EVALUATION OF NOISE SET ASIDE PORTION OF THE AIRPORT IMPROVEMENT PROGRAM

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INTRODUCTION

PURPOSE

This paper documents the Federal Aviation Administration's (FAA) evaluation of how effectively its noise set-aside grant program contributes to reducing the noise-impacted population around the nation's airports. The Government Performance and Results Act (GPRA) requires that each Federal Department develop a performance plan that sets strategic goals, defines programs to address those goals and identifies performance measures to evaluate program effectiveness. Reducing the population exposed to significant levels of aircraft noise is a performance measure for the "Aircraft Noise Exposure Program" contained in the U.S. Department of Transportation (U.S. DOT) Performance Plan. The "Aircraft Noise Exposure Program" supports the U.S. DOT strategic goal of "Protecting and Enhancing the Human and Natural Environment". FAA periodically reviews its programs contained in the U.S. DOT Performance Plan to determine if we are achieving the intended outcomes. The noise set-aside program ("noise program") was one of the FAA programs selected for evaluation in FY 2002.

DESCRIPTION OF PROGRAM BEING EVALUATED

AIP noise grants provide financial support to airports and to units of local government to study and/or implement approved noise compatibility projects such as: residential and public building sound insulation; land acquisition and associated noise sensitive residential and public building relocation; acquisition of noise monitoring equipment; installation of noise barriers; taxiway and runway construction primarily for the purpose of noise relief; and special noise studies to determine the effectiveness of other noise mitigation proposals. With the exception of noise insulation for buildings used for educational or medical purposes, noise mitigation projects must be an element of an FAA-approved Noise Compatibility Program (NCP) to be eligible for AIP noise set-aside money. To compete favorably for AIP noise set-aside money, noise compatibility projects normally must be located in areas where noise is at the annual day-night average

sound level (DNL) of 65 dB(A) or greater. The DNL 65 dB(A) is the threshold of noise exposure considered by the Federal Interagency Committee on Aviation Noise, including the FAA, to be significant. Projects may also be eligible in areas of lesser noise exposure, including projects to provide a noise buffer or achieve equity in the neighborhood. Proposals for projects below the DNL 65 dB(A) must be supported by appropriate airport sponsor documentation and be approved in the sponsor's Part 150 program. Noise mitigation projects contained in an approved environmental Record of Decision (ROD) or Finding of No Significant Impact (FONSI) are not eligible for funding from the AIP noise set-aside but may be considered for entitlement or general AIP discretionary funds.

Specific requirements for project eligibility, allowable costs and sponsor eligibility are contained in FAA Order 5100.38B, "Airport Improvement Program Handbook". The form and format of a Noise Compatibility Program is described in Federal Aviation Regulation (FAR) Part 150.

A NCP prepared under FAR Part 150 sets forth the measures that an airport sponsor has taken, or proposes to take, to reduce existing non-compatible land uses and prevent additional non-compatible land uses within the area covered by the airport sponsor's Noise Exposure Maps (NEM). Noise Exposure Maps are land use base maps depicting the airport and the surrounding area, and they contain a series of noise exposure contours, at a minimum including DNL 65, DNL 70 and DNL 75. NCP measures for mitigation within the NEM contours and approved by FAA become eligible for AIP grant funding. Participation in the Part 150 process is voluntary to airport sponsors, and it is available to any airport eligible to receive AIP moneys.

LEGISLATION

The importance of reducing noise around airports is recognized by the Congress of the United States, which provided under paragraph 47101C, "Capacity Expansion and Noise Abatement", Chapter 471, Title 49, that "non-compatible land uses around airports must be reduced and efforts to mitigate noise must be given a high priority". Under paragraph 47117(e), the Congress directed that the Secretary of Transportation set aside 34 percent of available discretionary funding under the AIP for carrying out noise compatibility programs.

BACKGROUND

Public concern and sensitivity to aircraft noise around airports is high. Aircraft noise is an undesired by-product of our mobility, and the Government has acted to reduce the public's exposure. Over the past 20 years, considerable effort has been expended to provide relief to noise impacted areas by the funding of noise compatibility projects under the AIP. The recent phase-out of air carrier aircraft that use older and louder engines (i.e. Stage 2 aircraft) has contributed greatly to the reduction in the number of people exposed to significant (DNL 65 dB(A))

levels of aircraft noise. The Stage 2 phase-out was completed on December 31, 1999. Research continues on quieter engine technology, but it has not advanced to the point that would result in further aircraft noise reductions in the near future. Therefore, for the foreseeable future, AIP-funded noise compatibility projects will be the principal means employed by the Government to further reduce the number of people exposed to airport noise.

APPROACH

SCOPE OF THE EVALUATION

The evaluation examined the noise compatibility projects of the FY 2000 and FY 2001 elements of the AIP. These fiscal years were chosen for review, as they are the latest program years for which complete grant data are available.

This paper did not evaluate AIP-assisted noise mitigation efforts that are a result of airport capacity projects, such as new runways or other projects funded outside of the AIP noise set-aside.

SURVEY

A two-part questionnaire was transmitted to each of the designated noise contacts in the nine regional airports division offices. Instructions were provided to ensure uniformity in reporting. A copy of the questionnaire is included in Appendix A. The first part of the questionnaire contains a spreadsheet requesting funding, phasing and noise benefit data for each AIP noise project funded in FY 2000 or FY 2001. The second part lists four questions to support the data reporting on the spreadsheet and eight general questions on the regional noise program.

FINDINGS

DISTRIBUTION

A total of 219 individual noise compatibility projects were AIP-funded in FY 2000 and FY 2001. Projects were supported at 84 airports in 37 states. Approximately $535M in AIP funds was originally committed to these projects. Project additions, deletions and adjustments made to date by the regional offices raise the current dollar total to approximately $543M, a change of about 2%. Table 1, below, represents the distribution of noise compatibility projects by project type.

TABLE 1

Project Type	Number of Projects	Amount *
Residential Sound Insulation	69	$226.6M
Land Acquisition/Relocation	47	$165.4M
Public Building Sound Insulation	49	$54.2M
Land Acquisition-No Relocation	10	$28.2M
Runway/Taxiway for Noise	2	$22.0M
Public Building Relocations	3	$14.4M
Noise Monitoring Systems	10	$7.8M
Part 150/NEM/Other Studies	26	$7.1M
Noise Barriers/Run Up Enclosures	3	5.5M
Other †	-	$11.8M

RESIDENTIAL BENEFITS

Table 2 is an accounting of the residential population that benefits as a result of FY 2000 and FY 2001 AIP funded noise compatibility projects. The regional airports division offices supplied the population numbers. The numbers were derived from AIP grant information on the number of residential units (e.g. houses, apartments, etc.) that are to be insulated or relocated by applying an

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* Approximate amount due to project round offs and to assumptions of funds distribution for a small number of multi-project grants where the cost distribution was not readily apparent.

† The Other category includes; acquiring easements only, sales assistance to ensure sale of incompatible property, and other similar projects. In the submittals from the regional offices, these projects were included with residential sound insulation projects or with land acquisition/relocation projects and not as separate projects. Therefore, the total of 219 individual noise compatibility projects noted above does not change. The dollar amount of individual projects in this category was not tabulated and is assumed to be equal to the portion of the $543M total that is not committed to the other project categories.

average number of residents per household. The airport sponsors have confidence or a high degree of confidence in the average number of residents per household as the data is primarily based upon actual population counts, sponsor experience with similar projects or U.S. census data. The benefits noted below are limited to residential sound insulation and residential land acquisition and relocation projects and do not contain projects (such as easements and sales assistance) that do not result in a direct noise reduction benefit.

TABLE 2

Region	FY 2000 Benefit	FY 2001 Benefit
AAL	0	73
ACE	0	125
AEA	203	717
AGL	2994	3667
ANE	2394	1866
ANW	1254	1871
ASO	2419	3370
ASW	927	1136
AWP	3594	6218
Total	13,785	19,043

The regional data represents residents within the DNL 65 dB(A) or higher noise contour as shown on the noise exposure maps used by the airport sponsors.

VARIABILITY OF AIP NOISE PROJECT FUNDING

Funding for AIP noise compatibility projects is variable from year to year. Fluctuations in actual AIP allocations occur due to several factors: 1) the total amount of AIP funds available in a fiscal year, 2) the effect of prior year carry-over funds on the amount available for current year discretionary funding for noise set-aside projects and 3) the amount of AIP funds, other than the noise set-aside, available for noise mitigation projects. To illustrate the annual variability in funding, Table 3 provides the AIP noise set-aside funding for FY 2000 and FY 2001. In addition, the table shows the additional funds provided to noise compatibility projects for each of FY 2000 and FY 2001. For the purposes of this

evaluation, we measured the population benefit associated with each fiscal year's total noise funding (set-aside plus additional funds).

TABLE 3

Fiscal Year	Noise Set Aside Funding	Additional Funding
2000	**$206,719,492**	**$8,709,327**
2001	**$315,261,073**	**$4,029,446**

AGE OF NOISE MAPS

Many of the FY 2000 and FY 2001 AIP-assisted noise projects were based upon NEM prepared in the late 1980s and early to mid-1990s, prior to the completion of the phase-out of Stage 2 air carrier aircraft. Because of the phase-out, it is likely that for many air carrier airports, the current (and future year) noise contours are smaller than that same airport's noise contours from the earlier time period. Shrinking contours would result in some of the population benefits reported for the FY 2000 and FY 2001 programs occurring in areas that today would be moderately noise impacted (55 to 64 dB(A)).

Program Guidance Letter (PGL) 01-1 was issued on March 29, 2001 to address the use of older NEM in making grant decisions. PGL 01-1 provides that "For airports that still have active funding programs based on older maps that included a high concentration of Stage 2 air carrier aircraft operations, the sponsor should be required to submit, as part of its request for funding, current noise level information …". Paragraph 800 of the recently issued FAA Order 5100.38B, "AIP Handbook" provides that "Prior to programming noise compatibility projects, airport sponsors and FAA Airports Offices should review the Noise Exposure Maps upon which noise compatibility projects are based to ensure that they are a reasonable representation of current and/or forecast conditions at the airport".

A Notice of Proposed Rule Making (NPRM) is under development to update FAR Part 150. The draft NPRM adds the requirement that the airport sponsor must revise NEMs where there is a "…substantial change in conditions that significantly reduces the noise contours such that major portions of areas previously included within the airport's noise contours are no longer included or predicted to be included within the forecast time frame." The NPRM will be soliciting public comment on the appropriate threshold of reductions in noise exposure that would require the preparation of new NEMs. Although the updated FAR Part 150 is expected to answer the question of when new NEMs and

revised NCPs are required, the update is expected to take some time and may not be available for use for the FY 2003 or FY 2004 AIP noise programs.

PUBLIC BUILDING BENEFITS

Under the combined FY 2000 and FY 2001 AIP program, 48 school insulation projects, 3 school relocation projects and 1 church insulation project were supported. Although most of the projects were for the New York (20 projects) and Chicago (14 projects) airports, projects were also approved in eight other states.

OTHER PROGRAM OUTCOMES

There are some AIP funded noise-set aside projects that do not directly reduce the number of residents or students that are exposed to a significant level of aircraft noise. However, these projects do contribute in a positive way to the control or monitoring of airport noise. Some of the contributions, such as the AIP funding of the acquisition of land interests to prevent the future establishment of non-compatible land uses, result directly from AIP-funded projects. Others, such as local land use policies and projects to ensure that pilots fly specific noise abatement procedures, although actions taken by others, are a result of AIP funded Part 150 studies. Appendix B contains a listing of these other contributions of AIP-funded noise set-aside projects.

CONCLUSIONS

The performance goal established for the noise program is to reduce the residential population that is exposed to high levels of aircraft noise (DNL 65 dB(A) or greater) by 62,500 over the five-year period of FY 2003 to FY 2007. This is an average annual population benefit of 12,500. Prior to the program evaluation, FAA roughly estimated that in each fiscal year, at least 10,000 people exposed to high levels of aircraft noise (DNL 65 dB(A) or greater) benefited as a result of the AIP noise set-aside program. This evaluation was our first effort to more accurately measure the actual population benefit. The population benefits summarized in Table 2, Section 3.2 of this report are larger than the selected performance measure for two reasons. First, the FY 2001 population benefits resulted from a FY 2001 noise program funding level that is approximately 10% higher than the noise program funding expected for FY 2003 and subsequent years. Secondly, some of the population benefits of Table 2 are based on the use of older NEM in making program decisions. This most likely resulted in some of the population benefits stated in Table 2 occurring in areas of moderate noise impact (e.g. DNL 55 to 64 dB(A)), rather than all of them being within the DNL 65 dB(A) or greater contour as reported in the survey. While it is the policy of the FAA to give priority consideration for funding to noise compatibility projects in areas with the greatest noise impact, we believe that it is good public policy to

support some projects in areas of moderate noise impact where it has been decided locally that non-compatible land uses exist, specific noise sensitive properties are adversely affected by noise, or that a noise buffer should be established. Proposals for noise compatibility projects below DNL 65 dB(A) contour are to be supported by airport sponsor documentation and are subject to the same FAA approval processes as projects at or above DNL 65 dBA.

In order to improve the accuracy of reporting on how the AIP noise set-aside program benefits a population that is impacted by high levels of noise, starting with the FY 2003 program, the regional airports division managers will be tasked with ensuring that 100% of all AIP programming decisions are based on noise contours that were either developed not more than five years prior to the grant application, or are otherwise certified as current. Once more refined data becomes available, FAA will examine whether the annual performance goal needs to be adjusted.

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