



APPENDIX A

Background Information

APPENDIX A FEDERAL AIRPORT NOISE COMPATIBILITY PLANNING BACKGROUND

Title 14 Code of Federal Regulations (CFR) Part 150, *Airport Noise Compatibility Planning*, issued in January 1985, establishes a voluntary process for airport operators to measure aircraft noise exposure, assess existing and future land use compatibility, and develop strategies for improving that compatibility. A 14 CFR Part 150 study typically includes two components: Noise Exposure Maps (NEMs) and a Noise Compatibility Program (NCP).

NEMs show existing and forecast noise exposure contours and identify land uses within those contours that are considered incompatible with aircraft noise, based on 14 CFR Part 150, Appendix A, Table 1. The NCP evaluates potential measures for reducing or mitigating those incompatibilities. Participation in 14 CFR Part 150 is voluntary, but airport sponsors that complete an NCP and receive Federal Aviation Administration (FAA) approval become eligible for federal funding under the Airport Improvement Program for approved noise abatement and mitigation measures. This appendix supports the preparation of NEMs and is limited to the regulatory requirements applicable to their preparation.

Under Section 150.21 of 14 CFR Part 150, NEMs must identify existing noncompatible land uses at the time of submission to the FAA for approval and show forecast aircraft noise exposure for at least 5 years into the future. To satisfy this requirement, NEMs are developed using FAA-approved modeling tools¹ that generate noise exposure contours for both existing and forecast cumulative noise conditions in the airport environment. The metrics and data elements to be used in developing these contours are specified in 14 CFR Part 150. Specifically, noise exposure contours must be based on the following metrics:

- The A-weighted sound level,² measured, filtered, and recorded in accordance with 14 CFR Part 150, Appendix A, Section A150.5, must be employed as the unit of measurement for single event noise at airports and surrounding areas.³
- The yearly day-night average sound level (DNL)⁴ must be employed for the analysis and characterization of multiple aircraft noise events and for determining the cumulative noise exposure for individuals around airports.⁵

NEMs must depict DNL contours of 65, 70, and 75 dBA to define the extent of aircraft noise impacts.⁶ Within areas exposed to DNL 65 dBA or higher, land uses must be identified and evaluated for compatibility in accordance with

¹ The FAA currently mandates the use of the Aviation Environmental Design Tool in studies performed under 14 CFR Part 150.

² An A-weighted sound level is adjusted to account for the way the human ear perceives different frequencies, reducing the influence of very low and very high sounds. A-weighted sound levels are commonly reported in A-weighted decibels (dBA).

³ 14 CFR Part 150, Appendix A to Part 150, Sec. A150.3(a).

⁴ DNL is a 24-hour, time-weighted average noise level expressed in dBA. It reflects cumulative exposure to multiple noise events and applies a 10-decibel penalty to sounds occurring between 10:00 p.m. and 7:00 a.m., when most people sleep and are more sensitive to noise.

⁵ 14 CFR Part 150, Appendix A to Part 150, Sec. A150.3(b).

⁶ 14 CFR Part 150, Appendix A to Part 150, Sec. A150.101(a).

the guidelines in 14 CFR Part 150, Appendix A, Table 1. These guidelines, which are summarized in **Table A-1**, set compatibility standards for residential, public (schools, churches, nursing homes, hospitals, and libraries), commercial, manufacturing and production, and recreational land uses. However, the FAA guidelines emphasize that responsibility for determining permissible land uses and their relationship with specific noise contours rests with the local authorities.

Under these guidelines, all land uses below DNL 65 dBA are considered compatible with airport operations. Residential uses are generally incompatible above this threshold, but they may be permitted between DNL 65 dBA and DNL 70 dBA if sound insulation measures are applied. Although historic properties are not listed in the table, they may be considered under the residential, public, commercial, manufacturing and production, and recreational categories, as appropriate.

NEMs and supporting documentation must be developed in consultation with state agencies, local planning bodies with an area of jurisdiction within the DNL 65 dBA contour, FAA regional officials, and other federal officials with local land use responsibilities. Consultation must also include regular aeronautical users, such as pilots and tenants, at the airport for which the NEM is being prepared. The airport operator must certify that all interested parties were given sufficient opportunity to provide opinions, data, and comments regarding the accuracy and adequacy of the draft NEMs and the associated aircraft operations forecast.

TABLE A-1 LAND USE COMPATIBILITY GUIDELINES – TITLE 14 CODE OF FEDERAL REGULATIONS
PART 150

LAND USE	YEARLY DAY-NIGHT AVERAGE SOUND LEVEL IN DECIBELS					
	BELOW 65	65–70	70–75	75–80	80–85	OVER 85
Residential						
Residential other than mobile homes and transient lodgings	Y	N ¹	N ¹	N	N	N
Mobile home park	Y	N	N	N	N	N
Transient lodgings	Y	N ¹	N ¹	N ¹	N	N
Public Use						
Schools	Y	N ¹	N ¹	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y ²	Y ³	Y ⁴	Y ⁴
Parking	Y	Y	Y ²	Y ³	Y ⁴	N
Commercial Use						
Offices, business, and professional	Y	Y	25	30	N	N
Wholesale and retail – building materials, hardware, and farm equipment	Y	Y	Y ²	Y ³	Y ⁴	N
Retail trade – general	Y	Y	Y ²	Y ³	Y ⁴	N
Utilities	Y	Y	Y ²	Y ³	Y ⁴	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing general	Y	Y	Y ²	Y ³	Y ⁴	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y ⁶	Y ⁷	Y ⁸	Y ⁸	Y ⁸
Livestock farming and breeding	Y	Y ⁶	Y ⁷	N	N	N
Mining and fishing, resource production, and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y ⁵	Y ⁵	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusement parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

NOTES:

Y – Yes, land use and related structures are compatible without restrictions.

N – No, land use and related structures are not compatible and should be prohibited.

- Where the community determines that residential or school uses must be allowed, measures to achieve an outdoor-to-indoor noise level reduction (NLR) of at least 25 A-weighted decibels (dBA) to 30 dBA should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide an NLR of 20 dBA, thus the reduction requirements are often stated as 5, 10, or 15 dBA over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.
- Measures to achieve an NLR of 25 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where normal noise level is low.
- Measures to achieve an NLR of 30 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where normal noise level is low.
- Measures to achieve an NLR of 35 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise-sensitive areas, or where normal noise level is low.
- Land use is compatible provided that special sound reinforcement systems are installed.
- Residential buildings require an NLR of 25 dBA.
- Residential buildings require an NLR of 30 dBA.
- Residential buildings are not permitted.

SOURCE: Title 14 Code of Federal Regulations Part 150, *Airport Noise Compatibility Planning*.