

## **THE SIX STEPS FOR CONDUCTING A PART 150 STUDY**

There are essentially six steps required in the Part 150 study process. They are:

### ***Systematically identify the issues and problems concerning airport and aircraft noise and local land use planning efforts.***

- Information is usually provided by airport staff, members of the airport's public, and technical advisory committees, local planners, and other interested parties.
- A Planning Advisory Committee is usually formed and is typically composed of citizen representatives from local interest groups and neighborhoods; representatives of local, regional, state, and federal agencies; and the local business community.
- A Technical Advisory Committee is also typically formed as a nonvoting advisory body to the airport's consultants and airport staff on matters relating to technical analysis used to formulate the noise abatement recommendations. This committee is usually composed of FAA personnel, air traffic control tower representation, airline and air cargo operators, airport users and tenants, planning agency representation, and airport staff.

### ***Define current (existing) and future (five-year) noise exposure.***

- Existing noise conditions are based on the airport's current operating procedures without additional efforts to abate noise.
- Within the area of noise exposure, the number of residents and noise-sensitive land uses (housing, schools, churches, nursing homes, hospital, and libraries) are identified within the 65 Ldn or greater noise contour.
- Two Noise Exposure Maps (Existing Conditions and Future) are the product generated by this step in the process.

### ***Evaluate alternative measures.***

- All feasible options to abate noise and manage encroachment of incompatible land uses within the airport environs are evaluated.
- Measures evaluated are those typically suggested by the planning and technical advisory committees, the public, the airport sponsor, and the airport's consultants.

- Each measure is evaluated for its effectiveness in reducing noise, and its cost, safety, and ability to be implemented.

***Develop a Noise Compatibility Plan.***

- The noise compatibility plan consists of an "optimum" combination of preferred noise abatement and land use management measures and a plan for implementation.

- Land use management measures consist of both remedial corrective measures (typically sound insulation or property acquisition) and preventive measures (land use controls that amend or update local zoning ordinances, comprehensive plan, subdivision regulations, and building code).

- The implementation plan usually indicates the estimated cost to the airport sponsor, FAA, airport users, and local governments for each of the recommended measures.

***Submit the completed Noise Compatibility Plan for FAA review and approval. FAA review and approval of a submitted plan, except for measures relating to flight procedures, must be completed within 180 days. Failure to approve or disapprove within this period is deemed approval under ANSA.***

ANSA and the Part 150 regulations state that a Part 150 program will be federally approved if:

- Its measures do not create an undue burden on interstate or foreign commerce.

- Its measures are reasonably consistent with the goal of reducing existing incompatible land uses and preventing introduction of additional incompatible land uses.

- It provides for future updating through submission of a revised noise exposure map.

- It is not "unjustly discriminatory. "

- It does not derogate safety or adversely affect the safe and efficient use of airspace.

- To the extent practicable, it meets both local and national needs of the national air transportation system, considering tradeoffs between economic benefits derived from the airport and the noise impacts.

- It can be implemented in a manner consistent with the powers and duties of the FAA administrator.

***Develop an implementation and monitoring plan.***

- This process is usually internal to the airport and could include tracking grant application progress and funding or the implementation status of each recommended measure.

**PREPARING AND SUBMITTING NOISE EXPOSURE MAPS**

- The FAA Part 150 regulations require the use of a standard noise forecasting methodology to develop the noise level contours for the required noise exposure maps. The FAA Integrated Noise Model was adopted as the program's standard noise modeling methodology, but other FAA-approved equivalent models or programs may be used. If a model does not already have blanket FAA approval for use in Part 150 studies, it must receive specific approval by the FAA's Office of Environment and Energy before it can be used.

- Key factors in considering approval of a methodology or computer program include its demonstrated capability to produce the required output and its "public availability" to provide interested parties the opportunity to substantiate the results (14 CFR § A150. 103).

- Both the Existing Condition and Five-Year noise exposure maps must use the same model and the same version of the model in order to be comparable.

- Actual noise monitoring is not required under the Part 150 regulations for generating either the noise exposure maps or the noise compatibility program alternatives. The airport operator may use noise monitoring for data acquisition or data refinement, but it is not required to do so (14 CFR § A150. 1).

- The regulations require the use of the government furnished data on aircraft noise characteristics (if they are not already a part of the computer program's stored data bank). Airport operators and their consultants cannot alter the basic acoustic data in FAA approved noise models (referred to as "calibration" of the model). Noise monitoring may not be used to calibrate the noise model.

- It is permissible to substitute one aircraft type for another for which noise data is not readily available, but any substitution must be determined to be technically acceptable by the FAA Office of Environment and Energy.

- If actual noise monitoring is used in developing the noise maps, (1) sound levels must be measured or analyzed with equipment having the "A" frequency weighting and "slow response" characteristics as defined in International Electro technical Commission Publication No. 179 and (2) noise measurements and documentation must be in accordance with "accepted acoustical measurement methodology" such as those described in ANSI 51. 13; ARP No. 796; the *Handbook of Noise Measurement* by Arnold P. G. Peterson; or *Acoustic Noise Measurement* by Hassell and Zaveri.

- The technical data on which both maps are based must be adequately described in the accompanying narrative and data sources must be indicated. The technical information includes the existing and five-year forecast of numbers and types of aircraft operations, types of aircraft and fleet mix, runway percentage use and flight track usage, day/night breakout of operations, explanation of any planned airport development within five years that will affect airfield operations, land use and population data, and incorporation of any noise abatement strategies.

- The five-year map must be based on "reasonable assumptions" concerning future type and frequency of aircraft operations, number of nighttime operations, flight patterns, airport layout including planned airport development, planned land use changes and population changes in the surrounding areas. Data sources must be indicated (14 CFR § 150. 21).

- The FAA must be satisfied with the adequacy of the underlying technical data for both maps and with the reasonableness of the planning assumptions for the five-year map in order to find the maps in compliance with Part 150.

- The airport operator must submit a revised noise exposure map if, after previously submitting a map, any change in the operation of the airport would create any "substantial, new noncompatible use" in any area depicted on the map beyond that which is forecast for the fifth year after the date of submission. The regulations define this as any change that results in an increase of the yearly day-night average sound level of 1. 5 decibels or more in either (1) a land area which was formerly compatible but is thereby made incompatible or (2) was already determined to be incompatible and whose incompatibility is "significantly increased" (14 CFR § 150. 23(d)).

Noise exposure maps must include:

- A map of the airport and its environs in adequately detailed scale (at least 1 inch to 8,000 feet) showing runway length and end numbers,

alignments, landing thresholds, take-off start-of-roll points, airport boundary, and flight tracks out to at least 30,000 feet from the end of each runway

- Airport activity levels and operational data showing, on an annual average-daily-basis, the number of aircraft, by aircraft type, that use each flight track for landings and takeoffs during daytime (7 a. m. to 10 p. m. ) and nighttime (10 p. m. to 7 a. m. ) periods
- For landings, the glide slopes, glide slope intercept altitudes, and other pertinent information needed to establish approach profiles along with the engine power levels needed to fly the approach profile
- For takeoffs, the flight profile which is the relationship of altitude to distance from start-of-roll along with the engine power levels needed to fly the takeoff profile reflecting the use of any noise abatement departure procedures and, if applicable, the takeoff weight of the aircraft or some proxy for weight such as stage length
- Existing topographical or airspace restrictions which preclude the use of alternative flight tracks
- The government furnished data on aircraft noise characteristics (if not already part of the computer database)
- Airport elevation and average temperature
- Noise monitoring sites, if noise monitoring is being used for data acquisition and refinement
- Noise contours for Ldn 65, 70, and 75 decibels (others can be included at the airport operator's option but the reason must be explained in the narrative)
- Incompatible land uses within the noise contours (Ldn 65 decibels and greater) and optionally for contours below 65 decibels (No land use has to be identified as incompatible if the self-generated noise from that use and/or the ambient noise from other non-aircraft and non-airport uses equals or exceeds the noise from aircraft or airport sources. )
- The locations of noise-sensitive public buildings, including schools, hospitals, health care facilities, and properties on or eligible for inclusion in the National Register of Historic Places
- Estimates of the number of people living within the Ldn 65, 70, and 75 contours

- Depiction of the contours on a scale sufficient to discern streets and other geographic features
- Compatible land uses are not required to be included or identified on the noise exposure maps

## **THE REQUIRED CONSULTATION PROCESS**

The FAA regulations emphasize the importance of the consultation process in a Part 150 study. They require a narrative description of the public participation and consultation carried out with respect to the noise compatibility program.

- Program documentation must clearly identify the various consulted parties. Parties to be consulted by the airport operator are FAA officials, state officials, public and planning agencies (identified by name) within the Ldn 65 decibel area, other federal officials with local responsibility for land uses within the Ldn 65 decibel area, air carriers, and, to the extent practicable, other aircraft operators (14 CFR § 150. 23(c)).
- Consultation with the FAA must include, to the extent practicable, informal agreement from the FAA on proposed new or modified flight procedures.
- Program documentation must show that the airport operator has afforded "adequate" opportunity for the "active and direct" participation of the state, public agencies and planning agencies in the areas surrounding the airport, aeronautical users, and the general public prior to and during the development of the noise compatibility program and prior to its submission to the FAA. This must include adequate opportunity for them to submit "views, data, and comments on the formulation and adequacy of the program. " (14 CFR § 150. 23(d))
- Program documentation cannot merely state that an adequate opportunity has been afforded. It must indicate that the required parties were given the opportunity to participate and have input; that the opportunity was substantial, involving an active role and a real opportunity for input into program considerations; and that the participation was timely.
- Although formation of advisory groups or task forces is common in Part 150 studies, it is not required by the regulations. The participation vehicle is not specified. Airport operators are given the flexibility to determine how to meet the consultation and participation requirements.

- The requirement for active, direct participation and opportunity for substantive input does not include a requirement for the airport operator to let participants vote on recommended program measures or otherwise have an equal role in determining alternatives. Neither does it require unanimity of opinion in the consultation process.
- Not every aviation user or member of the public must be allowed to actively participate on an advisory committee or task force. However, all written comments from any party must be received and considered. The documentation must include a summary of all comments received at any public hearing and a copy of all written material submitted to the airport operator during the consultation process. The airport operator must include its response and disposition of both verbal hearing comments and written materials.
- The documentation must include evidence that the operator provided notice and an opportunity for a public hearing on the noise compatibility program. The only specified timing for the hearing is that it must occur prior to submission of the program to the FAA.

## **CONSIDERATION OF ALTERNATIVES**

At a minimum, each noise compatibility program must consider these alternatives in formulating its program:

- Acquisition of land and land interests, including, but not limited to air rights, easements, and development rights to ensure compatible land uses.
- Construction of barriers and acoustical shielding, including soundproofing public buildings.
- Implementation of a preferential runway system.
- The use of flight procedures, including modifying flight tracks, to control aircraft operations and reduce noise exposure in noise sensitive areas around the airport.
- Implementing airport restrictions such as denying airport use to aircraft that do not meet federal noise standards, capacity limitation based on relative noisiness of different aircraft types, aircraft noise abatement takeoff and landing procedures, landing fees based on estimated noise levels and arrival times, and nighttime restrictions.
- Other actions that would have a beneficial noise control or abatement impact.

- Other actions recommended for analysis by the FAA.

The program must indicate into which category each considered alternative would fall with respect to authority to implement, i. e. , the airport operator, a local agency or political subdivision, a state agency, the FAA, another federal agency, or another entity.

- The regulations require a description and analysis of the considered alternative measures and a discussion of why specific alternatives were rejected for inclusion in the final program. There must be a "sufficient" description of each alternative to provide a clear understanding of it.
- There is no specified level of analytical detail required for rejected alternatives. However, the reasons presented in the documentation must appear reasonable, should not be based on faulty technical analysis, and should not be based on flawed conclusions.
- While other parties may recommend consideration of specific alternatives, the airport operator has the sole final prerogative to determine which alternatives to reject and which to recommend.
- Every recommended alternative must relate directly or indirectly to the reduction of noise and incompatible land uses. The regulations require a description of the relative contribution each of the proposed measures will make to the program's overall effectiveness. The description may be in narrative form and may be brief (14 CFR § 150. 23(e)(3)).
- For alternatives that lend themselves to quantification, the regulations require inclusion of the actual or anticipated effect on noise exposure reduction and prevention of introduction of additional incompatible land uses. Quantified effects must be based on relevant expressed assumptions concerning the type and frequency of aircraft operations, number of nighttime operations, flight patterns, airport layout and planned development, planned land use changes, and demographic changes within the Ldn 65 decibel contour.
- The FAA reviewer must comment on any recommended alternative that does not appear to have a clear noise or land use benefit and request the operator to provide additional supporting data or consider removing the recommendation from the program. The reviewer must also comment on any apparently faulty or questionable assumptions or any lack of descriptive and quantified benefits before starting the 180-day review period.