



ICAO-ACI/LAC Seminar for the Americas

Aircraft Noise Exposure and its Impact on Land Use at Airports

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Miami, 26 April 2001

1





Background in the United States

- ➔ Applicability to other countries
- ➔ Legal Aspects
 - Noise Abatement Policy Act - 1976
 - Aircraft Safety and Noise Abatement Act - 1979
 - Airport Noise and Capacity Act - 1990
 - Federal Aviation Regulation (FAR) Part 150





FAR Part 150 Programs

- ➔ Methodology for conducting airport noise compatibility and land use planning studies

- ➔ Aspects of Part 150 Programs
 - Voluntary
 - Based on a five year planning horizon
 - Regulatory





Part 150 Program Elements

➤ Program Elements

- Noise Exposure Maps (NEMs)
- Noise Compatibility Program (NCP)

➤ Noise Exposure Maps

- Noise Contours for existing case and five-year forecast, with and without NCP improvements, superimposed on land use maps
- Typically uses DNL metric for noise



8/5/83

LAND USES NORMALLY COMPATIBLE WITH VARIOUS NOISE LEVELS

[illegible]

Business as usualness refers to standard and the status quo (Hartmann)





Noise Compatibility Programs

- Noise Compatibility Program (NCP) Options
 - Acquisition of land or easements
 - Sound-proofing and sound attenuation barriers
 - Preferential runway use system by the FAA
 - Noise abatement flight procedures by the FAA
 - Noise-based restrictions on the use of the airport





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AC 150/5020-1

FIGURE 2
MATRIX OF NOISE CONTROL ACTIONS

		CONSIDER THESE ACTIONS	IF YOU HAVE THIS PROBLEM					
			NOISE FROM TAKEOFF	DEPARTURE	APPROACH	LANDING ROLL	TRAINING FLIGHTS	GROUNDED EQUIPMENT
AIRPORT PLAN	Change in Runway Location, Length or Strength	1	•	•	•	•		
	Extended Threshold	2		•	•			
	High-Speed Exit Taxiways	3	•		•			
	Relocated Terminals	4	•				•	•
	Isolating Maintenance Ramps or Use of Fast Stand Noise Suppressors and Barriers	5	•				•	•
AIRPORT AND AIRSPACE USE	Preferential or Restricted Runway Use *	6	•	•	•	•		
	Preferential Flight Track Use or Modification to Approach and Departure Procedures	7		•	•	•		
	Restrictions on Ground Movement of Aircraft	8	•					
	Restrictions on Engine Ramps or Use of Ground Equipment	9					•	•
	Limitations on Number or Types of Operations or Types of Aircraft	10	•	•	•	•	•	•
	Use Restrictions Rescheduling Move Flights to Another Airport	11	•	•	•	•	•	•
AIRCRAFT OPERATION	Reduce Climb Slope Angle or Intercept *	12		•	•			
	Power and Flap Management	13		•	•	•		
	Limited Use of Reverse Thrust *	14			•			
LAND USE	Land or Easement Acquisition	15	•	•	•	•	•	•
	Joint Development of Airport Property	16	•	•	•	•	•	•
	Compatible Use Zoning	17	•	•	•	•	•	•
	Building Code Provisions and Sound Insulation of Buildings	18	•	•	•	•	•	•
	Real Property Noise Notices	19	•	•	•	•	•	•
NOISE PROGRAM MANAGEMENT	Purchase Assurance	20	•	•	•	•	•	•
	Noise-Related Landing Fees	21	•	•	•	•	•	•
	Noise Monitoring	22	•	•	•	•	•	
	Establish Citizen Complaint Mechanism Establish Community Participation Program	23	•	•	•	•	•	•

* These are examples of restrictions that involve FAA's responsibility for safe implementation. They should not be accomplished unilaterally by the airport operator.

Chap 3
Par 321

Page 29





NCP Approvals

- FAA accepts the NCP as complete
- 180 day review period for public comment
- FAA issues determination approving or disapproving each program element
- Sponsor can seek Federal financial assistance to implement approved measures



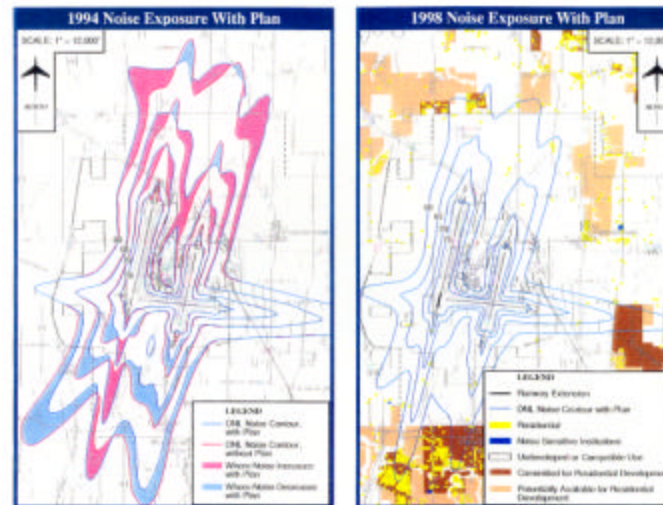


Kansas City International Airport
Master Plan and F.A.R. Part 150 Noise Compatibility Study



F.A.R. Part 150 Noise Compatibility Study
Executive Summary





inside the 60 Day-Night Average Sound Level (DNL) Noise Contour from 1,176 to 1,053. In 1998, the impacted population could increase to 2,605, but this is less than the 3,475 that could be affected without the plan. The potential increase is due to the possibility of new housing being built on currently undeveloped land.

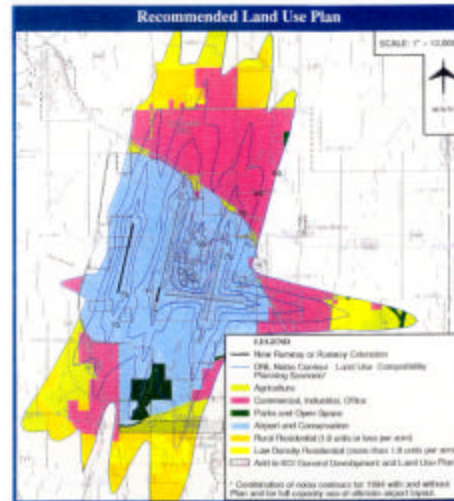
The size of the noise contours is expected to reduce over time because of the transition of the air carrier fleet to quieter aircraft. Congress has required that all airlines retire or revamp their old, loud Stage 2 jets by the year 2000, replacing them with quieter Stage 3 aircraft.

DNL Range	NUMBER OF PEOPLE IMPACTED			
	WITHOUT PLAN		WITH PLAN	
	1994	1998	1994	1998
60-65	1,118	1,436	1,009	2,584
65-70	50	17	42	19
70-75	2	2	2	0
75+	0	0	0	2
Total	1,176	1,475	1,053	2,605

Note: 1994 values represent current population only. 1998 values include current and potential future population on land considered to have residential development.

Population Impacted by Noise With and Without the Noise Compatibility Plan



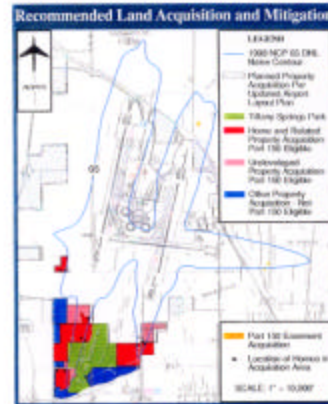


- **Rezoning land at I-435/M-152 interchange to commercial or industrial.** The land at the interchange of Interstate 435 and Highway 152 should be rezoned for industrial or commercial use. It is now zoned for multi-family housing, although it is designated in the Southern Platte County Land Use Plan for industrial, commercial, and office development.
- **Establish airport noise and land use compatibility performance standards.** Platte County should adopt airport noise and land use compatibility performance standards for

all special use permit and planned unit development applications within the 60 DNL contour. These require special review and approval by the County Planning Commission. Different standards would apply in different noise contour ranges, becoming increasingly strict as the noise level increases. Within the 60 to 65 DNL range, dwellings, hospitals and nursing homes, schools, churches, places of public assembly, auditoriums and concert halls, and resorts and group camps would be discouraged. Within the 65 to 70 DNL range, sound insulation would be required for noise-sensitive uses that must be permitted.

- **Adopt sound insulation standards for noise-sensitive buildings within the 65 DNL contour.** Within the 65 and 70 DNL noise contours in Kansas City, there is the potential for new development of some noise-sensitive land uses. Any new noise-sensitive buildings in these areas should be sound-insulated.
- **Amend subdivision regulations to require dedication of aviation easements and**





recording of fair disclosure agreements for new subdivisions. Kansas City now requires aviation easements for new developments in Kansas City near the Airport. The easement grants to the City the right to the airspace above the property and the right to make noise in connection with the operation of aircraft. Kansas City also requires an agreement for noise disclosure for new residential developments in Kansas City near the Airport. The seller must show the buyer a copy of the Airport's most recent noise exposure map before closing the sale. These requirements should be included in the subdivision regulations to ensure consistent application.

- Work with Kansas City Metropolitan Board of Realtors to develop voluntary ways to disclose Airport impacts to

prospective buyers of property in Airport area. In addition to regulations, voluntary and informal means of ensuring fair disclosure should be pursued by the City. The Aviation Department should work with the Kansas City Metropolitan Board of Realtors to develop these programs.

- Adopt project review guidelines for subdivision, rezoning, special use, conditional use, and variance applications. The review of proposed development projects using special noise compatibility criteria would ensure that this important issue continues to be addressed in future land use decision-making. The criteria should discourage changes in zoning and land use plans to allow more noise-sensitive development. Where noise-sensitive development must be approved, guidelines for sound insulation should be provided.
- Acquire homes and undeveloped land south of Airport within 65 DNL, based on 1998 Noise Compatibility Plan. Ten homes and 652 acres of undeveloped land are now, and will continue to be, impacted by significant aircraft noise. The undeveloped land lacks frontage on the nearby highways (I-435 and M-152) and has rough topography. Over the long-term, this area likely would come under increasing pressure for residential rezoning. Some of this land is adjacent to Tiffany Springs Park. Any land not needed by the Airport for approach protection should be considered for park and open space use.
- Acquire aviation easements over three homes within 65 DNL, based on 1998 Noise Com-





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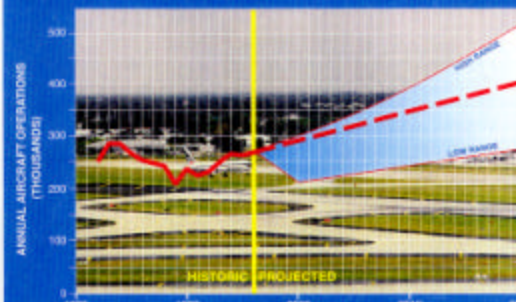
Tampa International Airport Master Plan and F.A.R. Part 150 Update

EXECUTIVE SUMMARY

PASSENGER FORECASTS



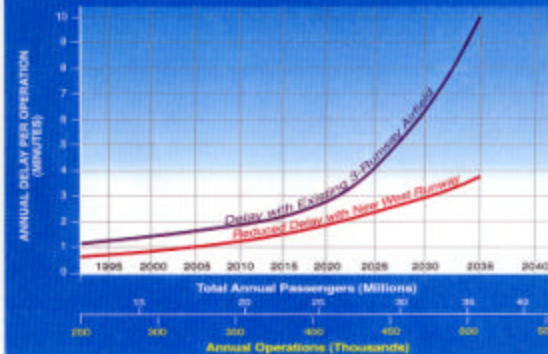
AIRCRAFT OPERATIONS FORECASTS

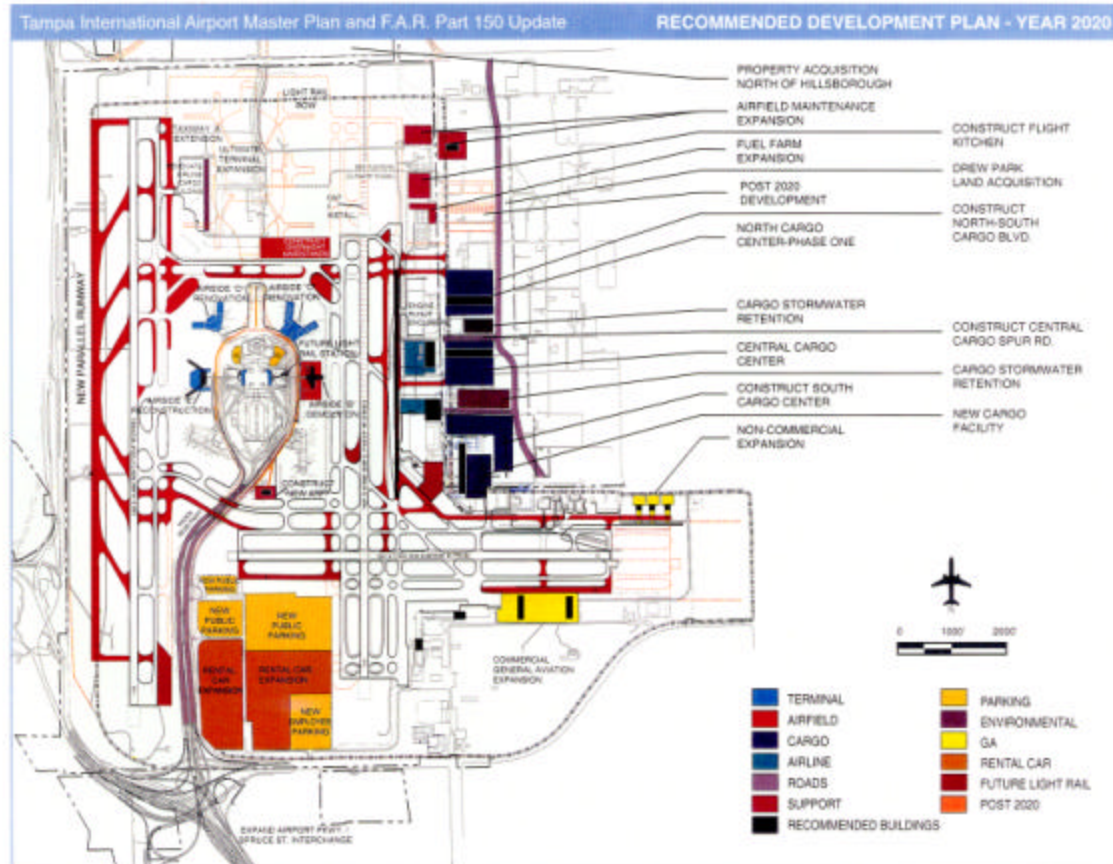


HISTORIC AND PROJECTED ENPLANED CARGO



AVERAGE AIRCRAFT DELAY COMPARISON







Land Use Measures

Both corrective and preventive land use measures were identified in the updated Part 150 Study. Residences within the Year 2003 DNL 65 contour will be eligible for sound insulation. Avigation easements from property owners will also be acquired from property owners receiving sound insulation.

Preventative land use measures include compatible zoning in local comprehensive and zoning plans, overlay zoning to restrict non-compatible development, and provide information for potential home buyers about current and future noise levels.

Publicity and Monitoring Actions

Finally, to maintain community input and improve compliance, several publicity and monitoring actions are recommended, as described below:

- Ongoing operations and flight track monitoring
- Portable noise monitoring
- Complaint database software
- Continuing public information/input program
- Noise office staffing
- Noise Compatibility Program publicity: signs, posters, and pilot handouts.

Summary

Implementation of these measures will result in Tampa International Airport achieving the objective of complete abatement, mitigation, and prevention of non-compatible land use.





Conclusion

➔ Advantages

- Improved Public Relations
- Intra- and Inter-governmental Coordination
- Airport Facilities Development
- Improved land Use Planning
- Noise Abatement





Conclusion

- ➔ Disadvantages
 - Heightened Controversy
 - Unrealistic Expectations
 - Uncooperative Participants in the Process
 - Possible Litigation

