San Antonio International Airport

Title 14 Code of Federal Regulations (CFR) Part 150

Noise Exposure Map Update

Frequently Asked Questions

What is a 14 CFR Part 150 Noise Study?

Title 14 Code of Federal Regulations (CFR) Part 150, *Airport Noise Compatibility Planning*, was issued by the Federal Aviation Administration (FAA) as a final rule in January 1985. 14 CFR Part 150 provides a mechanism for airport operators to undertake studies of aircraft noise that provide the public with information about existing and future noncompatible land uses around airports and to create measures that reduce, and prevent the introduction of new, noncompatible land uses. A noncompatible land use is a land use exposed to aircraft noise in excess of the thresholds established in 14 CFR Part 150 (see Section A150.101 in Appendix A to 14 CFR Part 150). Airports that choose to conduct a Part 150 Noise Study do so voluntarily with the goal of improving compatibility between the airport and the surrounding communities.

Part 150 studies typically consist of two primary components: (1) the Noise Exposure Map (NEM) Report, which contains detailed information regarding existing and 5-year future airport/aircraft noise exposure patterns, and (2) the Noise Compatibility Program (NCP), which includes descriptions and an evaluation of noise abatement and noise mitigation options/programs applicable to an airport.

As the owner and operator of the San Antonio International Airport (SAT or the Airport), the City of San Antonio (the City) is currently conducting a Part 150 NEM Update Study, which kicked-off in January 2020 and is expected to be completed by August 2021.

Why is the City undertaking a Part 150 NEM Update?

The City is conducting this Part 150 NEM Update Study to assess noise exposure in communities surrounding the Airport. Generally, NEMs should be updated about every five years or when an airport's noise environment has significantly changed. The operational environment has changed since completion of the last NEM Update in 2015, specifically changes in aircraft fleet mix, runway usage, and operational levels; as such, an NEM Update is warranted.

Has a Part 150 Study been prepared for SAT in the past?

Yes, the City has prepared a number of NEM Updates and an NCP in the past. The first Part 150 Study was completed in 1990 and the most recent Study was completed in 2015.

What will be produced during the Part 150 NEM Update?

The Part 150 NEM Update must be prepared in accordance with guidance provided in the 14 CFR Part 150 regulations. The FAA has prepared checklists for the NEM Update, which must be followed to ensure compliance with 14 CFR Part 150. As part of this Part 150 NEM Update, the City and its consultant (the Part 150 Study Team) will quantify 2021 "Existing Conditions"

and 2026 “Future Conditions” aircraft noise exposure levels in the vicinity of SAT. The Part 150 Study Team will also develop supporting documentation explaining the data, assumptions, and modeling processes used to calculate existing and future aircraft noise exposure levels. The NEM Update Report will provide two Noise Exposure Maps (for years 2021 and 2026) that identify areas exposed to aircraft noise of day-night average sound level (DNL) 65 decibels (dB) and higher. The NEMs will be submitted to the FAA for review and acceptance.

The NEMs will identify the Airport’s existing operational procedures and determine the existing and future noise conditions around the Airport. Importantly, the NEMs will also determine existing and future land uses that are and are not compatible with aircraft noise based on the noise conditions and land use compatibility guidelines in 14 CFR Part 150, Appendix A, Table 1. Land use compatibility will ultimately determine whether a property is potentially eligible for sound mitigation/acoustical treatment measures.

Who provides input into the Part 150 NEM Update Study?

14 CFR Part 150 encourages the participation of a variety of interested parties, including the FAA, land use agencies, and members of the local community. To facilitate an open and transparent discussion of the Party 150 NEM Update process, the City will be conducting two sets of public information workshops:

- The initial series of public workshops are scheduled for the week of August 31, 2020, and will provide introductory information on the Part 150 NEM Update process, including an introduction to aircraft noise, information about modeling aircraft noise exposure, runway use and aircraft operational information, the Draft 2021 Existing Conditions (or “Baseline”) NEM, and the Study schedule.
- In early 2021, a subsequent series of public workshops will be conducted upon completion and circulation of the Draft NEM report and will present the Draft 2026 “Future Conditions” NEM.

All members of the public are encouraged to participate in the workshops and provide written comments. Instructions on how to submit comments will be posted on the Airport’s Noise Office website and will be provided during the public workshop sessions.

Does the Part 150 NEM Update relate to the SAT Master Plan?

The Part 150 NEM Update Study is being conducted alongside the City’s Strategic Development Plan (SDP) for the Airport; however, they are separate and independent efforts. The Part 150 NEM Update is used to identify potential noncompatible land uses over a 5-year planning horizon, whereas the SDP will chart a longer-term and comprehensive path for Airport development over the course of 20 or more years.

What is DNL?

DNL, or day-night average sound level, is a function of equivalent sound level, or Leq. Leq is the logarithmic average of all the individual sound events occurring over a specified unit of time, expressed in A-weighted decibels. DNL is also sometimes referred to as Ldn. DNL is Leq measured over a 24-hour period with a 10 dB penalty applied to nighttime sound levels to account for the greater annoyance that nighttime noise is presumed to cause for most people. The nighttime hours are from 10 p.m. to 7 a.m. This extra weight treats one nighttime noise event as equivalent to 10 daytime events of the same magnitude. The average annual day is used for the quantification and evaluation of airport noise. The average annual day is determined by averaging operations over a 24-hour period for 365 days. DNL applied on the basis of an average annual day is the required metric specified in 14 CFR Part 150 to be used for noise compatibility planning and provides the basis for land use compatibility guidelines.

How is noise exposure determined?

The FAA has developed the Aviation Environmental Design Tool (AEDT) for evaluating aircraft noise exposure in the vicinity of airports. The AEDT is a computer model which produces DNL contours that are used to develop aircraft noise exposure maps. The AEDT uses a database of aircraft noise characteristics to predict DNL based on user input on the types (aircraft fleet mix) and number of aircraft operations, annual average airport operating conditions, average aircraft performance, and aircraft flight patterns, while also considering local terrain. The AEDT calculates the noise levels at thousands of points and then develops contours that represent areas of similar sound exposure. Use of the AEDT also allows the prediction of future noise conditions resulting from changes in aircraft activity levels, aircraft types, flight procedures or other operational factors.

What affects noise exposure?

Engine noise and airframe noise are specific sources of noise at an airport. The turbulent mixing of air streams in the engine produces noise from the engine's jets. The fan within the engine makes noise that escapes from both the front and back of the engine. The fan is also responsible for a buzzing noise during takeoff, created when the tips of the fan blades are traveling close to the speed of sound. Airframe noise is most noticeable during landing at an airport. The lowering of landing gear creates turbulence that produces noise in the surrounding area. Similarly, the interaction of flaps and slats on the wing during descent influences airstream flow and thus creates noise.

Noise exposure also takes into consideration the diverse range of noise levels that primarily depend on the type of engine used by the aircraft, the size of the aircraft and whether the aircraft is taxiing on the airfield, landing or taking off. Furthermore, aircraft noise exposure is determined by the number of aircraft operations, airport operating conditions, aircraft performance, and flight patterns, while also considering local terrain.

What is a noncompatible land use?

A noncompatible land use means that the sound exposure that a given use receives is normally not compatible because the DNL is above the thresholds identified in Part 150, Appendix A, Table 1. The thresholds for determining the compatibility of land use vary depending on the

current use of the land. For example, for residential land uses, the noncompatibility threshold is DNL 65, but for commercial land use (offices, business and professional), the noncompatibility threshold is DNL 70, where the design and construction of the structures do not attenuate outside noise by 25 decibels or more.