials of such exemptions. Some, but not all, of the exemptions granted involved Bangor or Miami. Lawsuits followed by carriers who objected to the exemptions given to others after they themselves had spent considerable money to meet the January 1, 1985, deadline and by carriers who had been denied exemptions. There was also considerable criticism from anti-noise interested persons of the FAA policy of allowing any exemptions at all.

A United States Court of Appeals decision in early 1985 vacated thirteen of twenty FAA decisions made and criticized the FAA for inconsistencies in handling exemption requests, applying all of the five criteria mentioned above in some cases but not in others.[88] In response to the Court decision, the FAA reinstated the five criteria referred to above when granting exemptions. By May 1985, it had approved 17 percent of the

85. 49 U.S.C. § 1421(c) and 49 U.S.C. § 1431(b) (1982), respectively.

86. H.R. Rep. No. 715, 96th Cong., 1st Sess. 230 (1980).

87. Pub. L. No. 98-473, § 124; 98 Stat. 1837, 1970 (1984).

88. Airmark Corp. v. FAA, 758 F.2d 685 (D.C. Cir. 1985). The FAA exemption policy was referred to by the court as an "exemption shell game." *Id.* at 693.

113 applications sought under the exemption authority.[89] In general, the exempted aircraft could not be operated beyond December 31, 1985, except where the operator had a firm retrofit ("hush kit") commitment for delivery after that date but, in such cases, no later than December 31, 1986.[90]

10. Federal Noise Regulation in the Late 1980's

By 1988 the carriers had complied with the regulations set forth in 1976 and 1977-1978. This was done at considerable cost to the carriers involved.

At the beginning of 1985, Stage II-compliant aircraft numbered 2,367, or 79.6 per cent of the airline fleet, not including about 300 still-exempt Stage I aircraft. The balance were Stage III aircraft. The Stage II aircraft were predominantly the Boeing 727-100 and 200 and 737-100 and 200 aircraft and McDonnell Douglas DC-9's. They numbered 2,057, or 86.9 percent of the Stage II aircraft.[91] The FAA estimated that the percentage of the fleet that would be Stage II would still be 57.5 percent in 1990 and 38.6 percent in 1995.[92]

Meanwhile, the rapid rise in the volume of air passenger traffic in the 1980's led to a severe airport capacity problem and the demand for expansion of the United States airport system. It also led to a steadily increasing noise problem which promised to get worse in the future. There were significant increases in the number of airlines in operation, the number of aircraft operations, the number of passengers carried, and the number of seat-miles flown. About 450 million passengers were carried by United States domestic carriers in 1987, about double the number carried in 1978 and this was expected to reach 750 million by the year 2000.[93]

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89. See *Transportation Dep't Defends Noise Exemption Policy as Judgment Call*, AVIATION WEEK & SPACE TECH. May 27, 1985, at 36.

90. In addition to the noise regulations discussed in this paper, the FAA has issued other noise regulations of lesser impact including those dealing with noise effects when aircraft are modified (*Acoustical Change Approvals*, 39 Fed. Reg. 43,830 (Dec. 19, 1974) (codified at 14 C.F.R. § 36.1(c)(2)(i-iii); noise standards for propeller-driven small airplanes (*Noise Standards for Propeller-Driven Small Airplanes*, 40 Fed. Reg. 1029, 1034 (Jan. 6, 1975) (codified at 14 C.F.R. § 36,501); operator plans for complying with federal noise regulations (*Part 91—General Operating and Flight Rules*, 44 Fed. Reg. 75,562 (Dec. 20, 1979) (codified at 14 C.F.R. § 91.308); and noise regulations for large non-common carrier aircraft (*Aircraft Operating Noise Limits for Airplanes Operating Under New Part 125*, 45 Fed. Reg. 67,258 (Oct. 9, 1980) (codified at 14 C.F.R. § 91.302). The FAA has not yet attempted to regulate enroute noise produced by aircraft but has considered doing so.

91. FAA data reported in Ott, *FAA Noise Policy to Stress National System, Fleet Replacements*, AVIATION WEEK & SPACE TECH., Nov. 17, 1986, at 29.

92. *Id.*

93. *Task Force Predicts Airport Capacity Crunch*, TRAFFIC WORLD, Apr. 4, 1988, at 15.

In 1986, of the 3,200 public airports in the United States, the top fifty accounted for more than 80 percent of all passenger boardings and more than 30 percent of all aircraft flight operations.[94] It is at these airports that the noise problem is the most serious.

Proprietors at some large airports have taken measures to reduce congestion. For example, airport proprietors in Boston and New York have proposed sharp increases in landing fees for regional airlines to discourage their use of the airports involved (Boston) or to shift to off-peak times of the day (New York). Boston would include general aviation aircraft as well, while New York already has a high peak period landing fee system for general aviation.[95] Although the purpose in both cases is to reduce airport congestion, the effect on noise will be to permit a greater number of large aircraft to use the airports, adding to the noise generated.

With the extensive growth in traffic expected by the year 2000, not only will airport capacity continue to be a problem, but the noise problem can become more severe and effect more people than is the case now, even if mainly Stage III aircraft are in use by then, because of the frequency factor—the aircraft noise problem is a function of noise generated by a single flight operation and the frequency of such operations.

By mid 1988, the FAA had not yet decided what to do next in the noise-regulation area and Congress, although occasionally discussing additional legislation requiring lower noise levels, had made no serious attempt to do anything. Meanwhile, as aviation jet fuel prices remained low (about $.60 per gallon in 1987) the carriers' incentive to purchase new aircraft for energy conservation purposes was lessened. The energy savings were not sufficient to offset the high cost of new Stage III aircraft compared with keeping Stage II aircraft or purchasing a used Stage II aircraft.[96] Some airlines were also in financial difficulty in the 1980's and could not afford new aircraft. Airline reluctance to purchase Stage III aircraft is also said to be caused by airline uncertainty as to whether or not local proprietor regulations will permit their long-term use.[97] However, in 1988, orders for new Stage III aircraft increased, reflecting the improved financial condition of some carriers.

On the other hand, liberal federal policy permitted many airline merg-

94. Shifrin, *Officials Hope Capacity Crisis Will Spur Expansion of Airports*, AVIATION WEEK & SPACE TECH., Nov. 9, 1987, at 83.

95. Hughes, *Agency Proposes Raising Fees at New York Airports*, AVIATION WEEK & SPACE TECH., Apr. 4, 1988, at 64; Hughes, *Two Coalitions Sue Massport to Block Logan Fee Increase*, AVIATION WEEK & SPACE TECH., Apr. 25, 1988, at 99; and *Who Controls Airport Access?*, AVIATION WEEK & SPACE TECH., Mar. 28, 1988, at 9.

96. New Stage III aircraft available in the late 1980's included the Boeing 747-200A, 747-400, 757, 767 and more recent versions of the 737, the McDonnell-Douglas DC-9 MD-80 series, and Airbus A-300.

97. *See* Ellett, *supra* note 26, at 28.

ers to take place which, in turn, temporarily reduced the number of flight operations at some major airports. Greater stability in the airline industry and elimination of unprofitable flights also contributed to the reduction. At the same time, adoption of the hub-and-spoke method of operation by many airlines increased the number of flight operations and the noise problem at other airports such as Memphis, Nashville, and Raleigh-Durham.[98] In the long-run, the picture of airport capacity and the noise problem is not a positive one.

Anti-noise protesters in the 1980's advocated that the government set a cutoff date for both production and operation of Stage II aircraft, the aircraft that meet the 1976 noise standards that were established originally in 1969. This has been accompanied by increased militancy of local anti-noise organizations and airport operators seeking solutions to the noise problem. This is in spite of the progress that has been made in introducing new generation aircraft. Among the recommendations that were made to the FAA at a hearing conducted in 1985 were the following proposed by the Minneapolis-St. Paul Metropolitan Airports Commission: stopping production of Stage II aircraft; strict enforcement of the January 1, 1988, deadline for Stage I aircraft still operating under the small community exemption provided in the 1979 Act; a January 1, 1995, deadline to halt operation of all Stage II aircraft; federal tax credits and other financial inducements for U.S. airlines to purchase Stage III aircraft; Stage IV technology research to lower the noise emitted by future aircraft; antitrust immunity for airlines to jointly and voluntarily reduce Stage II aircraft flights at noise-impacted airports; local regulatory action to reduce Stage II flights if necessary; additional public hearings in noise impacted communities; and statutory incentives, including imposition of a surtax on jet fuel consumed by noisy aircraft, to develop funds for interest-free/low-interest loans to airlines to purchase Stage III aircraft. At the same hearing, the Airport Operators Council International advocated strict compliance with noise regulations; prohibition of further production of Stage II aircraft after January 1, 1986; a program to phase out operations of Stage II aircraft; government directives to require airlines to use Stage III aircraft in noise-sensitive communities; and financial inducements to airlines to phase out Stage II aircraft.[99]

An FAA report to Congress in 1986 proposed several different regulatory approaches that could be taken. They were a Stage II nonaddition rule, prohibiting the addition of any Stage II aircraft into the United States fleet on or after a specific date, such as January 1, 1988; a Stage II oper-

98. Ott, *Leading Airports Reflect Mergers in Declining Aircraft Traffic*, AVIATION WEEK & SPACE TECH., Feb. 1, 1988, at 81.

99. *See* Ott, *Cutoff Date for Stage II Aircraft Operations Urged at FAA Hearings*, AVIATION WEEK & SPACE TECH., Dec. 23, 1985, at 34.

ating ban at critical airports, making the noise limitation a local option; a nationwide Stage II operating ban with a fixed date, which would set one or more dates by which some percentage of the affected aircraft must be brought into compliance with Stage III standards, exported, or taken out of service; a nationwide Stage II operating ban by age of aircraft, guaranteeing each transport a minimum service life before it must be phased out; a nationwide Stage II operating ban, combining a fixed phase-out date with federal preemption of the right of local airport proprietors to restrict the operation of Stage II aircraft at their airports prior to the FAA deadline; operational flight procedures, which would provide Stage III aircraft preferential treatment in the use of operational procedures in terminal areas and en route; operational ground procedures, providing preferential ground handling treatment to operators of Stage III aircraft by the FAA and local airport proprietors; noise budgets, allowing the airport operator to assign a noise budget to each carrier using that airport; modification of current FAR Part 36 noise standards, which might include adding one or more additional stages to the two stages for which standards currently are written; and noise fees, which would implement a user surcharge for operators that choose to continue to operate their Stage II aircraft.[100] None of these approaches had been adopted at the time of this writing.

In 1987, a long-range plan under which U.S. air carriers would phase out Stage II aircraft in exchange for an end to new airport noise restrictions was presented in draft form to the FAA by an FAA-sponsored working group representing airlines and airport operators and two trade associations (Working Group on Aircraft Noise/Airport Capacity). The report recommended a December 31, 1987, cutoff date for the production of Stage II aircraft. This would have affected the Boeing 737-200, the only Stage II aircraft still in production. A December 31, 1989, cutoff date was recommended for final registration of any Stage II aircraft, which would mean that airlines could not buy or sell such aircraft after that date. The group recommended an operational phase-out of the Stage II aircraft which would permit airlines to phase out 20 percent of those aircraft in their fleets in each of five three-year blocks, beginning December 31, 1994, and ending no later than December 31, 2009, with an additional recommendation that Congress provide financial incentives that would result in completion of the phase-out by December 31, 1999. In addition, the group proposed a moratorium on the establishment of new noise restrictions at individual airports while Congress considers the new program, and made recommendations having to do with land use and noise

100. Preble, *Inaction on Noise Standards Raises Industry Concern Over Stage 2 Fleet*, AVIATION WEEK & SPACE TECH., July 6, 1987, at 38.

mitigation measures around airports.[101] The draft report was still subject to public hearings and review by Congress. The report was viewed by some critics as an attempt to have airport operators trade their local noise controls for early retirement of noisy airplanes before their economic life is ended, especially if the December 31, 1999, deadline could be achieved. At the time, there were in service approximately 2,200 Stage II Boeing 707's, 727's, and 737's, McDonnell Douglas DC-8's and DC-9's, and British Aircraft Corporation BAC 111's.[102]

The newly appointed Administrator of the FAA, T. Allan McArtor, responded to the Working Group report by announcing that the FAA would propose legislation to Congress to establish a national noise policy and require a phase-out of Stage II aircraft, create an incentive program for airlines to comply, and outline terms of agreement for airports to call a halt to aircraft restrictions.[103] Legislation by Congress would be needed if future noise regulation involved government financing of some sort. But legislation would not be needed to require lower noise levels. The FAA already has authority to do so on its own. In any event, the newly appointed Secretary of Transportation, James H. Burnley IV, later said that it would be politically naive to make such a proposal (Mc Artor's), and it would give the federal government too much power over local airport operators.[104]

Despite pronouncements by FAA officials that a cutoff date for Stage II aircraft would be set, this had not yet been done at the time of this writing. The airlines, of course, prefer to operate the 2,200 or so Stage II aircraft currently in use as long as they are economically viable. At the same time, the sharp increase in the volume of airline traffic and the number of flight operations since 1977 has largely mitigated the effect of the Stages II and III rules now in effect because the noise problem is a combination of the amount of noise emitted by an aircraft and the number of occurrences (number of flights). For example, at Minneapolis-St. Paul, although about 27 percent of the scheduled airline flight operations were Stage III aircraft in 1987, the number of registered noise complaints received at the airport reached an all-time high of 16,696 in that year; it was only 601 in 1980.[105]

Meanwhile, criticism of the FAA mounted in the country because of

101. *See* Preble, *Industry Group Urges Stage 2 Phase-Out, Halt to Noise Limits*, AVIATION WEEK & SPACE TECH., July 13, 1987, at 30.

102. *Id.*

103. *See* Ott, *Limitations of Growth*, AVIATION WEEK & SPACE TECH., Nov. 9, 1987, at 15; *FAA Drafts Policy to Serve as Proposal for Federal Aircraft Noise Legislation*, AVIATION WEEK & SPACE TECH., Nov. 9, 1987, at 39; and *McArtor to Seek Bill on Nat'l Noise Policy; May Ask User Fee Boost*, TRAFFIC WORLD, Nov. 9, 1987, at 43.

104. *Air Group Asks Burnley to Back Airport Policy*, TRAFFIC WORLD, Mar. 14, 1988, at 53.

105. Minneapolis-St. Paul Metro. Airports Comm., *supra* note 1.

alleged failure to adequately regulate airline safety. It was claimed that it was difficult for the FAA to operate effectively when part of the larger Department of Transportation, that the governmental personnel and procurement rules and procedures were making the FAA inefficient, and that there was too much budgetary uncertainty year to year for the agency to properly carry out its mandate. As to the problem of slow decision making, decisions of the FAA had to be approved by the Department of Transportation and the Office of Management and Budget. Establishment of a new aviation standard was said to require 217 steps and often took years with an average of nineteen months between first notice and the final rule before a rule making became effective. There also had been too much turnover in the post of Administrator. In short, the FAA was said to be unable to respond quickly and efficiently to change.[106] The FAA structure has been criticized also because of the mixed nature of its functions. It regulates air safety, it builds, operates, and maintains the federal air traffic control system, and it is charged with promoting air transportation development. Critics say that it cannot do all three things simultaneously in an effective way. Because of some of the criticisms stated above, a Presidential Commission on Aviation Safety, in April 1988, recommended that there be a complete organizational overhaul of the FAA which would include removing it from the Department of Transportation and establishing it under a new name as an independent agency and giving it freedom to control its own financing.[107]

IX. CONCLUSIONS

The aircraft noise problem is a serious one for many Americans. Unfortunately for them, they are a small minority of the total population which makes it difficult for them to get a satisfactory political response to their complaints.

As pointed out earlier in this paper, there is multiple responsibility for the problem and there must be multiple responsibility for trying to solve it. Therefore, local government, airport proprietors, land developers, those who buy property near airports, aircraft and engine manufacturers, airlines and other aircraft operators, and the federal government all have a

106. *See* Patton, *Air Transport is Straining Limits of Airports Control*, TRANSPORT TOPICS, Mar. 21, 1988, at 14; *Should the FAA Be Free?*, TRAFFIC WORLD, Mar. 21, 1988, at 30; Solomon, *FAA Safety Functions Should be Accountable, Burnley Tells Senate*, TRAFFIC WORLD, Mar. 28, 1988, at 50; Bradford, *Inflexible FAA Structure Causes Safety Problems, DOT's Deputy Sec'y Says*, TRAFFIC WORLD, Apr. 4, 1988, at 45; and Payne, *Washington Should Allow FAA to Fly Solo*, BUS. WEEK, May 2, 1988, at 40.

107. Proctor, *Panel Urges U.S. to Create Independent Aviation Agency*, AVIATION WEEK & SPACE TECH., Apr. 25, 1988 at 96.

part to play.[108]

A. Technology as a Solution

However, given the limitations on what the others can do, aircraft and engine manufacturers, aircraft operators, and the federal government are the most likely to be able to have a significant impact on the problem. This is because technological improvement is the best long-run and permanent solution. Other measures are mainly attempts to regulate the effect of noise rather than to reduce the amount of noise emitted from aircraft. Unfortunately, it is often not in the economic interest of airlines and other aircraft operators to invest in retrofitting or replacing noisy aircraft. Replacement can be attractive if the aircraft are ready to be retired anyway. There is some incentive to replace aircraft also if replacements are more energy efficient to an important degree, but the role of energy has been lessened since the mid 1970's as the price of crude oil fell and more or less stabilized at a "reasonable" level.[109] The lack of interest in buying new technology for noise-reduction purposes has a discouraging effect on aircraft and engine manufacturers and their interest in spending money to develop less-noisy aircraft.

B. Need for Greater Federal Action

Therefore, if technology is the route to acceptable noise levels, while the carriers and aircraft and engine manufacturers have little economic incentive to develop it, the federal government is the logical actor to accelerate adoption of better technology. Without more aggressive action by the federal government requiring the use of new or retrofitted aircraft (unless conditions change and the airlines have great economic motivation for doing so), it is not likely that the airline industry will generally operate many Stage III or better aircraft for a long time. The federal government is the only party that has the legal jurisdiction required and it is the only party with the capability, if necessary, of arranging non-airline financing for a noise-reduction program.

The difficulties associated with local government and airport proprietor noise-reduction efforts were discussed earlier in this paper. The legal limitations on what can be done in establishing noise standards are severe and the impact of local government and proprietor regulation on the problem is bound to be limited but at the same time a nuisance for the

108. Some of the deficiencies of the current approach to regulating aircraft noise are discussed in Ellet, *supra* note 26. A response to that discussion is Blackman and Freeman, *supra* note 41, who argue in favor of the current system of divided regulatory authority.

109. A severe energy crisis in the future accompanied by a sharp rise in price could change the attitude of air carriers on this question.

aircraft operator. In addition, to the extent that they do have some effect, local rules serve to create a series of different sets of regulations that conflict with the need for a smooth flowing national air transportation system, for example, when a certain kind of aircraft cannot serve a given airport or flights are banned at certain times of the day. Other more indirect options in addition to setting noise standards available to local government and airport proprietors are inadequate, in themselves, to make a significant impact on the problem. It is too late to use some of the methods available to them such as zoning for compatible land use and choosing acceptable sites for airports.[110] Regulation of procedures followed when aircraft are on the ground has a limited impact on the problem. Encouragement of noise-abatement flight procedures has limited effect because safety issues take precedence and, when they are effective, they, to a large extent, merely redistribute the noise rather than reduce it. Purchasing and/or soundproofing buildings is too expensive to be a large-scale solution and is also very disrupting to the property owners involved.

The federal government, on the other hand, has far fewer legal limitations. Under the United States Constitution, it has the authority to regulate interstate commerce when needed, provided that it does so in a reasonable and non-discriminatory way. The airport noise problem is an interstate issue and is best dealt with by an agency that has jurisdiction over interstate matters. Noise regulation by the federal government is already accepted as being legitimate, not just in air transportation, but in other industries as well, including other transportation industries. In addition, the legal hassles involving local action would be avoided if the federal government would take a more active and meaningful role in the matter of aircraft noise and a great deal of uncertainty for all concerned would be eliminated, particularly for airline companies when making aircraft acquisition decisions. This may or may not necessitate federal preemption of the authority to regulate aircraft noise. In the *Burbank* case, Justice William H. Rehnquist, in his dissenting opinion, observed that "Clearly Congress could preempt the field . . . if it chose, and very likely the authority conferred on the Administrator of the Federal Aviation Administration [by the Federal Aviation Act, 49 U.S.C. 1431 (1982)] is sufficient to authorize him to promulgate regulations effectively preempting local action."[111]

Another advantage of federal action is that it would recognize that

110. Moving the airport is a very effective solution, if the new location is large enough and remote enough and the adjacent land is controlled as to land use. However, financial and environmental barriers are so great that there is little likelihood of this happening on any important scale in the near future. The fast-rising volume of traffic may eventually force some airports to new sites because of lack of sufficient capacity but this also appears to be in the distant future.

111. City of Burbank v. Lockheed Air Terminal, *supra* note 24, at 653.

aircraft noise is a national problem that requires a national solution. It would insure that whatever is done is done nationally for all aircraft and airports, thus avoiding the "patchwork" or "balkanization" effect of local attempts to deal with the problem. This will preserve the "national system" character of air transportation. In addition, all areas of the country would be treated equally and airlines would not be able to avoid the regulations by moving their operations elsewhere, which has sometimes been threatened when airport proprietors show interest in noise regulation. All carriers would be treated equally as well, so that whatever negative effects there are on them are borne equally, thus minimizing the effect on competition among carriers. In the area of air safety and in the area of economic regulation (which ceased in the early 1980's) the federal government has been supreme, with the states and local government having virtually no role to play. If airport noise is a national problem affecting the national air transport system, why should aircraft noise be different with the federal government sharing control with local governments and airport proprietors?[112]

C. LACK OF FEDERAL INITIATIVE

There are several reasons why the federal government has not taken a more proactive role in the matter of aircraft noise. First, the FAA does not want to assume greater control, perhaps by preempting all regulation on the matter, because of fear of the federal government becoming liable for damages caused by aircraft noise under the inverse condemnation principle. A second reason is that the FAA, in regulating safety as well as in regulating aircraft noise, must regulate in a reasonable way so that the regulations imposed are practical and not unduly burdensome on the carriers. In fact, the law authorizing the FAA to set noise standards provides that the FAA take into account the economic feasibility of any regulation that it may impose. This means that the FAA may refuse and has refused to promulgate a high-cost noise regulation because of the negative economic impact on the airlines. It has done the same thing with recommendations regarding safety made to it by the National Transportation Safety Board.

Finally, there is no doubt that the organizational structure within which the FAA operates is responsible, in part, for the approach the FAA has taken to the aircraft noise problem. As part of the Department of Transportation, its decisions are politically motivated to a certain degree because it is part of an executive branch agency. The fact that the FAA

112. An early argument for federal action on the aircraft noise issue is in Vitten, Jr., *Airport Noise—the Unanswered Question*, PROCEEDINGS OF TRANSPORTATION RESEARCH FORUM (1972), at 401.

has not made an important change in the country's aviation noise policy since 1978 is probably related to the non-interference policy of the federal administration. Other than the political factor, the problems mentioned earlier relating to government procedures and slow decision making have also been important.

In any event, regardless of the reasons, the FAA did virtually nothing in the matter of aircraft noise until Congress specifically required it to do so in 1968. Since then, it has installed moderate noise rules in 1969 that didn't affect most aircraft until much later when the 1976 policy was implemented completely in the mid 1980's. It took about seventeen years for moderate noise regulation to be imposed on a significant number of aircraft in United States service. Stage III standards are an improvement over Stage II standards but apply to only a small part of the fleet in 1988 and there has been no decision by the FAA to end operation of Stage II aircraft and to go on to further reduce aircraft noise with a Stage IV set of standards. There has not been a significant noise ruling by the FAA since 1978.

D. What the Federal Government Could Do

There is no shortage of suggestions that have been made by various individuals and organizations over the years as to what the federal government should do, some of which were referred to in this paper. The FAA could easily find a combination of steps it could take that would be within its legal jurisdiction and practical from the standpoint of availability of technology. The problem of assuming greater liability for noise-related damages is often brought up as a reason for the federal government not becoming more active in noise control. It is claimed that more severe federal noise regulation of the kind suggested here may mean that damaged property owners would be able to sue the federal government and not the local airport. This is not likely. The federal government would not be taking over all regulation of aircraft noise—it would just become more effective in the kind of regulatory authority it has specifically had since 1968 and has participated in since 1969. It would not mean that the federal government has preempted all local control.

A problem would be the need to take into account the economic impact on the carriers. If deemed necessary, the FAA could also propose to Congress how the federal government could assist in the financing of retrofitting or replacing noisy aircraft.

New federal regulations could include: (1) setting a fixed near-term deadline to end the adding of Stage II aircraft to an airline fleet; (2) setting a fixed near-term deadline for ending operations of Stage II aircraft—within five or six years or about 1995, i.e., all aircraft in operation would

have to conform to Stage III standards; (3) establishment of a new Stage IV set of standards that newly-certified aircraft would have to meet after a certain date; (4) setting a long-term deadline for ending production of Stage III aircraft; (5) setting a long-term deadline for ending operation of Stage III aircraft; and (6) reducing the number of flights at the more seriously noise-affected airports by permitting carriers to schedule collectively or by the FAA imposing flight reductions on airlines.

There is a question whether the FAA can be expected to take the lead in more stringent regulatory standards. Cynics will say no because of the FAA's past record on the subject. If it is the case that the FAA will not take appropriate action, then Congress can require it to do so or authority to do so can be given by Congress to the EPA, a less biased agency which already has jurisdiction over noise in some other industries. Restructuring of the FAA along the lines suggested by the President's Commission on Aviation Safety, including placing responsibility for regulation of aircraft safety and noise in a new independent regulatory agency, could be a step toward more active regulation of aircraft noise by reducing the political element, eliminating the possible conflict between different functions the FAA now has, and speeding up the regulatory process.

E. The Financing Question

The financing question must also be dealt with. Near-term significant noise reduction regulations could impose a financial hardship on the carriers. If a careful analysis of the financial consequences of ending the operation of Stage II aircraft should show that the economic burden on the carriers would be too great for them to survive as a viable industry, then there is justification for the federal government, acting in the public interest to preserve common carriage in air transportation, to help the carriers finance the changeover to Stage III aircraft and, perhaps, to Stage IV aircraft eventually.

A considerable amount of money is already available in the form of surplus in the federal Airport and Airway Trust Fund (Fund). The surplus is currently about $6 billion.[113] The Fund was established by Congress in 1970 to help pay for improvements in the air traffic control and airport system of the country. The money in the fund is derived from several taxes paid by aircraft operators, the major contributor being the 8 percent tax on airline passenger tickets which is passed on to airline customers. This tax is collected by the airlines and turned over to the federal government and is considered a "user tax" on the airline industry. The current surplus is the result of a number of factors, not the least of which is the rapid growth in airline traffic and the number of tickets sold in the last ten

113. *Appendix to the Budget of the U.S. Gov't, Fiscal Year 1988* (1988) at I-R31.

years which has caused the 8 per cent tax to produce far more revenue than anticipated. Another factor is the federal government's policy of holding back spending all of the money available in the Fund in order to keep the federal budget deficit as low as possible, i.e., the surplus is used on the plus side in measuring the amount of the deficit. This is done even though the Fund has nothing to do with the deficit since it is a user fund—the government can spend only what is in the Fund—deficits are not possible. The government considers the Fund and other dedicated funds as being part of the "unified" federal budget, meaning it is included in the overall revenue-expenditure picture. If these dedicated funds and their surpluses, if any, were not included, the federal deficit would be even worse than the calculations have shown. The unified budget approach also means that spending from the Fund is subject to whatever laws Congress has passed or will pass regarding the size of the allowable annual deficit in the federal budget.

The surplus would not be enough to provide significant short-term noise reduction. In addition to, or instead of, the surplus, there are other options. Diversion of part of the user revenue and/or an increase in the federal user taxes paid by aircraft operators could raise sufficient revenue. Each one per cent of the eight percent tax on airline passenger tickets, for example, produces about $373 million per year.[114] Part of this current or increased tax revenue could be dedicated to the noise-reduction program. Other options are a temporary surcharge on airline passenger fares, federal tax credits to reequipping airlines, no or low interest federal loans to reequipping carriers, and federal guarantee of private loans made to reequipping airlines. However, the funds used should be derived from air transportation users in some way and not from general revenue. The beneficiaries of air transportation should furnish the funds used by government to help pay for noise reduction.

Retrofitting is less expensive in the short run than replacing aircraft. There have been various differing estimates made of the cost of retrofitting, ranging from $4 million to $8 million per airplane. If we use $6 million as the number, and 2,000 aircraft were to be retrofitted, the total cost would be $12 billion. As an illustration of what might be done, a combination of some or all of the surplus money in the Fund and an increase in the passenger tax from 8 to 10 percent would make it possible to complete a retrofitting program within a reasonable period of time, assuming that the carriers would pay part of the cost with their own funds, which they should be required to do. Instead of retrofitting, the carriers may prefer to retire and replace some of the older aircraft so that all 2,000 aircraft would not be retrofitted and the federal program would need to include some sort of

114. Based on projected revenue from the tax for fiscal year 1988. *See Id.*

financial incentive for those carriers who choose to buy new aircraft, perhaps allocating an amount equal to the federal share of retrofitting the replaced aircraft to an airline that purchased a new airplane. New Stage III aircraft cost between $22 million (Boeing 737-400) and $120 million (Boeing 747-400) each, depending upon the kind purchased and the configuration and options ordered by the customer. Most aircraft purchased would probably be in the lower range. This high cost is partially offset by much better fuel efficiency and other economies of operation and larger capacity than the Stage II aircraft they will replace.

Caution must be exercised in such a federal program. Some airlines have gone farther than others in retrofitting and/or acquiring new aircraft to reach Stage III and some carriers are in a better financial position to retrofit or replace aircraft than others. It may not be fair to the more advanced and more profitable carriers to begin a federal assistance program after they had already invested considerable funds on their own to reduce noise or are in a position to do so in the future when their competitors are not able to do so. Fairness can be maintained if the program recognizes past noise-reduction investment and includes retroactive federal assistance to those carriers, and if funds would be supplied to all carriers, regardless of profitability. One negative is that, by providing financial help to less profitable and, perhaps, less efficient carriers, the government may be helping to keep them in business to the disadvantage of those carriers that are more efficient.

There are at least two reasons why the federal government should participate in the financing of noise regulation compliance. One reason is that the need to provide capital for retrofitting or replacing aircraft would be imposed on the carriers by a government regulatory decision. Therefore, it can be argued that the government should bear some responsibility for financing the compliance. A second reason is that there does not appear to be any alternative. If meaningful aircraft noise regulation is to be imposed and the carriers are unable to completely pay for it on their own, then the federal government should participate in the financing.

There is also a reason why airline customers, the ultimate payers of user charges levied against airlines, should pay to reduce aircraft noise. The noise generated is in their behalf—they receive the benefits of air transportation. Until now, a small part of society who live near major airports have borne all the social costs of the air transport system. Although they also may benefit from airline service, the benefits are enjoyed by many others as well—the benefits are diffuse and have little relationship to distance from the airport. The noise burden, however, is concentrated on the airport's neighbors.

There is precedence for this approach. Barge lines operating on our river system pay a diesel fuel tax to the federal government which is re-

flected in the rates paid by their customers. The tax revenue is used to help build, operate, and maintain the federal waterway system. Trucking companies pay considerable user taxes to all levels of government, including fuel taxes, which they must reflect in the rates charged to their customers. The tax revenue is used to build, operate, and maintain highways. In these cases, the higher rates paid by shippers are justified because they benefit from the provision of water and highway transportation. Using the taxes on airline passenger tickets or other user charges is no different from taxing the fuel burned by barge lines or by trucking companies—they are all passed on to the customers of these companies. The difference is that not all airline customers benefit directly from the noise reduction as such, since they are not all airport neighbors. In effect, the airline customer who is not an airport neighbor would subsidize the customer who is an airport neighbor in respect to noise reduction. But all airline customers benefit from air transportation service and, if noise control is considered to be a *necessary* part of operating an air transportation system, similar to providing safety devices or a minimum amount of space per passenger, or food service, or proper maintenance of airplanes, then the cross-subsidy argument fades. The cost of operating a transportation system is normally reflected in the prices charged to use the system. In this situation, instead of the carriers incurring all the costs of noise reduction and then passing them on to their customers, the federal government would incur part of the cost and recoup the cost from airline customers in the form of a user charge. In any event, there are other transportation examples where the federal government has gone even farther than what is suggested here and paid for transportation improvements out of general revenue without requiring that carriers and/or their customers pay the bill. General taxpayers, many of whom never benefit directly from the services provided, contribute toward their provision. In such cases, there is no connection whatever between taxes paid and benefits received. Amtrak, Conrail, and the Merchant Marine Subsidy Program are illustrations.

The Executive Director of the Minneapolis-St. Paul Metropolitan Airports Commission was quoted as saying, at a recent public meeting regarding the noise problem, "In the year 2000 we'll still be sitting here talking about noise unless something radical is done." That something radical will have to be done by the federal government. It is a federal problem and the federal government must take the lead in solving it and be willing to help pay for it, if necessary.