Part 150 Noise Studies and Noise Exposure Maps

January 12, 2021

ADDISON

Introduction

What is FAR Part 150?

- Title 14 of the Code of Federal Regulations – Aeronautics and Space
- Part 150 – Airport Noise Compatibility Planning
- Commonly known as “FAR [Federal Aviation Regulations] Part 150”

“prescribes the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs”

- Part 150 program was established in 1981 following passage of the Aviation Safety and Noise Abatement Act in 1979
- Part 150 is a **voluntary** program for public-use airports to reduce impacts of airport noise on surrounding areas / communities

Introduction

What is a Part 150 Study?

- Study undertaken to determine levels of noise exposure on real properties in the vicinity of an airport attributable to aircraft operations at that airport
- Two parts to a Part 150 program:
  - Study to collect data and develop Noise Exposure Maps (maps identify compatible and non-compatible land uses around the airport)
  - Development of a Noise Compatibility Program (NCP) which identifies specific measures to reduce incompatible land uses around the airport
- Data collection for a Part 150 study requires a full year to capture seasonal variations
  - Record takeoffs and landings of aircraft (type, date, time, direction of flight)
  - Measure sound produced by these aircraft operations
- Data input into FAA noise model to produce Noise Exposure Map (NEM)

Introduction

When is a Part 150 Study needed?

- Part 150 studies provide a means to address community concerns over airport noise
- Part 150 studies are customarily conducted in conjunction with Airport Master Plan Updates because there is overlap in data collection and forecasting requirements

- Addison's most recent Part 150 Study was conducted in conjunction with the 2004 Master Plan Update (revised NEM approved 9/22/04; NCP approved 12/22/05)
- Addison did NOT conduct a Part 150 Study in conjunction with the 2016 Master Plan Update (for reasons of cost and lack of perceived benefit)
- Addison will likely seek to conduct another Master Plan Update in 2025-26

Who Performs the Study?

Part 150 Studies are typically conducted by consulting firms

- If the Part 150 Study is funded by an AIP grant, the airport will select a qualified consulting firm to conduct the study (using FAA selection requirements)
- Many aviation / engineering firms are capable of performing these studies
- Firms capable of providing these services include but are not limited to: AECOM, CHA Consulting, Coffman Associates, CP&Y, HNTB, Garver, KSA, Landrum & Brown, Lochner, Mead & Hunt, Moye Consulting, RS&H, RW Armstrong & Associates, Woolpert Inc., and WSP
- Coffman Associates performed the most recent (2004) Part 150 Study for Addison

Cost and Funding Considerations

How Much Does a Part 150 Study Cost?

- Below is some recent cost data for Part 150 Studies performed at various airports

BDR	Igor I Sikorsky Memorial	Bridgeport, CT	$170,435
BAF	Westfield-Barnes Regional	Westfield, MA	$35,192
SAN	San Diego International	San Diego, CA	$1,119,195
IND	Indianapolis International	Indianapolis, IN	$262,500
AFW	Fort Worth Alliance	Fort Worth, TX	$600,000
APF	Naples Municipal	Naples, FL	$600,000
TPA	Tampa International	Tampa, FL	$502,014
MDW	Chicago Midway International	Chicago, IL	$276,900
DLH	Duluth International	Duluth, MN	$645,920
CMH	John Glenn Columbus International	Columbus, OH	$866,637
HHR	Jack Northrop Field/Hawthorne Municipal	Hawthorne, CA	$307,125
LNA	Palm Beach County Park Airport	West Palm Beach, FL	$600,000

- None of the airports listed above are really similar to Addison
- A reasonable cost estimate for a stand-alone Part 150 Study at Addison – with its single runway and compact area – would be in the $400,000 to $500,000 range

Cost and Funding Considerations

Is a Part 150 Study Eligible for Grant Funding?

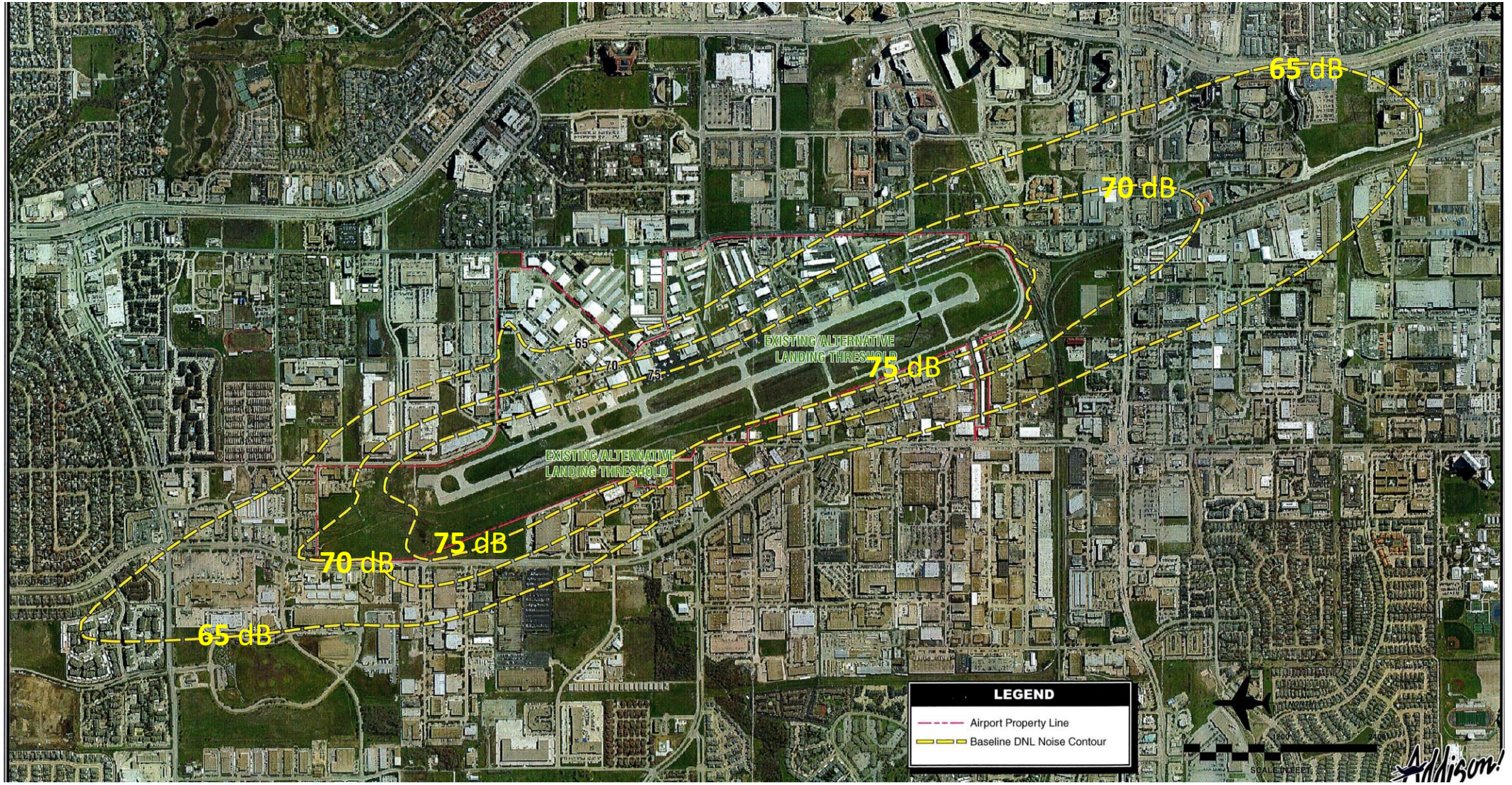
- A Part 150 Study is eligible for FAA Airport Improvement Program (AIP) grant funding
- Part 150 studies are typically conducted (and funded) in conjunction with Airport Master Plan Updates
- AIP grant funded projects are typically planned years in advance as part of an Airport Capital Improvement Program (CIP) that is submitted to / coordinated with FAA (or, in Addison's case, TX-DOT Aviation, which acts as FAA's agent for Texas general aviation [GA] airports)
- An "out of sequence" Part 150 study would be a low-priority project, very unlikely to be funded by FAA / TX-DOT; it would not be competitive for Discretionary funding

Cost and Funding Considerations

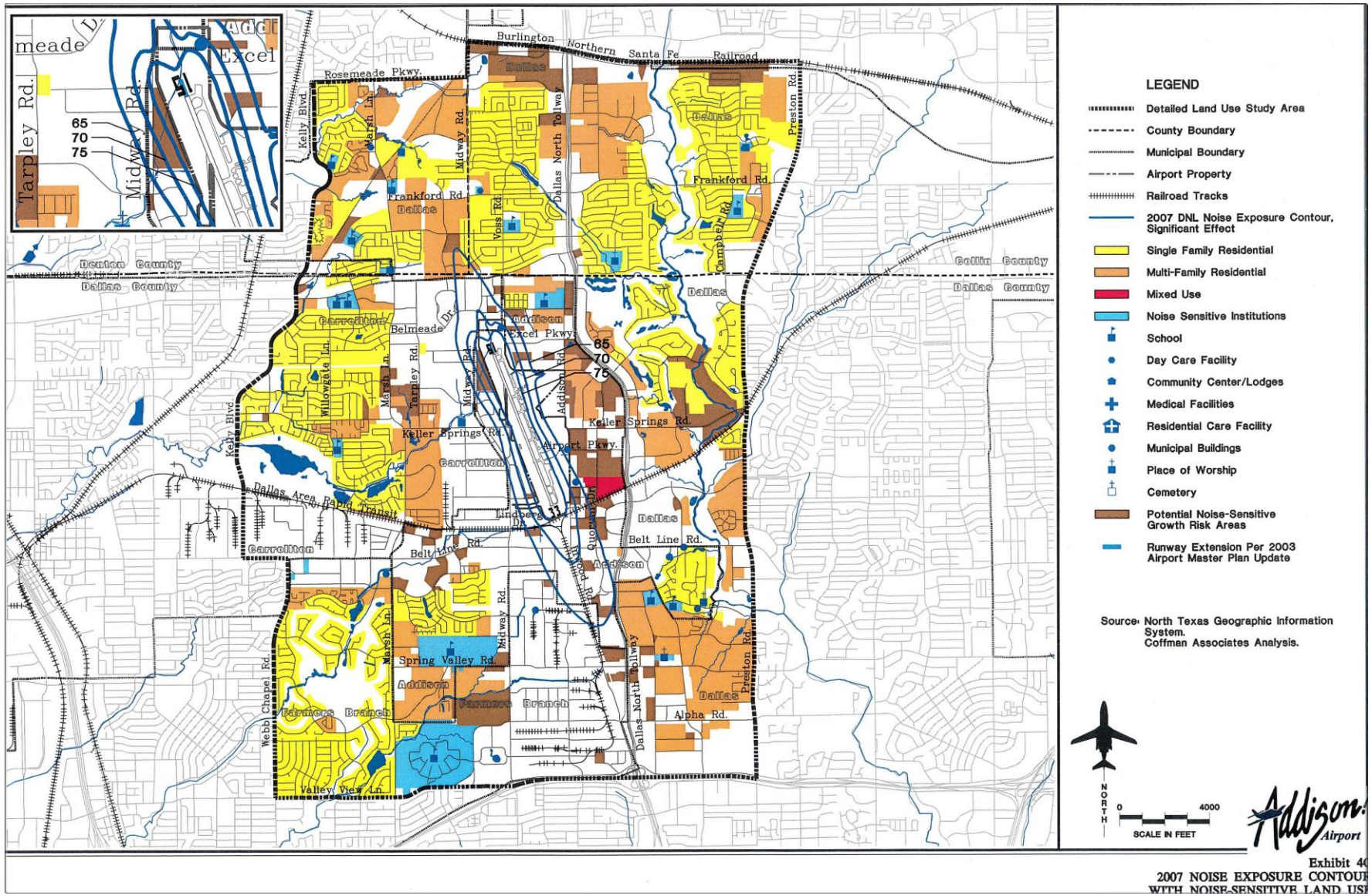
Could an Airport Use Its Non-Primary Entitlement (NPE) Funds to Finance a Part 150 Study?

- There are three types of AIP funding available to general aviation (GA) airports:
  - State Apportionment – about $20 Million annually, administered by TX-DOT Aviation under the State Block Grant Program (SBGP) to fund improvements at approximately 180 eligible GA airports in the State
  - Discretionary – amounts vary, but approximately $15 Million annually is available to TX-DOT Aviation to fund high-priority projects at the state's eligible GA airports
  - Non-Primary Entitlement (NPE) – $150,000 annually for each eligible airport, which may be accumulated for up to four years. When TX-DOT Aviation provides AIP funding to a project at an airport, the airport's accumulated NPE funds are first to be applied, before any State Apportionment funds are allocated.
- In theory, an airport could insist on using its available NPE funds to finance a Part 150 Study. Doing so is a *de facto* declaration that a Part 150 Study is the airport's highest development priority. It would delay any projects in the airport's CIP that TX-DOT Aviation had previously planned to fund.

Addison Noise Contours

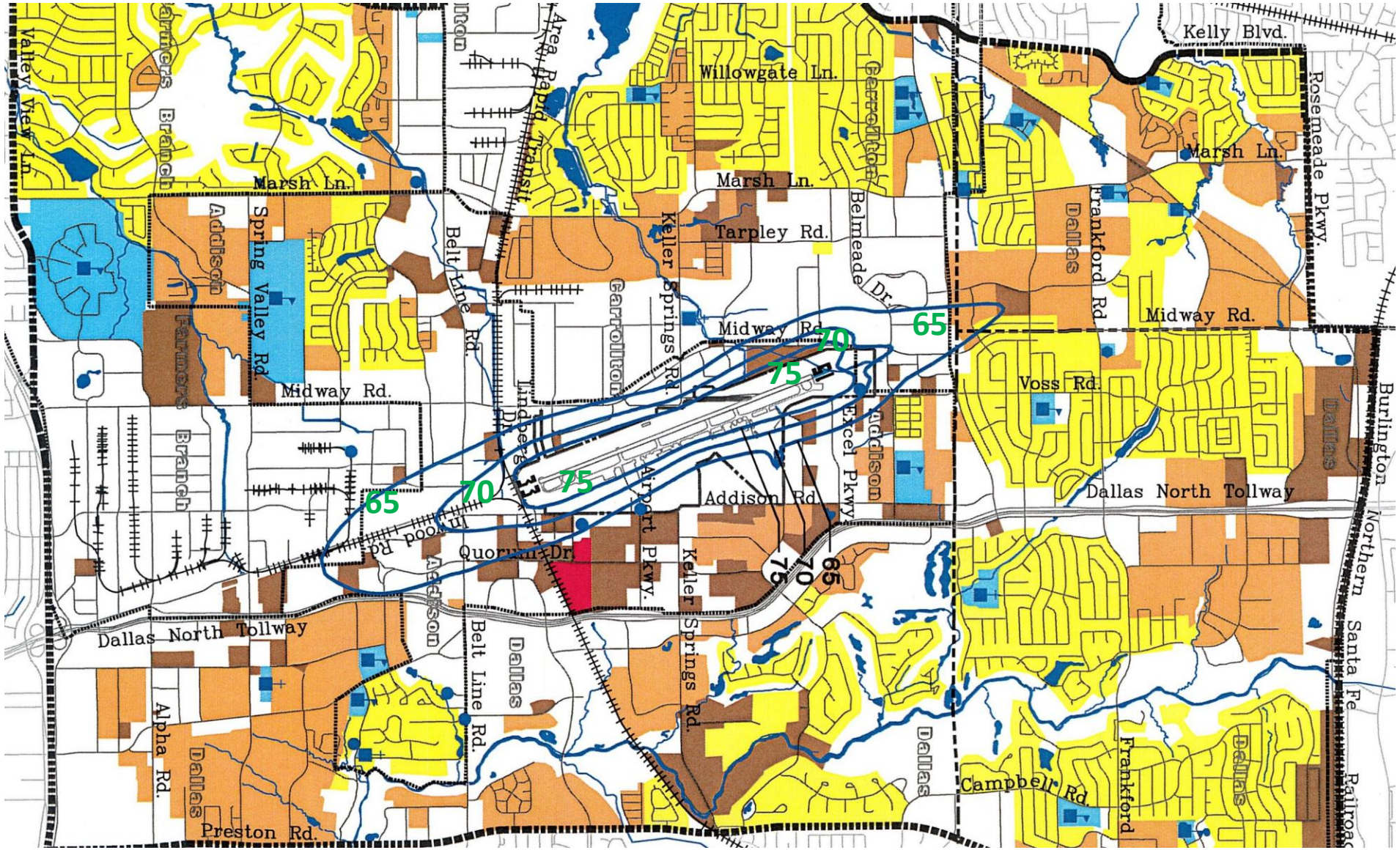


Addison Noise Contours and Land Use



Addison Noise Contours and Land Use (Detail)

South →



North →

What Has Changed Since Addison's Last Part 150 Study?

FAA Noise Modeling

- FAA uses a noise model to draw noise contours for Noise Exposure Maps
- Addison's most recent Part 150 Study used FAA's "Integrated Noise Model" (INM)
- The INM is no longer in use; it was replaced by the "Aviation Environmental Design Tool" (AEDT) in 2014

  AEDT is a software system that dynamically models aircraft performance in space and time to produce fuel burn, emissions and noise. Full flight gate-to-gate analyses are possible for study sizes ranging from a single flight at an airport to scenarios at the regional, national, and global levels. AEDT is currently used by the U.S. government to consider the interdependencies between aircraft-related fuel burn, noise and emissions.

- There are differences between the INM and the AEDT; given the same input data for noise contours, the AEDT will typically generate noise contours that are shorter along the runway axis but wider on either side of the runway

What Has Changed Since Addison's Last Part 150 Study?

Aircraft Operations

- Mandatory retirement of "Stage 2" jet aircraft under 75,000 pounds Maximum Gross Weight effective December 31, 2015 (the noisiest aircraft operating at Addison).
- Addison's "fleet mix" includes many newer, quieter jet aircraft.
- Annual operations were 170,000 at the time (2002 data) of the most recent Part 150 Study; in FY19 and FY20, annual operations totaled approximately 115,000.
- In 2008 the standard heading for instrument departures from Runway 15 (take-offs to the south) changed from 100 degrees (slightly south of due east) to 040 degrees for piston aircraft and 050 degrees for turbine aircraft … so departing aircraft make a sharper turn to the northeast rather than to the east.

What Could Change

If or When Addison Conducts a New Part 150 Study:

- The study will result in an updated Noise Exposure Map (NEM) with updated Noise Contours. The NEM and the Noise Compatibility Plan (NCP) must be submitted to FAA/TX-DOT for approval.
- The study will produce an updated NCP.
- It is possible, perhaps even likely, that the noise contours will contract in the areas north and south of the runway ends; this may have favorable implications for redevelopment along the Inwood corridor south of the airport.
- Whether the noise contours expand or contract laterally – in the areas east and west of the runway – is not possible to say without performing the study. Given the differences between the INM and the AEDT, there is at least the potential that the noise contours could expand laterally.
- If the noise contours expand to include existing incompatible land uses – residential uses in particular – Addison may be required to mitigate the noise exposure.

What Will Not Change

If or When Addison Conducts a New Part 150 Study:

- Flight patterns into and out of Addison Airport **WILL NOT CHANGE** as a result of a Part 150 Study. (Flight pattern changes can be requested in the NCP update, but these require FAA approval, which is very unlikely to be granted.)
- No curfews or other similar restrictions will be imposed on Addison's flight operations as a result of a Part 150 Study. (Noise and access restrictions may only be imposed through the 14 CFR Part 161 process.)
- Land uses that FAA considers to be incompatible from a noise exposure perspective will not change; these are defined in 14 CFR Part 150 Appendix A.

Options

Should Addison Conduct a New Part 150 Study? If so, when? What are the available options?

1. Conduct a new Part 150 Study as soon as possible
   - **FUNDING OPTIONS:**
     a. Request to use NPE funds (FY21: $150,000 available); would require additional funding source; would disrupt Airport's CIP and delay planned projects (Taxiway Bravo extension)
     b. Identify / use a different Town of Addison funding source
     c. Seek a private funding source (*e.g.*, Addison Circle TOD master developer)
   - **TIMING:** study would likely require 18-24 months to complete, longer if using NPE funds
2. Wait to conduct a new Part 150 Study (in conjunction with Master Plan update)
   - Project would be eligible for 90% grant funding (10% local match from Airport Fund)
   - Master Plan Update for Addison expected around 2025-26 (when current plan is 10 years old)
3. Don't plan to conduct a new Part 150 Study
   - Zero cost
   - No requirement to update NEM or NCP

Recommendation

Recommendation: Update Addison's Part 150 Study in Conjunction with the Next Airport Master Plan Update

- Using Non-Primary Entitlement (NPE) funding would almost certainly derail the Airport's planned Capital Improvement Program, delaying important projects
- A stand-alone Part 150 Study will cost more than if it is performed in conjunction with an Airport Master Plan Update (overlap in data collection)
- There is no guarantee that the noise contours would change in a way that is beneficial for off-airport development opportunities
- There is a risk that the noise contours might expand to include 'incompatible' land uses (especially residential) which might then require mitigation for noise exposure

Resources and Information

Links to Resources and Information

- Electronic Code of Federal Regulations – Title 14 Part 150
- FAA Airports – Airport Noise webpage
- FAA Airport Noise Program – Fact Sheet
- Aviation Environmental Design Tool

Questions?