

APPENDIX F

Agency and Other Consultations

This Appendix includes details of agency and other consultations in associated with the Fort Lauderdale International Airport (FLL) Title 14 Code of Federal Regulations (CFR) Part 150 Noise Compatibility Program (NCP). Documentation in this Appendix includes copies of meeting notices, agendas, attendance sheets, presentation materials, and meeting summaries.

- Appendix F-1 FAA Air Traffic Organization (ATO) Coordination – March 11, 2019
 - Meeting Agenda and Attendance Roster
 - Meeting Summary
- Appendix F-2 FAA ATO Coordination – July 30, 2019
 - Meeting Summary
 - Materials Presented at Meeting
 - Airport Noise Abatement Committee (ANAC) Recommendations
- Appendix F-3 Land Use Coordination with City of Dania Beach – January 28, 2020
 - Meeting Agenda and Attendance Roster
 - Materials Presented at Meeting
- Appendix F-4 Land Use Coordination with Town of Davie – January 29, 2020
 - Meeting Agenda and Attendance Roster
 - Materials Presented at Meeting
- Appendix F-5 Land Use Coordination with City of Fort Lauderdale – March 4, 2020
 - Meeting Agenda and Attendance Roster
 - Materials Presented at Meeting
- Appendix F-6 Coordination with City of Hollywood – May 6, 2020
 - Coordination Letter
 - Materials Presented at Meeting

Appendix F-1

FAA ATO Coordination

March 11, 2019

FAA ATO Coordination

Meeting Agenda and
Attendance Roster



AVIATION DEPARTMENT - Fort Lauderdale-Hollywood International Airport
2200 SW 45th Street, Suite 101 • Dania Beach, Florida 33312 • 954-359-6100

Meeting Agenda
FAA ATO Coordination
14 CFR Part 150 Study
Fort Lauderdale-Hollywood International Airport
March 11, 2019 – 10:30AM to 12PM EDT

1. Introductions
2. Overall airspace structure and roles/responsibilities of Tower/ TRACON/
Center
3. Arrival and departure sequencing
4. Interaction with other airports
5. Flow determinations (east vs. west)
6. Separation criteria and headings
7. Discuss Metroplex or other potential procedure changes
8. Briefly discuss measures identified by TC, ANAC and public
9. Review and refine approach to FAA ATO coordination as needed

Meeting:

Date/Time:

Part 150 Study - FAA (ESA Meeting)
3/11/2019 - 10:30am Location: Bcws Cabot Bldg. Conf. Rm 1

Please initial next to name to verify attendance				
Name and Title	Company	Work Phone #	Cell Phone #	Email Address
CHRISTOPHER SEQUEIRA	ESA	954-207-7210		CSEQUEIRA@ESASSOCI.COM
Richard Sack	FAA	954-921-9226	786-510-5150	richa-d.7.5a.1.0@faa.gov
Enrique Rivera	FAA	954-921-9203		Enrique.Rivera@FAA.GOV
Vernon Rupinta	FAA	407-487-7228		Vernon.Rupinta@faa.gov
BART VERNACE	FAA	407-487-7223		bart.vernace@faa.gov
PETER GREEN	FAA	407-487-7296		peter.m.green@faa.gov
Winston Carrasco	Bcws	954-359-6181		wcarrasco@broward.org
Michael Tacito	BCAD	954-359-6103		mtacito@broward.org
Michael Arz	ESA	407-312-1294	407-312-1294	marz@esassoci.com
Mike Rupinta	BCAD	954-359-1213		mrupinta@broward.org
John Pokrzycki	BCAD	954-359-1214		JPokrzycki@broward.org

FAA ATO Coordination

Meeting Summary



5401 South Kirkman Road
Suite 405
Orlando, FL 32819
407.403.6300 [phone](#)
407.403.6301 [fax](#)

esassoc.com

meeting notes

project	FLL Part 150 Study	project no.	D150120.00
date	March 11, 2019	time	10:30AM
present	Peter Green, FAA Bart Vernace, FAA Vernon Rupinta, FAA Richard Sack, FAA Enrique Rivera, FAA TJ Delnegri, FAA Mike Pacitto, BCAD Winston Cannicle, BCAD Mike Nonnamacher, BCAD John Pokryfke, BCAD Michael Arnold, ESA Autumn Ward, ESA Christopher Sequeira, ESA	route to	
subject	FAA Coordination meeting		

- BCAD opened the meeting at 10:31 am eastern time.
- All participants introduced themselves.
- ESA explained the 14 CFR Part 150 process for FLL.
- Overall airspace structure, roles, and responsibilities
 - FAA indicated the following:
 - Miami TRACON sequences all arrivals to FLL - arrivals are transferred to FLL Tower and typically join 7 to 10 miles from FLL, but no less than 5 miles (VFR)
 - FLL Tower airspace is below 1,000 feet MSL, very constrained
 - Miami overhead traffic transition above 2,500 feet
 - FLL Tower's priority: keep the runways clear
 - FLL Tower gives Miami Departure a standard separation: either 3 miles in trail (MIT) or 15 degrees divergence
 - By Letter of Agreement (LOA) with Miami TRACON, the following headings are used for both the north and the south runway:
 - Northbound jets are diverged 15 degrees from runway heading using a 290 heading (sometimes northbound aircraft are also sent straight out for capacity reasons – allowing a reduction in separation between consecutive departures)
 - Southbound jets head straight out using runway heading

- **IMPORTANT:** North runway and south runway operations are split between 2 departure controllers at Miami TRACON
 - There is a 4,400 foot distance between FLL's north and south runways
- BCAD asked if the current airspace structure is consistent with the Environmental Impact Statement (EIS) for the FLL south runway.
 - FAA responded that the EIS reflected the best information available at the time, but that airspace and airport operations evolve; the current Part 150 process is capturing any changes between the time of the EIS and the current day.
 - FAA added that this is why the EIS ROD indicated that a 14 CFR Part 150 process would be initiated after a certain amount of time.
- ESA stated that a relatively small percent of total operations at FLL use the west flow divergent 290 degree heading, however these operations cause a lot of community concern when they do happen.
 - FAA again noted that the airspace is operated in quadrants (one Miami TRACON controller manages northbound departures and a different TRACON controller manages southbound departures). The divergence in departure heading helps segregate the activity for management.
- FAA indicated that Miami Departure does not use RNAV Off the Ground procedures at FLL, which subjects departure flight paths to lateral movement due to different winds. The added that the Metroplex program at Florida MAY develop RNAV Off the Ground procedures.
- **Airport airspace interactions**
 - FAA indicated that current procedures minimize operational conflicts between FLL and nearby airports
 - FAA added that there are not too many interactions between FLL and Executive Airport.
 - FLL and Miami TRACON coordinate to determine east flow vs. west flow at FLL to minimize airspace conflicts.
 - SOMETIMES Miami TRACON will ask smaller airports to flip flow direction if FLL really needs a specific direction.
 - Collaborative discussion when wind is on the cusp
 - FAA stated that some communities propose single runway heading. This would require staggered arrivals and a larger departure gap to provide a bigger departure gap to ensure appropriate spacing for both arrival and departures
 - FAA tower responded that this would decrease FLL's arrival rate, require more staffing at Miami TRACON, and also require a longer (40 to 50 mile) final approach to FLL.
 - FAA indicated that FLL's surface winds AND winds aloft both influence the decision for east vs. west flow at FLL.
 - FAA indicated that at FLL, the normal procedure is for one runway to handle instrument approaches and another to handle visual approaches, allowing a high arrival rate. This allows sequencing aircraft at final approach fix.
 - FAA indicated that when the weather conditions drop below visual minimums, all arrivals must arrive via ILS, which drops the arrival rate and increases controller workload.
 - FAA added that the Minimum Vectoring Altitude (MVA) is 1,500 feet at FLL.
 - FAA indicated that typically, Miami TRACON places north downwind arrivals at 6,000 feet abeam FLL - this is not as common for south downwind arrivals
 - FAA indicated that propeller aircraft are separated from jets using headings (060, 110, 305 and 250 degrees per LOA).
 - BCAD mentioned that some community members are complaining about noise from aircraft at 10,000 feet.

- FAA replied that FLL departures are limited to 9,000 feet until being cleared to climb higher, and that this has been the same procedure for decades. They added that Miami TRACON has operations at 10,000 feet, which can cause FLL departures to be held at 9,000 feet for many miles.
- Overview of community suggested noise abatement measures
 - ESA provided an overview of some of the noise abatement measures suggest by the ANAC and community. It was noted that this was a very preliminary discussion to help FAA understand the types of issues that would be evaluated in the study.
 - Preferential runway use
 - FAA: This would cause departure delays on the ground due to limited taxi space, even at night (e.g. 11 pm), plus departure takeoff delays, plus arrival delays. After 11pm there might be more flexibility.
 - Mandatory South RW curfew (10PM-7AM, or 9PM-9AM) - Mandatory language is concerning from an operational standpoint. FAA likely wouldn't approve due to grant assurances. Would potentially further impact homes off north runway
 - FAA also indicated that there is not enough room on the ground to stage departing aircraft and that they are constantly addressing flow management issues in part of the country which further impact flexibility of sequencing
 - Noise Abatement Departure Procedures (NADPS): A comment was made that NADPs may not be so effective these days, due to quieter aircraft
 - Optimized Profile Descent procedures (OPDs)
 - FAA indicated that with two runways, ATC must use either altitude holds or 3 MIT for separation - ATC prefers altitude holds because they provide better separation of traffic when sequencing multiple traffic streams.
 - FAA added that the cloud layer at FLL is typically 2200 to 2300 feet in altitude; this enables visual separation for arrivals but not for departures
 - Do not turn to heading 290 until after overflying the runway end
 - FAA indicated that FLL departure procedures indicate that aircraft should maintain runway heading until reaching 580 feet, before turning to 290 degrees. He added that pilot outreach could be effective, while also stating that many aircraft can reach 580 feet in altitude before the runway end
 - BCAD indicated that the Metroplex program may still look at Equivalent Lateral Spacing Operations (ELSO)
 - FAA indicated that Metroplex is working on ELSO off departure ends and plotting points (3/4 off end of runway via runway heading, then can diverge).
 - RNAVs are drawn; waiting on FLL comments for potential changes
 - Trying to incorporate ANAC suggestions into Metroplex (e.g., parallel I-595)
 - FAA indicated that Metroplex meetings may occur the week of the southern region conference
 - BCAD stressed importance of broad public outreach
- FLL 10L-28R runway closure for reconstruction later this year
 - BCAD inquired about opportunities to reduce operational impacts during the runway closure period on Dania Beach.
 - BCAD asked whether all aircraft in west flow could be turned to a 290 heading or if other opportunities existed to reduce impacts on Dania Beach.
 - FAA indicated that FLL Tower does everything in coordination with Miami TRACON according to the LOA and that when operating with a single runway, putting all aircraft on a 290 heading would not be possible due to capacity limitations. When operating on a single heading, greater spacing

between departures would be required. The increased spacing would affect the arrival rate thereby reducing capacity.

- FAA added that it's almost impossible to implement having all departure operations on the same heading because different departure controllers work the north flow aircraft vs. the south flow. Segregation of traffic by destination enhances operational safety and efficiency helps improve the throughput of the single runway by allowing for a reduction in spacing between some operations.
- FAA did note that southbound turboprops are typically turned to the north and then conduct a right turn until headed south (Bahamas)

Appendix F-2
FAA ATO Coordination
July 30, 2019

FAA ATO Coordination

Meeting Summary



5401 South Kirkman Road
Suite 405
Orlando, FL 32819
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esassoc.com

meeting notes

project	FLL Part 150 Study	project no.	D150120.00
date	July 30, 2019	time	9:00 AM Eastern Time
present	Mike Arnold, ESA Winston Cannicle, BCAD Janice Deak, FAA Peter Green, FAA Bob Hildebidle, FAA Richard Sack, FAA Dave Scaffidi, FAA Chris Sequeira, ESA Autumn Ward, ESA	route to	
subject	FAA Coordination Meeting		

- The call began at approximately 9:00 AM eastern time.
- Winston Cannicle (BCAD) indicated that the city of Weston has been highly active related to arrivals far from the airport and may likely pass a resolution to work with FAA and BCAD to increase height of overflights
- A representative of FAA stated that a Metroplex RNAV-off-the-ground concept (if implemented) will keep heading 290 departure operations south of 595 a little bit longer
 - Mike Arnold (ESA) stated that the design may include heading 287
 - Bob Hildebidle (FAA) stated that the Metroplex team recently did some human in the loop simulations (HITLs) related to this concept
 - Winston pointed out that people will ask: what can we do ahead of the Metroplex? What if we establish a waypoint so aircraft turn in a consistent location?
 - FAA suggested putting a note on the Standard Instrument Departure (SID) chart stating to keep the initial turn south of 595 in visual conditions
 - Winston asked if this would work. He pointed out that each aircraft turns at a different location, and earlier turns bring the aircraft closer to residential areas
 - FAA responded that a waypoint would not work unless RNAV-off-the-ground departures are implemented
 - Chris Sequeira (ESA) suggested establishing an altitude floor that aircraft must reach before turning
- Noise Abatement Departure Procedure 1 (NADP1)
 - FAA pointed out that the SID gets jets to 3,000 feet / props to 2,000 feet, then the MIA departure controller has the aircraft up to 5,000 feet

- Chris responded that he didn't see a conflict with NADP1 related to altitude constraints, but that procedures would have to be looked at in detail
- Maintaining high altitudes for arrivals
 - FAA pointed out that Miami approach arrivals are very confined due to airspace limitations
 - During high demand, cannot put simultaneous instrument approaches next to each other. Must vector instead, so one aircraft must be at least 1,000 feet lower than another
 - The minimum vector altitude (MVA) is 1,500 feet, and typically aircraft will be sent down to 2,000 feet in order to maintain separation until both are established on final approach course
 - The north aircraft is typically descended lower before approach to the airport, to get away from arrivals from the west (over the Everglades)
 - In many cases, aircraft are above the glide slope before descending
 - Chris asked about implementing Established on Required Navigation Performance (RNP) (EOR, pioneered at Denver) for FLL
 - FAA responded that there are two RNP approaches right now at FLL; they rarely used due to efficiency and traffic separation requirements
 - Most airlines will not accept the RNP based on their standard operating procedures (SOPs); Southwest Airlines is an exception
 - One challenge at FLL is the distance between runways; at Denver the runways are much farther apart
 - The requirement is for ATC to keep aircraft separated using standard separation rules until an aircraft is established at a 30 degree (or less) offset to the approach and acquires a visual of the runway
 - 7 miles out to get established is nice; 5 miles is the limit
 - Winston pointed out that there are pilots telling BCAD that Air Traffic Control (ATC) should do this or that (e.g. keep approaches higher), and we don't know how to respond to that
 - FAA stated that BCAD could suggest to pilots that they develop a proposal for consideration
 - The part that the pilots are missing is how to get two aircraft on the two separate runways to the instrument approaches. The higher the fixes, the steeper the descent angle and the more difficult it is to get a stabilized approach. Therefore, raising the approach altitudes is probably not the answer
 - Mike pointed out that ANAC interested in implementing "RNAV arrivals to the ground"
 - FAA commented that it is interpreting this terminology as RNAV arrivals connecting directly to RNP approaches (i.e. no vectoring)
 - Bob stated that RNAV procedures would be narrow flight paths, concentrating noise
 - Bob added that he is not sure that these procedures would be available at FLL due to close proximity of runways, but it is a question worth asking. Something is being evaluated in the Metroplex program but Bob does not know the details
 - Bob added that there is an RNAV GPS approach that is similar to the ILS approach in vertical profile
- Preferential runway use
 - Mike indicated that there is a push from the community to close the south runway or increase amount of time it's not used
 - FAA replied that the current summertime closure gives neighborhoods more ammunition to go back to a one-runway operation

- FAA indicated that there is some flexibility to use the various runways – FAA does a good job of voluntarily shutting down the south runway around 10:30 P.M.
- Factors that drive use later into the evening:
 - Sometimes there is a big arrival push around that time - we don't have a lot of data on this
 - Also must factor in departure demand and weather delays
- FAA added: one runway can handle up to 850 operations a day, but what the community is not seeing is what it takes to run a one-runway operation
 - Affects the whole eastern NAS
 - Pressure on Miami approach controllers
 - Pressure on FLL tower
 - It is a riskier operation to run all day long
 - Go-arounds are escalating over the summer during the existing runway closure, because every op is minimum separation
 - Do people want to reduce the level of safety??
- 55/45 percent split, as shown in EIS?
 - FAA indicated that the runway use split is more a function of where aircraft come from. The 2016 split is more representative of current operations
 - Taxiways are a huge constraint for departures
 - It's easiest to take most aircraft from northeast fix to the north runway. A scattering from the west will request north or south runway
 - May be able to accommodate a different runway use split - but what's the goal? Which runways to use more?
 - On departure side, it's tougher to use just one runway. Northbound and southbound traffic must be split apart.
 - Typically lots of delays for aircraft going south (e.g. Cuba)
 - Putting southbound departures on north runway would contribute to taxi delays - seeing that now this summer
 - FAA strives to balance arrivals between north and south runways
 - FLL taxiway configuration poses challenges to using only one runway for arrivals
 - In low demand: FAA tries to accommodate airline requests for one runway or another
 - Putting all arrivals on one runway means that same runway cannot be used for departures
 - FAA pointed out that FAA Order 7110.65 gives requirements for spacing
 - Miami TRACON does use wake RECAT, though not super important for FLL
 - FLL Tower has capability to provide visual separation from 5 miles out (assuming visual conditions)
- Mike indicated that related to the question of, "Why can't we operate airport how we used to (2005), " stakeholders were shown that there has been a significant increase in air carrier ops since 2005
- Mike added that many ANAC suggestions directly conflict with each other
- Peter Green indicated that if the FAA receives NCP rationale write-ups early, FAA would attempt to review and give feedback

FAA ATO Coordination

Materials Presented at Meeting



14 CFR PART 150 NOISE AND LAND USE COMPATIBILITY STUDY

FAA ATO NCP Coordination Meeting
July, 2019

DRAFT

January 2019
Noise Exposure Map Public Workshop

NEM Public Workshop

January 16, 2019, 6:00PM – 8:30PM

Signature Grand, Davie, FL

- Attendance:
 - Three elected officials
 - One media representative
 - Approximately 166 residents/members of the community
- Public Comment Period:
 - Approximately a dozen letters
 - Approximately 150 website comment submittals
 - Approximately 100 comment forms (including appx. 75 comment cards / petitions)

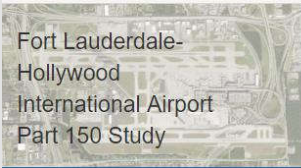


Workshop Attendees




All Comments

- 536 Comment Letters/Emails/Forms
- 2,011 Individual Comments
- Sources:
 - General public and elected officials
 - First round of Public Workshops (November 2016)
 - Website comments
 - NEM Public Workshop (January 2019)
 - Mailed letters




STATUS
In-Review


SUBMISSIONS
536


COMMENTS
2011



Noise Compatibility Program (NCP) Overview



NCP Stakeholder Suggestions

- Approximately 150 individual NCP suggestions (includes duplicates)
 - Noise Abatement Suggestions: 128
 - Land Use Suggestions: 9
 - Programmatic Suggestions: 10
- Sources:
 - ANAC
 - Technical Committee
 - Dania Beach
 - NEM Workshop
 - Website Comments

Major NCP Strategy Options

Noise Abatement

- Noise abatement flight tracks
- Preferential runway use
- Arrival/departure procedures
- Airport layout modifications
- Run-up enclosures
- Use restrictions*
- Other actions proposed by stakeholders

Land Use

- Remedial Mitigation
 - Land acquisition
 - Sound insulation
 - Avigation easements
- Preventative Mitigation
 - Land use controls
 - Zoning
 - Building codes
 - Comprehensive plans
 - Real estate disclosures
- Other actions proposed by stakeholders

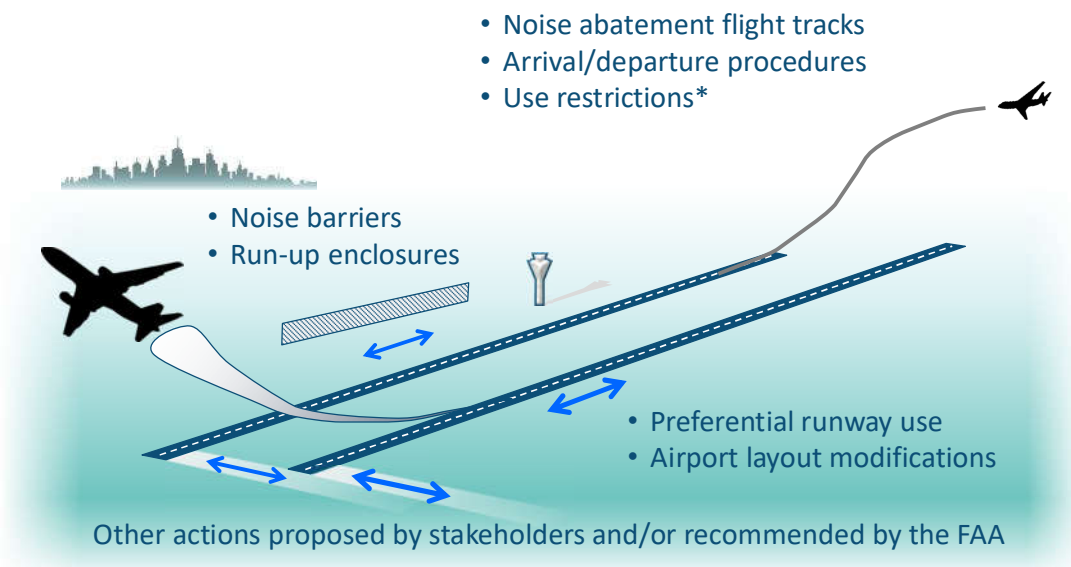
Programmatic

- Implementation tools
- Promotion, education, signage, etc.
- Monitoring
- Reporting
- NEM update
- NCP revision
- Other actions proposed by stakeholders

* Subject to further notice, review, and approval requirements in 14 CFR Part 161

Operational Measures

Types of Noise Abatement Strategies



* Subject to further notice, review, and approval requirements in 14 CFR Part 161

Stakeholder Operational Suggestions

• Flight Paths

- Flights departing to the west should follow Interstate 595 till the Everglades (Public)
- Aircraft should take off only over water unless for safety or wind conditions (Public)
- Takeoffs should fly runway heading 090 or 270 until 10,000 feet before turning north (Public)
- Restructure arrival and departure routes for North Runway to replicate arrival and departure routes from pre-2014 (ANAC)
- Establish and use a waypoint on runway heading west of the Turnpike for departures (Public)
- Reduce frequency of flights over Davie (Public)

The information in this presentation represent suggestions received from the Public and Stakeholders during the Public Comment Period. These are not official FLL Part 150 Noise Compatibility Program recommendations.



Stakeholder Operational Suggestions

• Arrivals and Departure Procedures

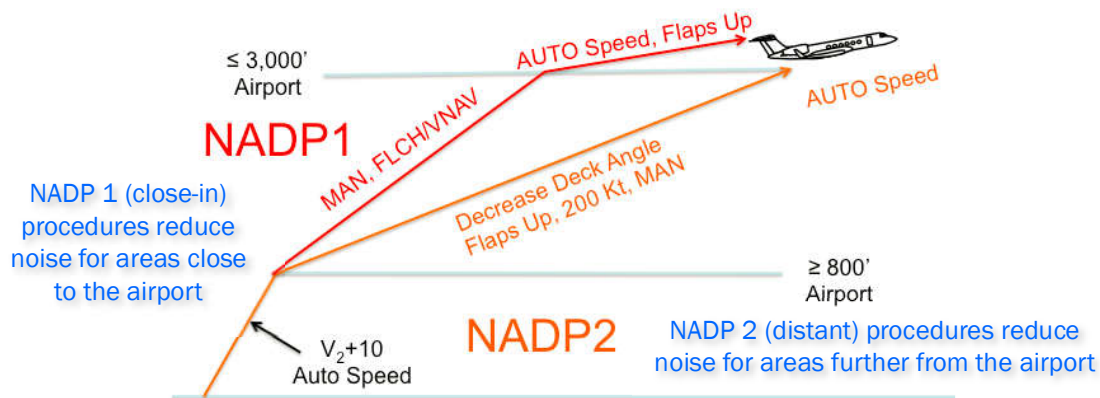
- Implement NADP1 (Dania Beach)
- Minimize low approaches (Public)
- Stagger flights from north and south runways to maintain use of heading 275 for departures - eliminate heading 290 completely, and maintain runway heading to 3 miles / 3,000 feet before turning (Public)
- Establish steep takeoff rules (Public)
- Use RNAV controlled descent approaches (Public)
- Implement idle-power 3:1 ratio glide landings (Public)
- Use steeper descents close to the airport (Public)
- Use of close-in noise abatement departure procedure to north and south runways (ANAC)
- Implement optimized profile descents (OPD) (TC)
- Implement RNAV arrivals to the ground (ANAC)

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Noise Abatement Departure Procedures

EXAMPLE: Noise Abatement Departure Procedures (NADPs)



Actual noise abatement departure procedures are aircraft- and operator-specific.

- SOURCE: Flight Operations, Supplement Number GAC-OMS-02: Noise Abatement Departure Procedures for JAA / EASA Operators. Gulfstream. June 25, 2008. Last Accessed: November 30, 2016. http://code7700.com/pdfs/gac_oms_2.pdf
- Image from http://code7700.com/noise_abatement.html. Last Accessed: November 30, 2016.
- Blue annotations by ESA.

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Stakeholder Operational Suggestions

• Preferential Runway Use

- Re-affirm and implement voluntary night closure approved in Broward County/Dania Beach Interlocal Agreement (Dania Beach)
- Dedicate north runway as preferential runway used exclusively and primarily until it reaches capacity (ANAC)
- Prefer arrivals on north runway and departures on south runway (Public)
- Use north and south runways at the same utilization (Public)
- Close south runway from 9pm to 9am (Public)
- Assign all arrivals to 10L and all Departures to 10R (Public)
- Prohibit arrivals to 10R from the west except for maintenance or emergencies (Public)

The information in this presentation represent suggestions received from the Public and Stakeholders during the Public Comment Period. These are not official FLL Part 150 Noise Compatibility Program recommendations.



Stakeholder Operational Suggestions

- Use Restrictions

- Implement penalties to deter operational negligence (Dania Beach)
- FAA Notams and/or airport bulletins should be binding to all operations (Dania Beach)
- Address and decrease frequency of flights (Public)
- Establish airport curfews (Public)
- Mandatory 10pm-7am south runway curfew (ANAC)
- Nighttime south runway closure from 9pm-9am (Dania Beach, TC)
- Impose fines on flights that turn north before I-75 and/or violate noise ordinances (Public)
- Prohibit aircraft that have been recorded as being too loud (Public)

The information in this presentation represent suggestions received from the Public and Stakeholders during the Public Comment Period. These are not official FLL Part 150 Noise Compatibility Program recommendations.

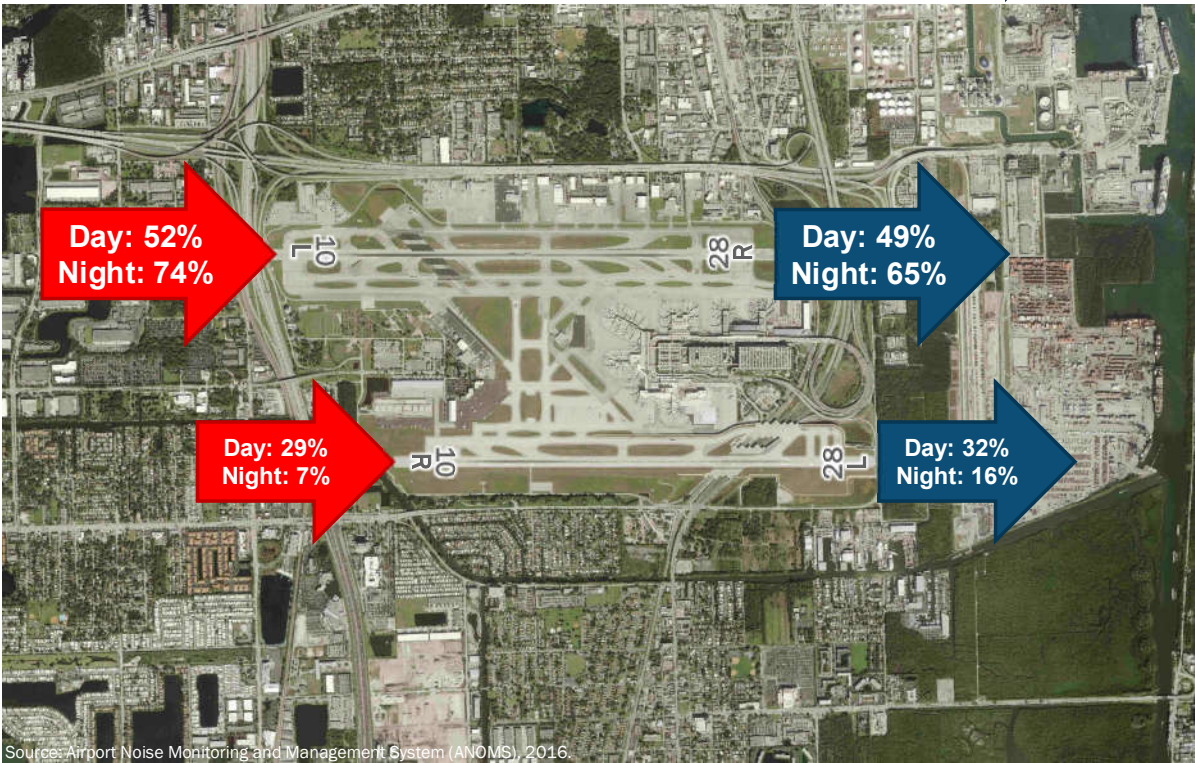
Operational Characteristics

Runway Use – East Flow

Legend

Arrivals

Departures

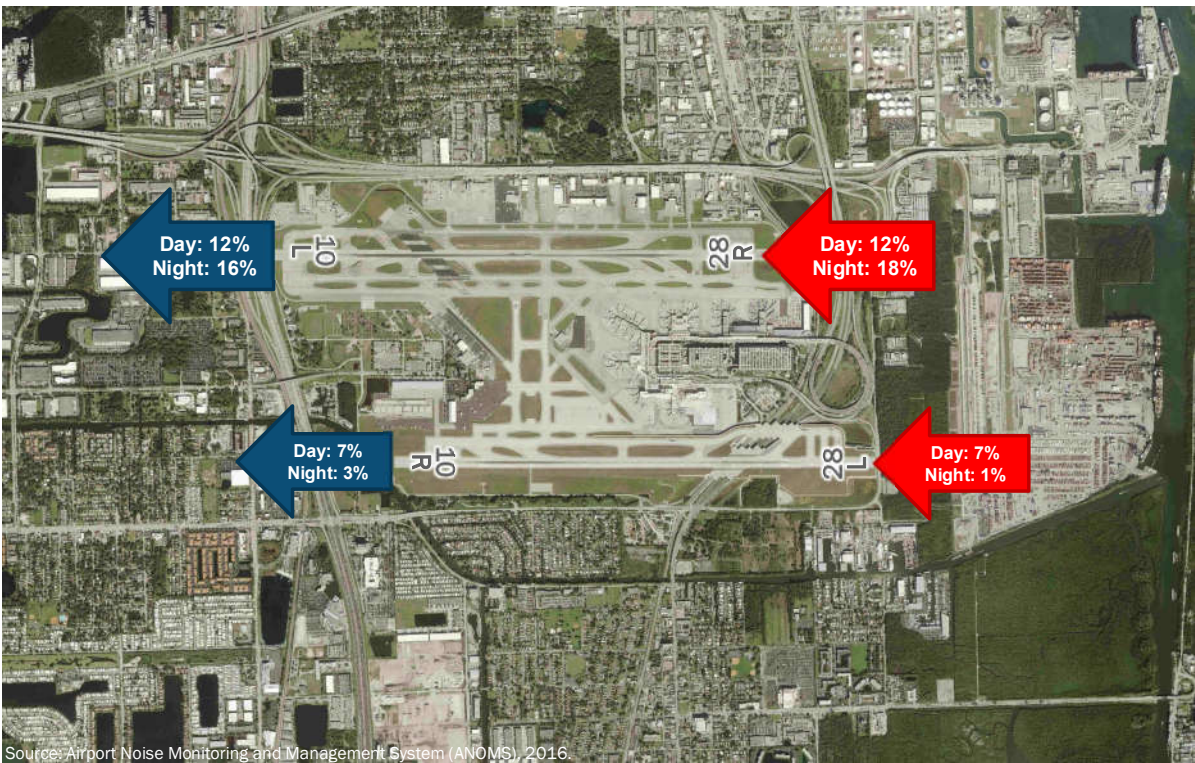


Runway Use – West Flow

Legend

Arrivals

Departures



Baseline Condition Runway Use

Runway Usage

Operation Type	Runway	Day	Night	Grand Total
Arrivals	North Runway			
	10L	52%	74%	55%
	28R	12%	18%	13%
	Total	64%	92%	68%
	South Runway			
	10R	29%	7%	26%
	28L	7%	1%	6%
	Total	36%	8%	32%
Departures	North Runway			
	10L	49%	65%	51%
	28R	12%	16%	13%
	Total	61%	81%	64%
	South Runway			
	10R	32%	16%	30%
	28L	7%	3%	6%
	Total	39%	19%	36%

Source: Airport Noise Monitoring and Management System (ANOMS), 2016.

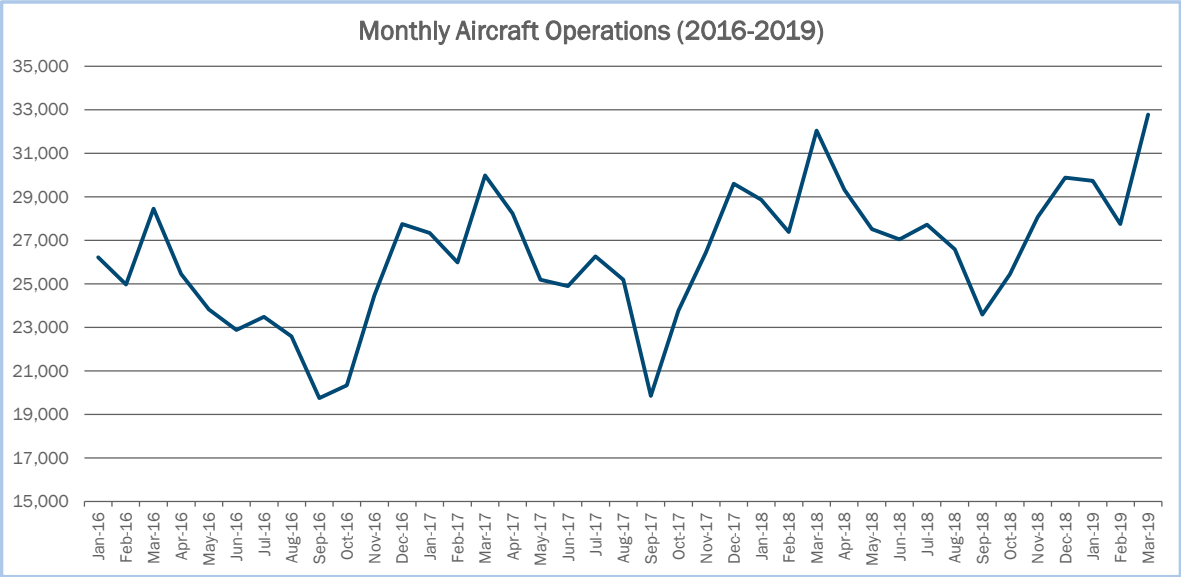
2023 Part 150 Runway Use

Runway Usage

Operation Type	Runway	Day	Night	Grand Total
Arrivals	North Runway			
	10L	49%	66%	52%
	28R	12%	12%	13%
	Total	62%	84%	65%
	South Runway			
	10R	31%	15%	29%
	28L	7%	1%	6%
	Total	38%	16%	35%
Departures	North Runway			
	10L	44%	59%	46%
	28R	14%	18%	14%
	Total	58%	77%	60%
	South Runway			
	10R	37%	21%	35%
	28L	5%	3%	5%
	Total	42%	23%	40%

Source: Airport Noise Monitoring and Management System (ANOMS), 2016; adapted by ESA, 2018.

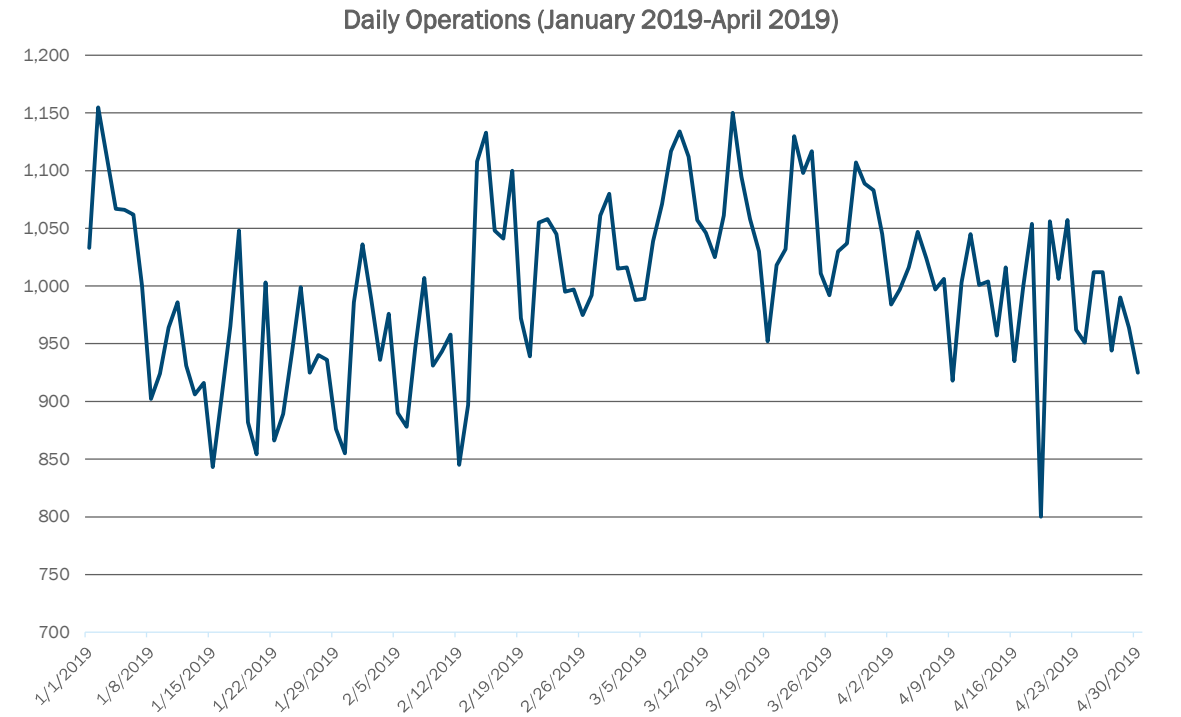
Seasonality of Aircraft Operations



Source: FAA Air Traffic Activity System (ATADS), 2019.



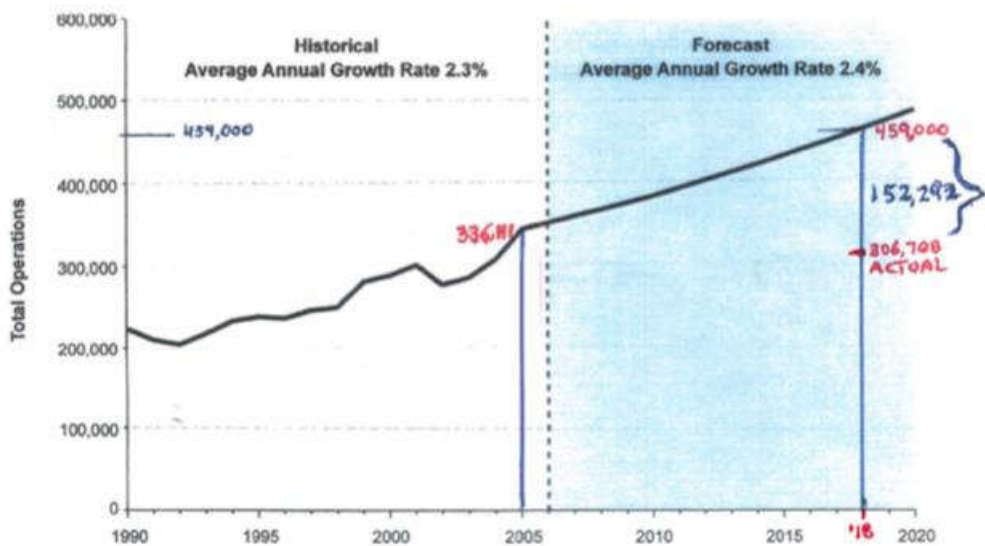
Daily Change in Aircraft Operations



Source: FAA ATADS, 2019.



2005 Forecast Data (ANAC)

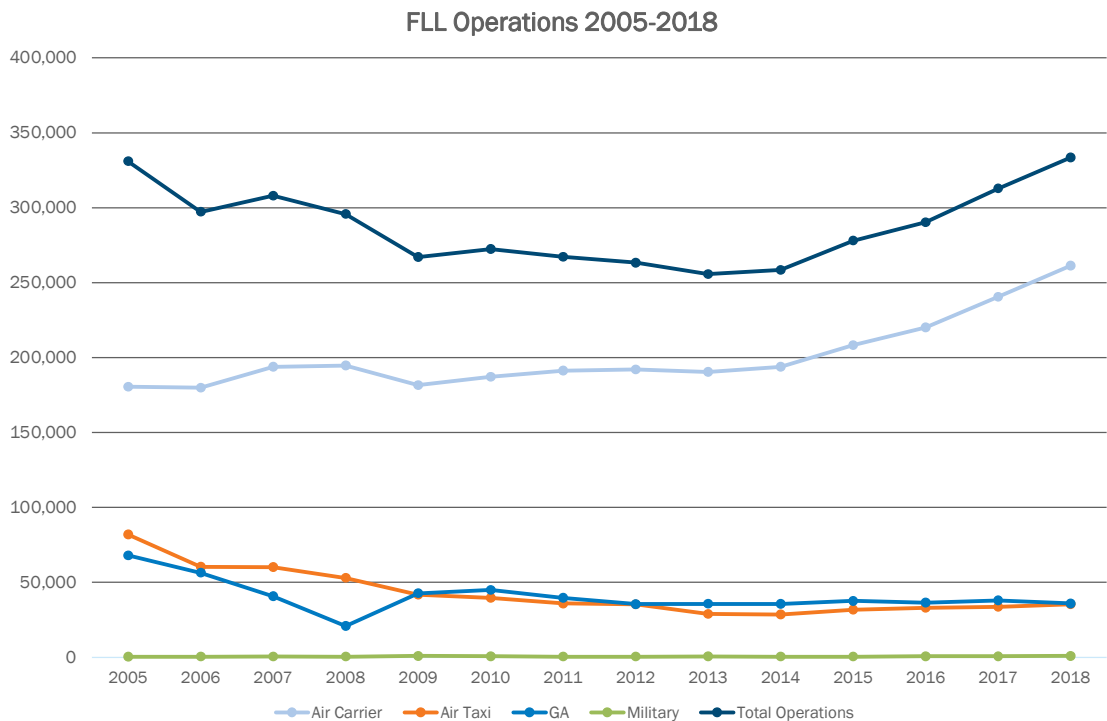


Source: Forecast Data Federal Aviation Administration, Terminal Area Forecast, January 2005.

TOTAL AIRCRAFT MOVEMENTS (ARRIVING AND DEPARTING)													
Month:	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANNUAL
17 VS 18	5.8%	5.4%	6.8%	3.9%	9.2%	8.8%	-98.3%	5.5%	18.8%	7.0%	6.2%	0.9%	-1.9%
2018	28,861	27,379	32,041	29,333	27,508	27,045	967	26,587	23,582	25,440	28,084	29,881	306,708
16 VS 17	4.3%	4.1%	5.3%	10.9%	5.7%	8.8%	11.8%	11.5%	0.5%	16.6%	8.0%	6.7%	7.8%
2017	27,336	25,986	29,988	28,242	25,188	24,901	26,263	25,198	19,847	23,774	26,436	29,604	312,763

Source: Gary Luedtke, ANAC Representative, email dated May 5, 2019.

Historic Growth in Aircraft Operations



Source: FAA ATADS, 2019.

FAA ATO Coordination

ANAC Recommendations

TO: 1. Mr. Mark Gale, Aviation Director FLL Airport
2. FLL Part 150 Technical Committee c/o Mr. Michael R. Arnold, Project Consultant and Mr. Gary Luedtke, ANAC Representative to FLL Part 150 Technical Committee
3. Broward County Commissioners c/o Commissioner Tim Ryan (whose District includes FLL Airport and virtually all of the noise sensitive communities around the airport)

FR: FLL Airport Noise Abatement Committee (ANAC)

DA: September 10, 2018

RE: ANAC Recommendations for FLL Part 150 Study and Related Studies and Procedures

ANAC

1. In 1992, the BCAD established the Airport Noise Abatement Committee (ANAC) to serve as the primary mechanism for noise-related communications with and among all potentially affected and interested parties.
2. Among other responsibilities, ANAC is charged with making recommendations to the Broward County Director of Aviation regarding steps to take to enhance the effectiveness of FLL Noise Compatibility Program and otherwise minimize noise-related impacts.

Background

1. In September 2014, FLL opened the new South Runway and commenced aviation operations on this runway.
2. Since immediately after this runway opening and continuing to today, FLL's airport noise problems have increased exponentially. For example, in January 2013 (a typical Winter month prior to South Runway opening), Airport Noise Complaints totaled 29 per month. By January 2017 (the same month during a period after the South Runway had been opened), Airport Noise Complaints totaled 13,701 per month.

3. It is apparent that FLL noise was relatively much less problematic during the time when there was no South Runway and the North Runway was being operated using sensible arrival and departure routes and procedures.
4. In this connection, the most noise-sensitive residential communities have requested curtailment of operations on the South Runway, ie, takeoffs and landings, to the greatest possible extent.
5. The principal purpose of this document is to spur development by BCAD of ways and means so that FLL can return as much as possible to the Noise profiles present prior to the opening of the South Runway, and so FLL can regain its status as a relatively Good Neighbor and relatively Noise-Friendly airport.
6. This will involve a serious commitment by BCAD to develop much better and stricter Noise Abatement Procedures for FLL, in conjunction with the community. Equally importantly, to strenuously advocate for these revised and stricter Procedures with FAA, through the Part 150 study and otherwise. This will entail forceful advocacy, lobbying and negotiations with FAA, and even perhaps eventual litigation, as other neighbor-friendly airports have had to do.
7. This FAA advocacy is in addition to, and not instead of, BCAD forceful advocacy with airlines at FLL to persuade them to cooperate in voluntarily reducing their noise profiles through revising their individual Flight Procedures as much as possible through throttle cutbacks, etc., thereby balancing safety with a significantly enhanced good-neighbor noise policy. This could be implemented quickly and in advance of mandatory procedures developed through the FAA process.

THEREFORE, the FLL Aviation Director, Mr. Mark Gale, is hereby requested promptly to undertake studies, communications, and implementations to achieve the following as soon as possible:

Since the North Runway was MUCH less problematic prior to opening the South Runway, and arrival and departure routes in use at the time were also MUCH less problematic:

1. The FLL Aviation Director is requested promptly to meet, discuss, negotiate and advocate with FAA (including Miami TRACON) to:
 - a. Restructure arrival and departure routes for the North Runway in order to replicate pre-2014 arrival and departure routes as closely as possible. Also, harmonize these restructured arrival and departure routes with similarly restructured noise abatement routes for the South Runway.
 - b. This involves, primarily, Aircraft being required to fly Runway Heading on Takeoffs and Landings, with a Maximum of Five (5) degrees variation by Tower from Runway Heading except in emergencies. Aircraft are not to be permitted by Tower or otherwise to deviate from Runway Heading until beyond the Industrial Area on West Side of Airport (approximately at Florida Turnpike), and beyond 5000+ feet east of Ocean Shoreline on East Side of Airport.
 - c. It is believed that FAA has so-called RNAV route procedures which can facilitate these restructured routes, or FAA has other mechanisms for achieving this, which do not require going through the Part 150 Study and can be implemented relatively quickly.
 - d. Regarding the West side of the South Runway, the Aviation Director is requested to advocate with FAA an RNAV or similar route which will vary from Runway Heading to the West so as to curve aircraft a bit Northerly so as to be approaching and departing away from the residential areas West of the South Runway and into the Industrial Areas to the North of these Residential Areas. Obviously, separation from North Runway traffic will have to be maintained.
 - e. Aviation Director is requested to "dig in" with FAA to verify if these Runway Heading procedures really conflict with so-called harmonization of FLL traffic with MIA traffic, or if this is really just overkill by FAA. Or alternatively, if there Really would be conflict with MIA traffic by using FLL Runway Heading procedures, then a workaround could be developed by FAA so MIA traffic is moved slightly so as to accommodate these FLL Runway Heading procedures, which are vital to the Noise Health of FLL.

- f. Aviation Director is requested promptly to meet with FLL FAA Tower with an agenda to go over in detail the items in this document. Perhaps some or most of these noise improvements documented herein can be implemented by changes in Local Tower Procedures, and more strict compliance by individual FAA Controllers with these revised Procedures with respect to each and every flight, in advance of more detailed procedures implemented through the FAA process.
- 2. Dedicate the North Runway as the PREFERRED runway, used exclusively or primarily until it reaches capacity. The FLL Aviation Director is requested promptly to meet, discuss, negotiate and advocate with FAA (including Miami TRACON), or petition through the Part 150 Study or otherwise, to achieve this status for the North Runway.
- 3. As part of Preferred Runway status for the North Runway, the FLL Aviation Director is requested promptly to meet, discuss, negotiate and advocate with FAA (including Miami TRACON), or petition through the Part 150 Study or otherwise, to:
 - a. Achieve a MANDATORY, not voluntary, closure of the South Runway from 9 pm to 9 am. For example, Appendix B to FAA Part 150, Section B150.7(3) authorizes the Part 150 Study to propose "implementation of a preferential runway system", and Section B150.7(5)(v) authorizes the Part 150 Study to propose "Partial or complete curfews".
 - b. During the overnight closure of the South Runway, the arrival and departure procedure for the North Runway is to specify that Aircraft are not permitted by Tower or otherwise to deviate from Runway Heading until beyond the Industrial Area on West Side of Airport, and beyond 5000+ feet east of Ocean Shoreline on East Side of Airport.
- 4. In addition to the RNAV route procedures described in Item 1 above, which can be achieved in advance of any Part 150 Study or other FAA study or petition, the FLL Aviation Director is requested promptly to meet, discuss, negotiate and advocate with FAA (including Miami TRACON), or petition through the Part 150 Study or otherwise, to:

- a. Achieve “the use of flight procedures (including modification of flight tracks) to reduce exposure of individuals (or specific noise sensitive areas) to noise in the area around the airport”. Ie, adoption of MANDATORY “Noise Abatement Departure and Arrival Procedures”. Appendix B to FAA Part 150, Section B150.7(4) authorizes the Part 150 Study to propose this. This includes, among other items, Mandatory Throttle Cutbacks on Takeoffs and Landings for Noise Abatement, equal to maximum throttle cutback permitted by FAA procedures for each Aircraft Type. Applies to the North and South Runways.
 - b. The FLL Aviation Director is requested promptly to meet, discuss, negotiate and advocate with FLL airlines to invite them to enhance their “good neighbor” image by voluntarily implementing Flight Operational Procedures at their airline for, among other noise abatement procedures, throttle cutbacks on takeoffs and “even throttle usage (less throttle jockeying) on landings”. This voluntary implementation by airlines could be implemented quite soon, ie, well in advance of mandatory restrictions imposed through the FAA process, and will enhance the image of the airlines voluntarily adopting the same. Compliance by the airlines with their voluntary actions would be monitored by the enhanced RMT system described in Item 7 below.
5. The FLL Aviation Director is requested promptly to meet, discuss, negotiate and advocate with FAA (including Miami TRACON) to:
- a. Ensure that the forthcoming reconstruction closure of the North Runway in mid-2019 is not used by FAA or FLL Airport as a pretext, upon re-opening of the North Runway, for increasing operations on the South Runway in excess of the ratio of North Runway to South Runway as was in existence during 2018 prior to closure of North Runway. And in fact, South Runway operations should be reduced from 2018 levels as per Item 2 above regarding dedicating the North Runway as the Preferred Runway.
6. Since some 82% of takeoffs from FLL are to the East, then it is fair to communities east of FLL, and to users of parks and beaches east of FLL, that FLL takeoffs to the East occur only when absolutely necessary due to strong prevailing easterly surface winds at FLL. It is believed that Miami TRACON, in setting runway direction for FLL, does not “flip” the

FLL airport during the many times when the prevailing FLL surface winds favor or permit takeoffs to the West. It is further believed that MIA airport operations would not be adversely affected by “flipping” the FLL airport more strictly in accordance with prevailing surface winds at FLL. Therefore:

- a. The FLL Aviation Director is requested promptly to meet, discuss, negotiate and advocate with FAA (including Miami TRACON), to achieve a flipping of the FLL airport so that, when winds are calm, or when there is a direct crosswind or any velocity of tailwind with respect to takeoffs to the East, that the FLL airport be flipped to West takeoffs. This operational procedure does not require going through the Part 150 Study and can be implemented relatively quickly. The Aviation Director is requested to “dig in” with FAA to see if flipping FLL more in line with prevailing winds really does interfere with MIA operations or if this is just overkill or bureaucratic sluggishness by FAA.
7. Regarding FLL RMTs, in addition to installation of the 2 new South Runway RMTs prior to end of 2018 as indicated by BCAD staff, the FLL Aviation Director is requested promptly to finalize negotiations with EMS, Inc. so that detailed RMT information is made available to the public on BCAD website.
- a. Also so that FLL SID (FAA Standard Instrument Departure Procedures for FLL) and related FLL Arrival and Departure Procedures are overlaid onto the RMT information and available to the public to view.
 - b. In addition, that all deviations by aircraft from FLL SIDs, other FLL Procedures and Noise Criteria are documented in detail to the public on BCAD website, ie, in more detail than at present.
 - c. Finally, that a procedure is set up so that ALL deviations are investigated by BCAD with FAA Tower and an explanation of each deviation is posted on BCAD website with complete information about the offending aircraft, including among other information, flight number, time, date, aircraft type, location, altitude, noise levels, and name of airline operator.

ANAC intends to continue to monitor the progress of improvement of the FLL Noise Compatibility Program as well as progress on reducing other FLL noise-related impacts, and as such, might have further comments related to the Part 150 Study and other initiatives of BCAD, including those related to the concerns described in this document.

Thank you in advance for your prompt attention to these important items, which have tremendous impacts on Broward County residents, literally including their health and welfare. Also, having a direct bearing on the public's perception of FLL, and airlines at FLL, as good neighbors to the surrounding communities and to the County as a whole.

Appendix F-3

Land Use Coordination with City of Dania Beach

January 28, 2020

Land Use Coordination with City of Dania Beach

Meeting Agenda and

Attendance Roster

14 CFR PART 150

AIRPORT NOISE AND LAND USE COMPATIBILITY PLANNING STUDY

Land Use Alternatives Discussion

City of Dania Beach

January 28, 2020

-
1. Overview of Part 150 Noise and Land Use Compatibility Study
 2. 2018 and 2023 Noise Exposure Maps
 3. Land Use Compatibility Strategies and Options for Consideration by Municipalities
 4. Land Use Compatibility Resources
 5. DNL Shape Files for 2023 DNL Contours

FLL Part 150 Study
Land Use Alternatives Meeting
City of Dania Beach
January 28, 2020 10:30-11:30AM

Name	Organization	Email	Phone
DONNA PEPLIN	Dania Bch	donna@tyestudios.com	954-610-2845
Corinne Lajoie	City of Dania Bch	clajoie@daniabeachfl.gov	954-924-6805 X3704
Eleanor Norena	City of Dania Beach	enorena@daniabeachfl.gov	954 924 6805 x3645
Marc LaFerrier	"	mferrier@daniabeachfl.gov	x3643
Winston Cannick	BCAD / PSD	wcannick@broward.org	(954) 359-6181
MICHAEL PACTO	BCAD / FID	mpacto@broward.org	954-359-6103
Karen Friedman	BCAD	kfriedman@broward.org	(954) 359 6258
MICHAEL ARNOLD	ES&	marold@esssoc.com	407-312-1294
JOHN COLLTON	KHA	JOHN.COLLTON@KIMLEY-HORN.com	407-427-1695 407-625-1647
Jacob Bowers	KHA	jacob.bowers@kimley-horn.com	
Dave Richardson	KHA	dave.richerson@kimley-horn.com	407-641-4553

Land Use Coordination with City of Dania Beach

Materials Presented at Meeting



14 CFR PART 150

AIRPORT NOISE AND LAND USE COMPATIBILITY PLANNING STUDY


Land Use Alternatives Discussion

City of Dania Beach

January 28, 2020

WHY WE'RE HERE

- Overview of FLL Part 150 study progress/schedule
- Discuss current land use measures in place related to aircraft noise
- Review land use measures that support mitigation of aircraft-related noise
 - Provide examples of land use strategies at other airports
 - Land use measures are for discussion purposes only
- Provide the FAA approved Noise Exposure Maps



OVERVIEW OF PART 150 STUDY

OVERVIEW OF PART 150 STUDY

The **14 CFR Part 150** process is the Airport's mechanism to **improve the compatibility** between airport operations and surrounding communities.

FLL's Part 150 efforts span three decades:

- **1987** – Initial FLL Part 150 study
- **1994** – FLL Part 150 update
- **2007** – FLL Part 150 initiated, later suspended

OVERVIEW OF PART 150 STUDY

Study Elements

Noise Exposure Map Report (NEM)

- Develop a comprehensive database of current conditions
- Noise contour development and impact analysis
- Prepare and submit Noise Exposure Map (NEM) report

Noise Compatibility Program (NCP)

- Identify and evaluate noise abatement alternatives
- Identify and evaluate compatible land use alternatives
- Identify and evaluate administrative measures
- Prepare and submit Noise Compatibility Program (NCP) report

Stakeholder Outreach Program

- Local jurisdictions/agencies
- FAA
- Public (public workshops, project website, newsletters, technical committee)

FOR DISCUSSION PURPOSES ONLY



FLL PART 150 SCHEDULE

FOR DISCUSSION PURPOSES ONLY



FLL PART 150 SCHEDULE

- NEM is complete and has been accepted by the FAA
- NCP is in development with a draft programmed for Q1 2020
- Public release of draft NCP, workshop and hearing Q2 2020
- Submission of final report to the FAA Q3 2020

FOR DISCUSSION PURPOSES ONLY



2018 & 2023 NOISE EXPOSURE MAPS

FOR DISCUSSION PURPOSES ONLY



NOISE EXPOSURE MAPS

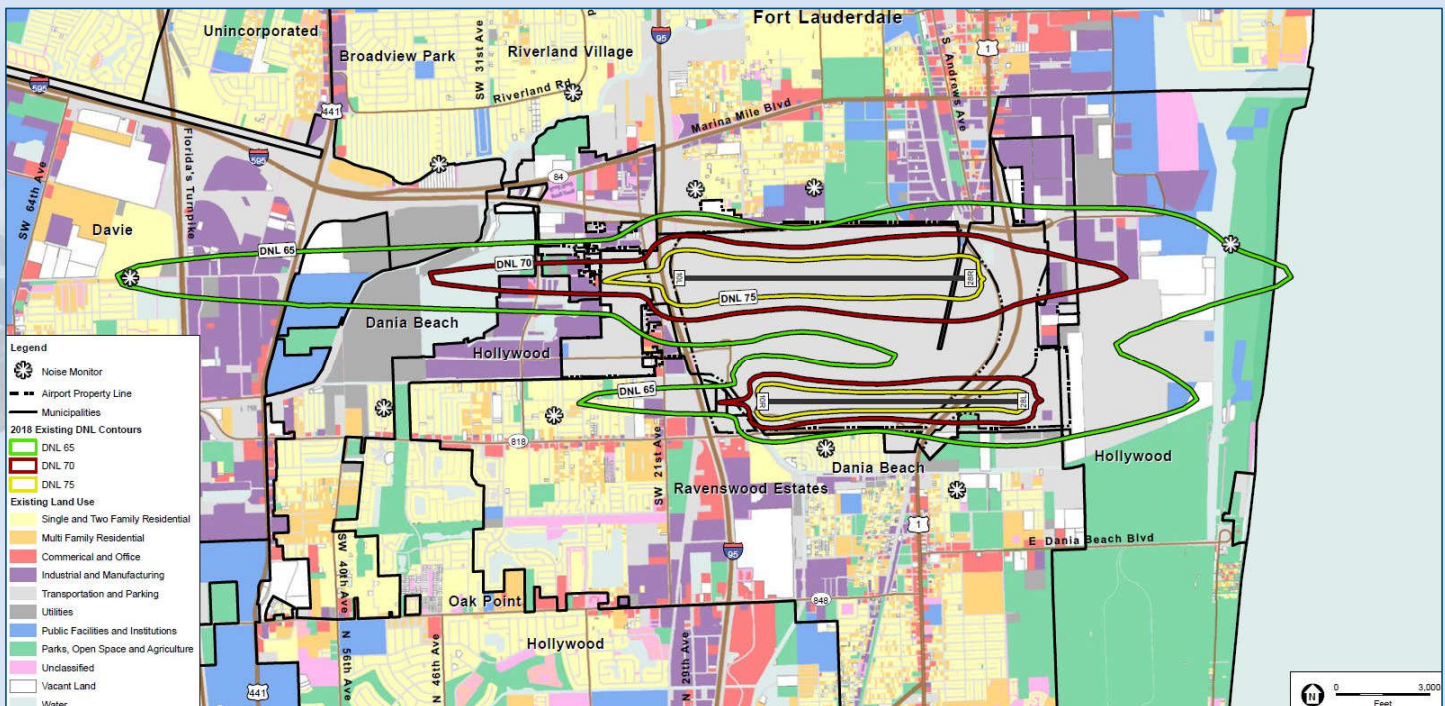
Noise Exposure Background

- FAA requires the use of Day-Night Average Sound Level (DNL) for airport noise assessments
 - 24-hour time weighted energy average noise level based on A-weighted decibels (dBA)
 - Noise occurring between 10 p.m. to 7 a.m. is penalized by 10 dB to account for the higher sensitivity to noise during nighttime hours
 - Average Annual Day aircraft noise exposure is calculated over a broad area and then depicted using contour lines of equal noise levels
 - Years of analysis: 2018 and 2023
- **FAA Determined the Noise Exposure Maps were in Compliance with Federal Regulation**
 - Federal Register Determination of Compliance – October 2019
 - Publication of Notice of Availability – three times each in English and Spanish, November 2019
- **FAA Land Use Compatibility Criteria - FAA Table 1 from Part 150**
 - FAA considers nearly all land uses compatible below the DNL 65



FOR DISCUSSION PURPOSES ONLY

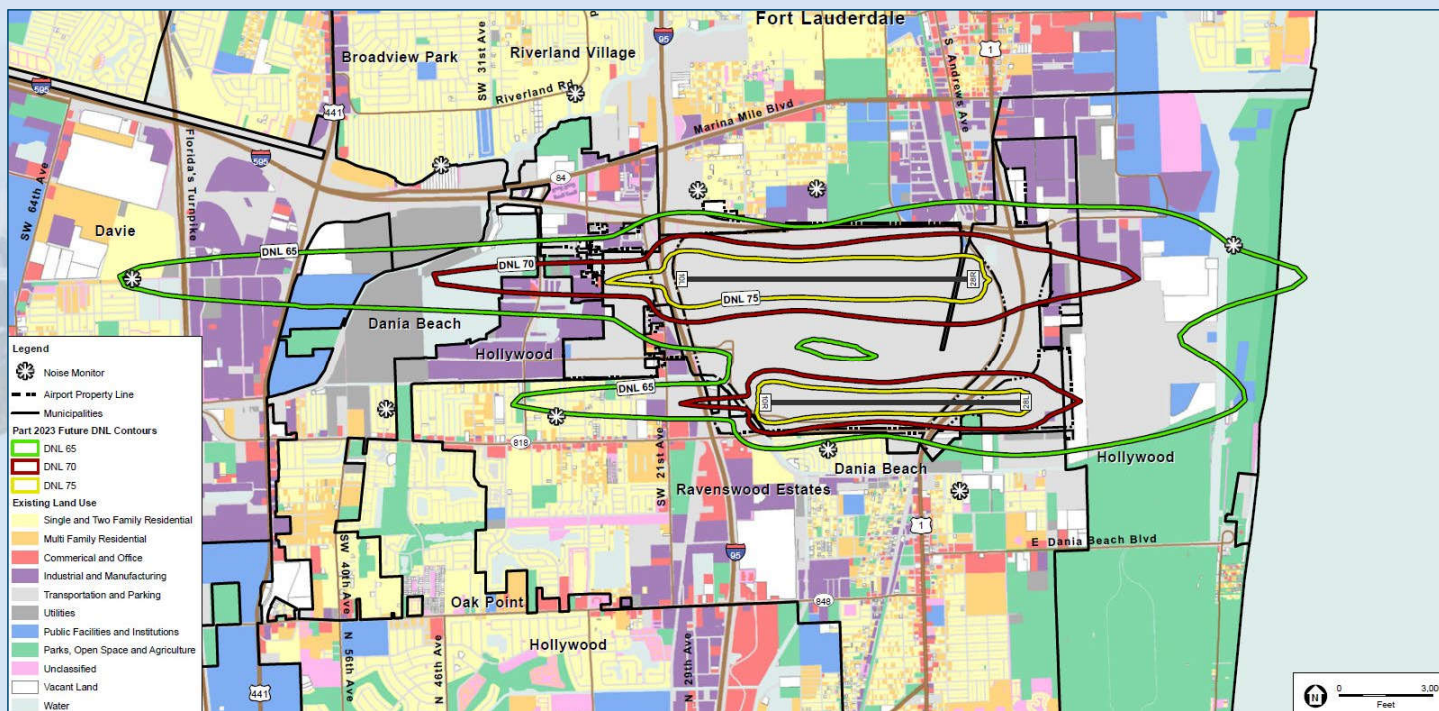
2018 NOISE EXPOSURE MAP



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

2023 NOISE EXPOSURE MAP



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

NOISE EXPOSURE MAPS

TABLE 5-5
NOISE SENSITIVE SITES EXPOSED TO DNL 65 AND HIGHER - 2023

Noise Level ¹	Total Area (Acres)	Housing Units ²	Population ²	Religious	Schools ³	Hospitals	Historic Resources	Day Cares	Group Care	Libraries	Nursing Homes
DNL 65-70	2,579.0	548	1,121	0	0	0	3	0	0	0	0
DNL 70-75	805.7	0	0	0	0	0	0	0	0	0	0
DNL 75+	503.3	0	0	0	0	0	0	0	0	0	0
Total	3,888.0	548	1,121	0	0	0	3	0	0	0	0

SOURCES:

- ¹ Noise contours from Environmental Science Associates (ESA)
² Housing units and population estimates derived from 2010 Census block-level data.
³ Public school data from Broward County Public Schools; private schools from Florida Geographic Data Library (FGDL).
⁴ All other noise sensitive site data from Florida Geographic Data Library (FGDL).

TABLE 5-6
HOUSING UNITS AND POPULATION NOT
IN CURRENT FLL SOUND INSULATION PROGRAM¹ - 2023

Noise Level ²	Housing Units ³	Population ³
DNL 65-70	106	231
DNL 70-75	0	0
DNL 75+	0	0
TOTAL:	106	231

SOURCES:

- ¹ FLL Sound Insulation Program housing unit data from Broward County Aviation Department. All housing units within the existing SIP boundary were excluded from this table regardless if they received treatment, elected to not participate or were deemed compatible through interior testing or deemed ineligible.
² Noise contours from Environmental Science Associates (ESA)
³ Housing units and population estimates derived from 2010 Census block-level data.

Note: Residential units that were addressed in current RSIP/CAR program are considered compatible for Part 150 purposes

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LAND USE COMPATIBILITY STRATEGIES

LAND USE COMPATIBILITY STRATEGIES

Noise Abatement

- Noise abatement flight tracks
- Preferential runway use
- Arrival/departure procedures
- Airport layout modifications
- Runup enclosures
- Use restrictions*
- Other actions proposed by stakeholders

Land Use

- Remedial Mitigation
 - Land acquisition
 - Sound insulation
- Preventative Mitigation
 - Land use controls
 - Zoning / overlay zoning
 - Building codes
 - Comprehensive plans
 - Real estate disclosures
- Other actions proposed by stakeholders

Programmatic

- Implementation tools
- Promotion, education, signage, etc.
- Monitoring
- Reporting
- NEM update
- NCP revision
- Other actions proposed by stakeholders

LAND USE COMPATIBILITY STRATEGIES

Observations

- Land area around FLL is **largely developed** (limited undeveloped property within airport environs)
- Residential areas within the 2018 and 2023 DNL 65 and higher contours are developed and **have been in place for years**
- Areas outside DNL 65 are typically not eligible for federally-funded noise mitigation actions
- Requires the **participation of multiple jurisdictions** to mitigate impacts within the 65 DNL contour

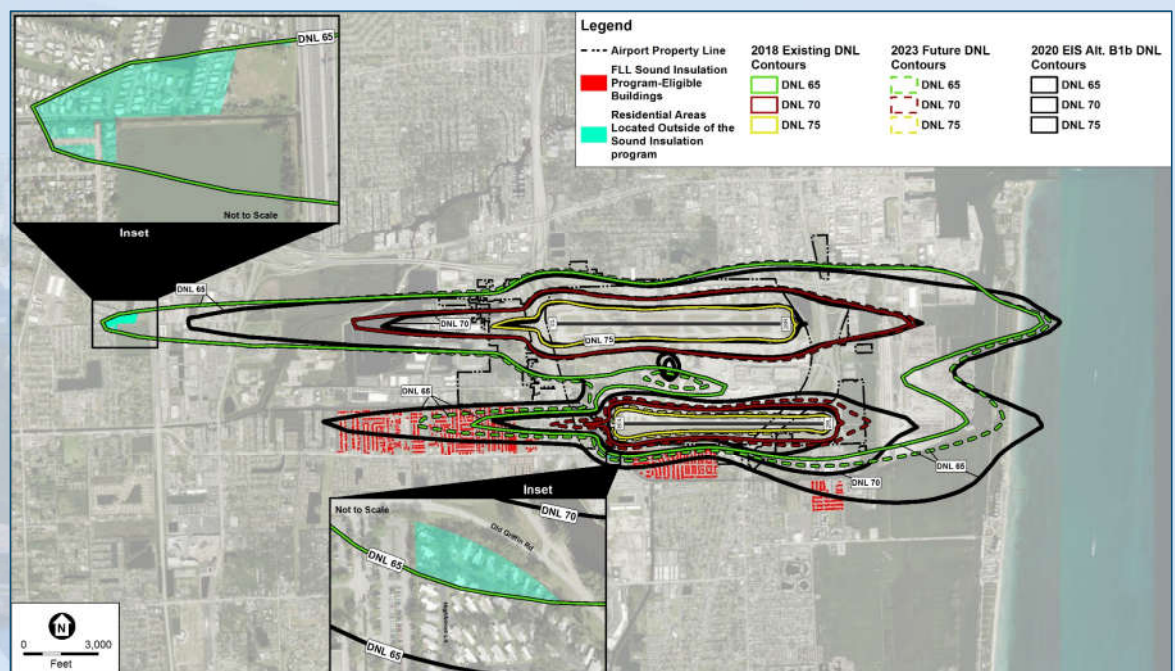
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LAND USE COMPATIBILITY STRATEGIES

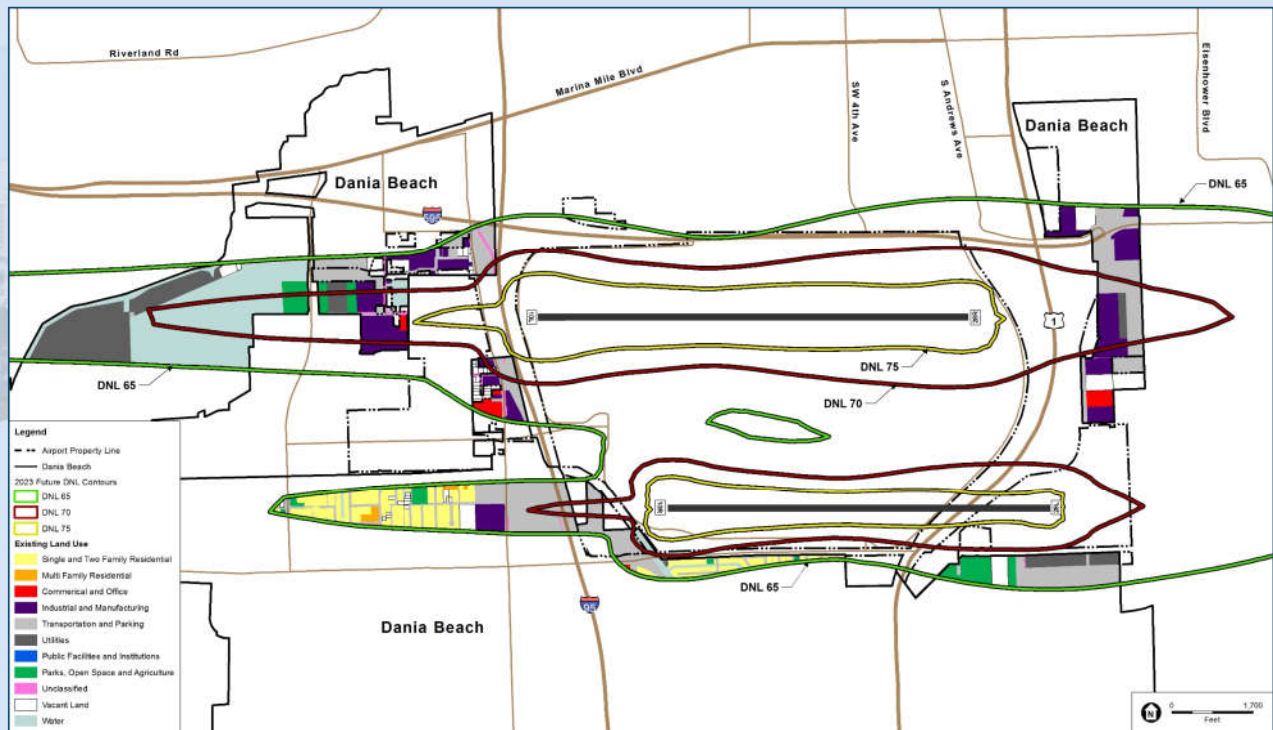
2018 & 2023 Part 150 Noise Contours with EIS 2020 Alternative

B1b Contours with EIS Sound Insulation Program



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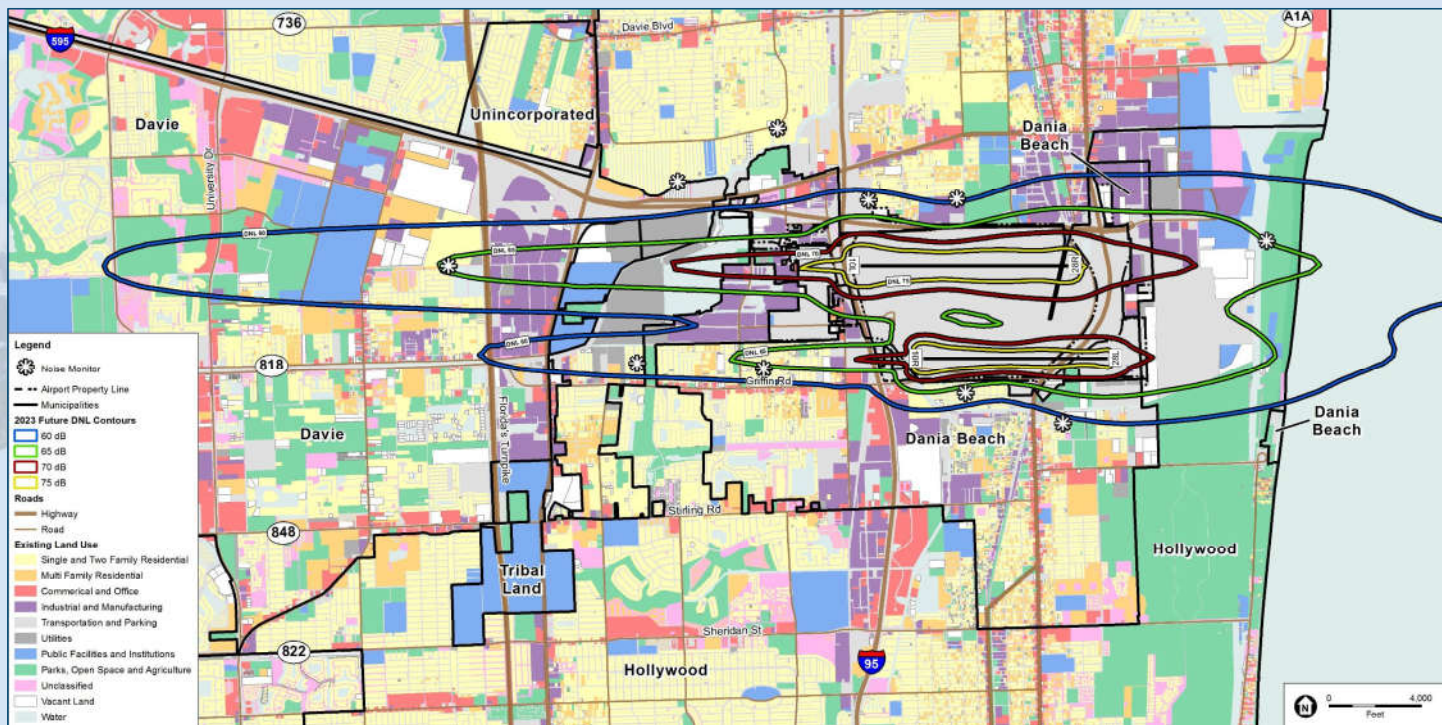
2023 NOISE EXPOSURE - DANIA BEACH



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

2023 NOISE EXPOSURE MAP (WITH 60 DNL CONTOUR)



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning

- **Augments/enhances traditional zoning controls** by focusing on noise-related requirements for a specific area
- Implemented by local jurisdictions consistent with **state enabling legislation**
- Can be used based on noise contours and/or overflight activity (can exist beyond 65 DNL contour if desired)
- Typically includes provisions establishing:
 - Specific requirements tied to noise contours
 - Modifications to permitted land uses in underlying zones
 - Aviation easement/disclosure requirements for new or redeveloped noise sensitive uses
 - Required exterior-to-interior noise level reductions to provide a maximum interior noise level of 45 dBA
 - Procedures for variances
- Has been **successfully implemented** by other local jurisdictions in the State of Florida

FOR DISCUSSION PURPOSES ONLY



OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning: Benefits

- Establishes **definitive requirements** within overlay zone for:
 - Permitted uses based on 14 CFR Part 150 criteria
 - Conditionally permitted uses based on sound level reduction construction/retrofitting
 - Criteria for new development vs. infill and improvements
- **Enhances compatibility** of new or redeveloped land uses within noise contours through **sound level reduction requirements**
- Focused on **mitigating key noise related issues** (i.e. sleep awakening and interruption, communication interruption)
- Can be used to implement actions **beyond the DNL 65 contour** (i.e. disclosure)
- Consistent with **protecting public, health, safety, and general welfare**
- Noise compatibility requirements are contained within a **single zoning section** in an ordinance rather than multiple sections
- Precedent for noise overlay zoning exists within the State of Florida

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

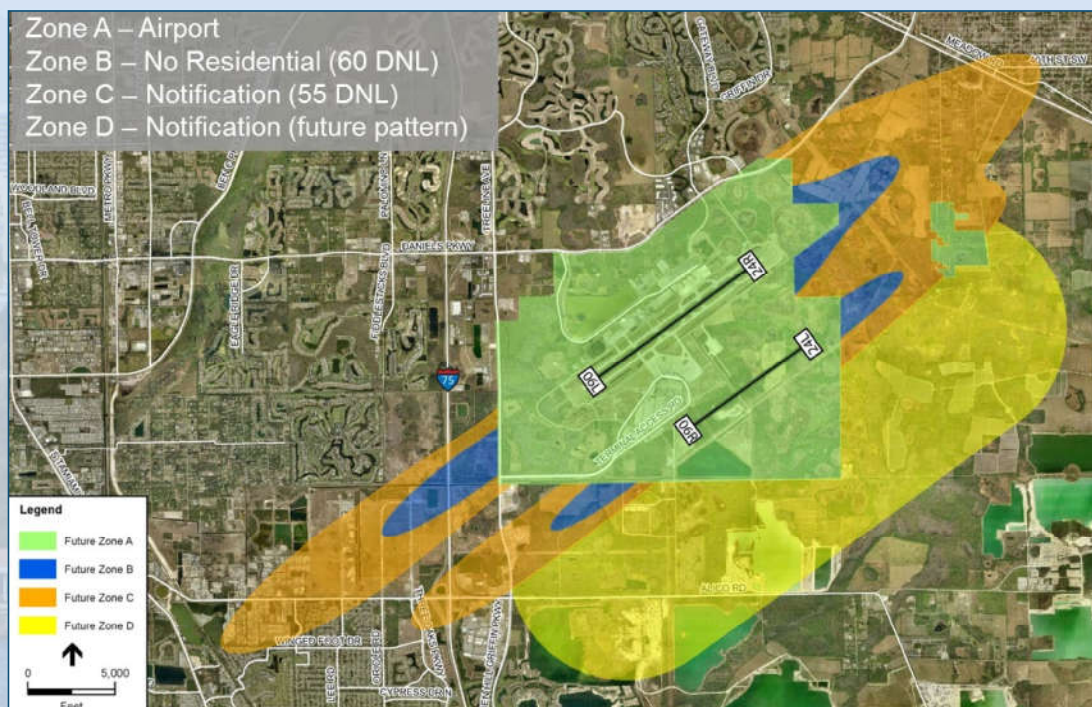
Noise Overlay Zoning: Challenges

- Most-suited areas experiencing new or large-scale redevelopment
- Increased regulations can be locally controversial
- Can create new non-conforming uses inside the noise zones
- Adds additional requirements to existing codes and administrative requirements
- More-stringent new construction/renovation requirements inside noise overlay zone can be politically sensitive
- Places additional workload on municipal land use planners

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning Example:

Southwest Florida
International
Airport

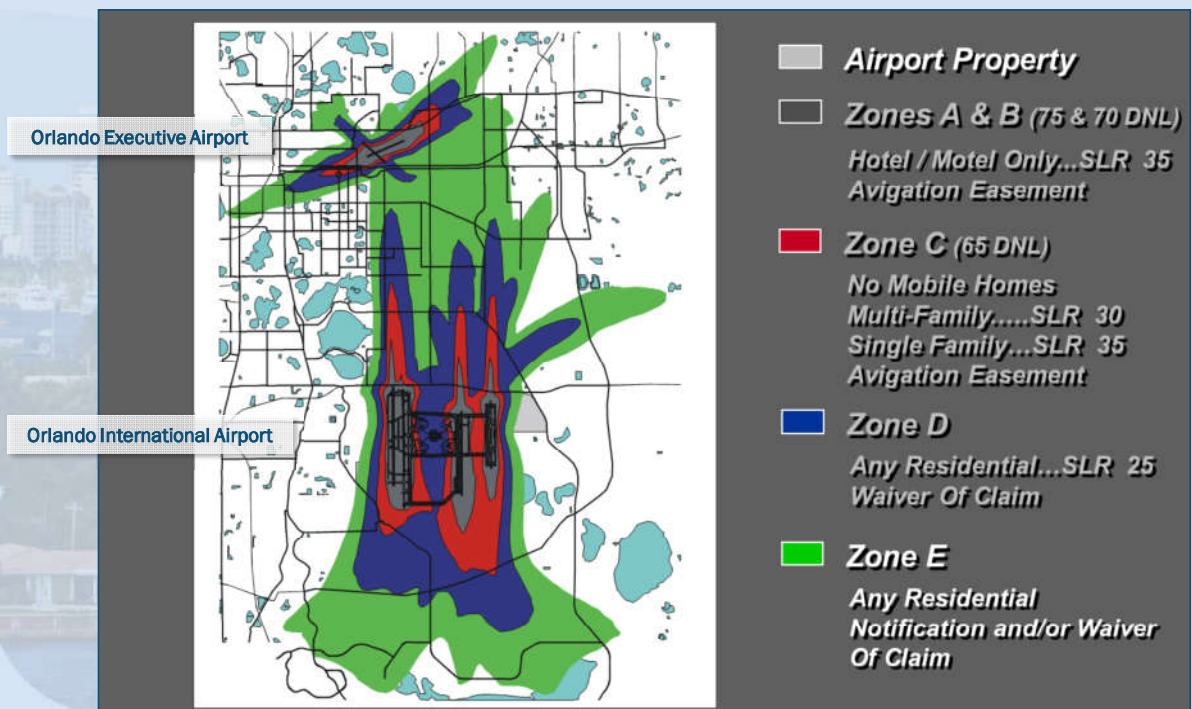


OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning Example:

Orlando
Airports

SLR = Sound Level Reduction



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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction

- Provides guidance to **planners, building officials, and contractors** not well-versed in noise compatibility
- Can work independently or in conjunction with **noise overlay zoning**
- Effective tool for **ensuring noise attenuation** in new development or significant reconstruction
- Improves interior **quality of life** for dwelling residents
- Provides **quieter internal living spaces**, mitigating impacts associated with:
 - Sleep awakening and interruption
 - Impacts to audio/TV entertainment
 - Disruption of normal conversation
- Currently, both Dania Beach and Davie have implemented noise attenuation construction requirements

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction

- Applied to **new structures** considered to be noise sensitive (i.e. within the DNL 65 and higher contours)
- FAA criteria define an interior noise level of **not greater than 45 dBA***
- Extent of Noise Level Reduction (NLR) to meet a 45 dBA interior sound level varies by noise contour; minimum NLR is typically:
 - 25 dB reduction in the DNL 65-70 contour area
 - 30 dB reduction in the DNL 70-75 contour area
 - 35 dB reduction in the DNL 75+ contour area (noise sensitive uses should be precluded)
 - Typical newer construction achieves approximately 20 dB reduction

* Airport Improvement Program Handbook. FAA Order 5100.38D. Federal Aviation Administration. September 30, 2014.



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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction

- Applied to **existing structures** undergoing renovation, conversion, or expansion
 - Additions, alterations, and repairs to existing structures (typically applies only to the improvements being made)
 - Change of a non-noise sensitive building to a human occupancy use within a noise zone
- If soundproofing is undertaken, **specific construction requirements** will be required to guide material selection and construction

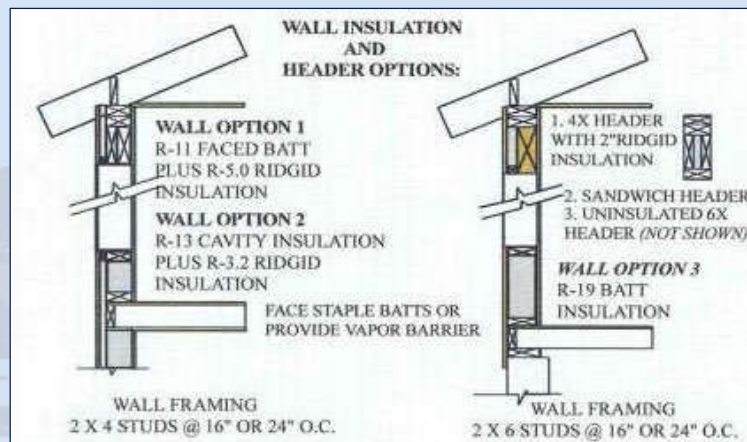


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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction: Challenges

- Increases construction costs in areas subject to requirements
- Defining renovation requirements for existing development is challenging
- Requires training of building officials and inspectors in noise attenuation
- Training seminars for local contractors could also be required
- Community reluctance due to added requirements, costs, and reaction by residents



SOURCE: Builders Guide: Mitigating Aircraft Noise in New Residential Construction. Metropolitan Council of Minneapolis-St Paul. March 2006.

FOR DISCUSSION PURPOSES ONLY

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing

- Retrofitting existing structures to **reduce exterior-to-interior noise levels**
- FLL has previously offered soundproofing as a mitigation measure required in the runway EIS
- **Significant data available** on construction techniques and building materials
- Retrofitting actions vary but may include:
 - Insulation
 - Walls and roofs (thicker roof sheeting, added depth of sheetrock)
 - Windows meeting a higher STC rating (generally rating 54 or above)
 - Solid-core exterior doors
 - Closure of external openings (e.g. baffling of vents and flues, caulking around windows and doors, weather-stripping)
 - Forced-air systems (to reduce the need to open windows)
- May include an upper limit on per-unit soundproofing cost

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing: Benefits

- Mitigates key contributors to noise impact:
 - Sleep awakening and interruption
 - Impacts to audio/TV entertainment
 - Disruption of normal conversation
- Improved inside **quality of life** for residents
- **Increase energy efficiency** resulting from soundproofing upgrades to homes
- Improvements **add to value of residential uses**
- Provides a **positive economic impact** (jobs and housing values)

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing: Challenges

- Opening windows/doors negates value of soundproofing
- Does not mitigate impacts to outdoor activities
- Not all homes within a noise contour will qualify for soundproofing
 - Structures with interior sound levels below 45 dBA will not qualify
 - Structures requiring significant reconstruction may not be cost effective to soundproof
- The extent of improvements will vary from structure to structure which can cause adverse reactions by recipients
- Soundproofing is typically not a viable option for mobile homes

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing: Challenges (cont.)

- Soundproofing typically focuses on structures in highest noise exposure contour first then proceeds outward
- Costs can be significant, and implementation is based on availability of funding
- Soundproofing actions can vary considerably from structure to structure to meet the 45 dBA interior level
- Significant administrative requirements with the program

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure

- Florida law states a seller must **disclose all known defects or damage** to their property
- Per *Johnson v. Davis* - 480 So. 2d 625 (Fla. 1985):
 - The seller must have knowledge of a defect in the property
 - The defect must materially affect the property value
 - The defect must be not readily observable and unknown to the buyer
 - The buyer must establish the seller failed to disclose the defect
- The duty to disclose applies to **both sellers and their realtor**
- Sellers are advised to prepare a sellers property disclosure statement but not required to do so under Florida law
- Selling a property "as is" **does not release the seller** from the disclosure requirement

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure

- Current state law could **exempt sellers** from a requirement to disclose noise-related impact
- Disclosure would require local legislative action to include **aircraft related noise**
- Requires potential buyers be informed of proximity to airport, potential for aircraft noise, and information about the noise prior to purchase
- The signed disclosure document is legally filed with the deed at time of purchase
- Disclosure **can be limited to impacted areas, or be more broadly employed at jurisdiction's discretion** to include areas of concentrated flight operations
- General view is that disclosure requirements are not sufficient to trigger a regulatory taking

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure: Benefits

- Potential buyers can make informed decisions about noise; mitigates “not knowing” about airport activity
- Recordation of disclosure provides a level of protection for the airport, municipality, and seller
- Informs realty community of noise levels in the vicinity of the airport
- Reduces seller's liability for post-sale claims since buyers sign disclosure up-front

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure: Challenges

- Disclosures do not reduce noise
- Adverse reaction from:
 - Realty community
 - Property owners concerned with buyers walking away
- Amendments to legislative acts will need to occur on the local level
- To be successful, enforcement of policies is necessary

FOR DISCUSSION PURPOSES ONLY



QUESTIONS?

FOR DISCUSSION PURPOSES ONLY





DNL SHAPE FILES FOR 2023 DNL CONTOURS

Appendix F-4

Land Use Coordination with Town of Davie

January 29, 2020

Land Use Coordination with Town of Davie

Meeting Agenda and

Attendance Roster

14 CFR PART 150

AIRPORT NOISE AND LAND USE COMPATIBILITY PLANNING STUDY

Land Use Alternatives Discussion

Town of Davie

January 29, 2020

-
1. Overview of Part 150 Noise and Land Use Compatibility Study
 2. 2018 and 2023 Noise Exposure Maps
 3. Land Use Compatibility Strategies and Options for Consideration by Municipalities
 4. Land Use Compatibility Resources
 5. DNL Shape Files for 2023 DNL Contours

FLL Part 150 Study
Land Use Alternatives Meeting
Town of Davie
January 29, 2020 10:30-11:30AM

Name	Organization	Email	Phone
Dave Rickerson	KHA	dave.rickerson@kimley-horn.com	407 404 0755
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Karen Friedman	BCAD	KFriedman@broward.org	(9)359 6258
MICHAEL PACITTO	BCAD	mpacitto@broward.org	954 359 6103
Winston Carmiche	BCAD	wcarmiche@broward.org	(954) 359-6101
David Quigley	Davie	david-quigley@davie-fl.gov	954-797-1025
leona Henry	Davie	leona-henry@davie-fl.gov	954-797-1035
Phillip Holste	Davie	phillip-holste@davie-fl.gov	954-797-1041
Richard Lemack	Davie	richard-lemack@davie-fl.gov	954-797-1034
John Colton	KHA	john.colton@kimley-horn.com	

Land Use Coordination with Town of Davie

Materials Presented at Meeting



14 CFR PART 150

AIRPORT NOISE AND LAND USE COMPATIBILITY PLANNING STUDY

Land Use Alternatives Discussion

Town of Davie


January 29, 2020



WHY WE'RE HERE

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- Overview of FLL Part 150 study progress/schedule
- Discuss current land use measures in place related to aircraft noise
- Discuss land use measure for consideration by municipality
 - Provide examples of land use measures at other airports
 - Land use measures are for discussion purposes only
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OVERVIEW OF PART 150 STUDY

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The **14 CFR Part 150** process is the Airport's mechanism to **improve the compatibility** between airport operations and surrounding communities.

FLL's Part 150 efforts span three decades:

- **1987** – Initial FLL Part 150 study
- **1994** – FLL Part 150 update
- **2007** – FLL Part 150 initiated, later suspended

OVERVIEW OF PART 150 STUDY

Study Elements

Noise Exposure Map Report (NEM)

- Develop a comprehensive database of current conditions
- Noise contour development and impact analysis
- Prepare and submit Noise Exposure Map (NEM) report

Noise Compatibility Program (NCP)

- Identify and evaluate noise abatement alternatives
- Identify and evaluate compatible land use alternatives
- Identify and evaluate administrative measures
- Prepare and submit Noise Compatibility Program (NCP) report

Stakeholder Outreach Program

- Local jurisdictions/agencies
- FAA
- Public (public workshops, project website, newsletters, technical committee)

FOR DISCUSSION PURPOSES ONLY



FLL PART 150 SCHEDULE

FOR DISCUSSION PURPOSES ONLY



FLL PART 150 SCHEDULE

- NEM is complete and has been accepted by the FAA
- NCP is in development with a draft programmed for Q1 2020
- Public release of draft NCP, workshop and hearing Q2 2020
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FOR DISCUSSION PURPOSES ONLY



2018 & 2023 NOISE EXPOSURE MAPS

FOR DISCUSSION PURPOSES ONLY



NOISE EXPOSURE MAPS

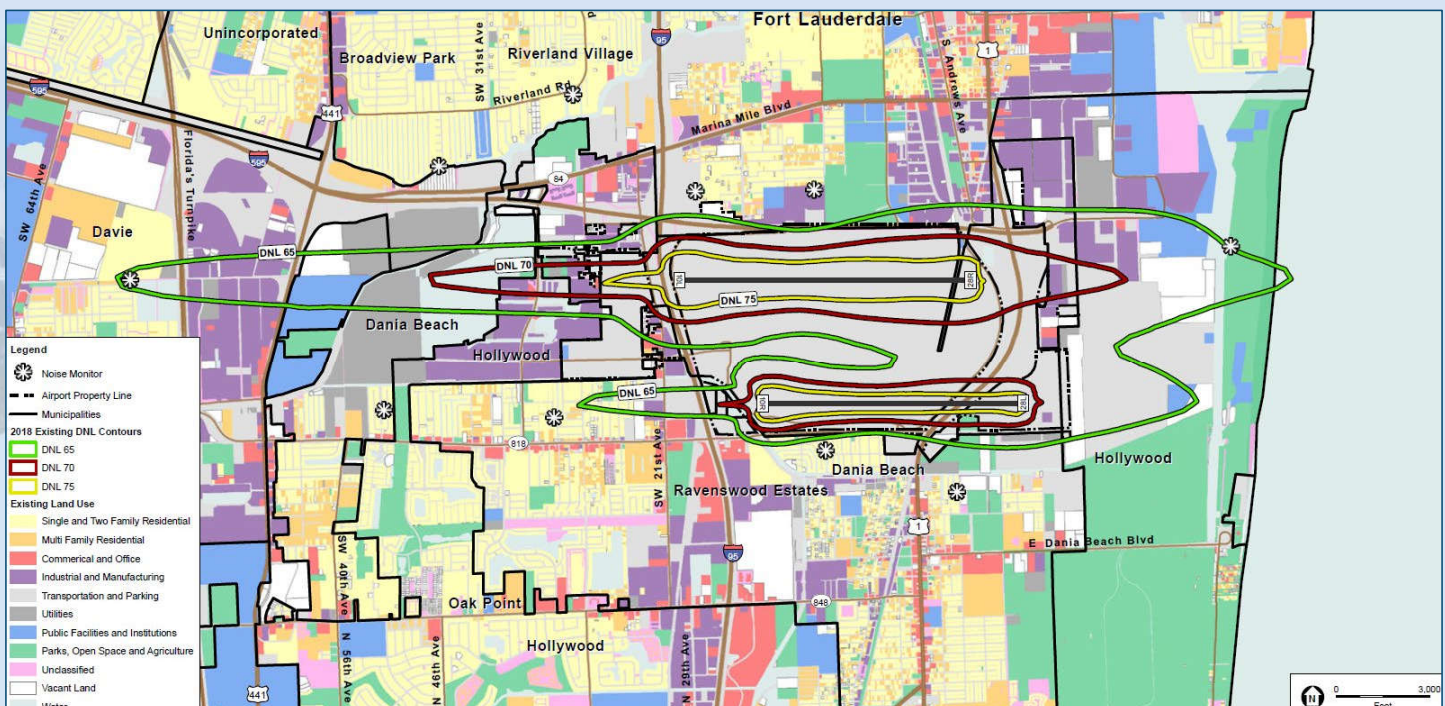
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- **FAA requires the use of Day-Night Average Sound Level (DNL) for airport noise assessments**
 - 24-hour time weighted energy average noise level based on A-weighted decibels (dBA)
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 - Years of analysis: 2018 and 2023
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 - Publication of Notice of Availability – three times each in English and Spanish, November 2019
- **FAA Land Use Compatibility Criteria - FAA Table 1 from Part 150**
 - FAA considers nearly all land uses compatible below the DNL 65



FOR DISCUSSION PURPOSES ONLY

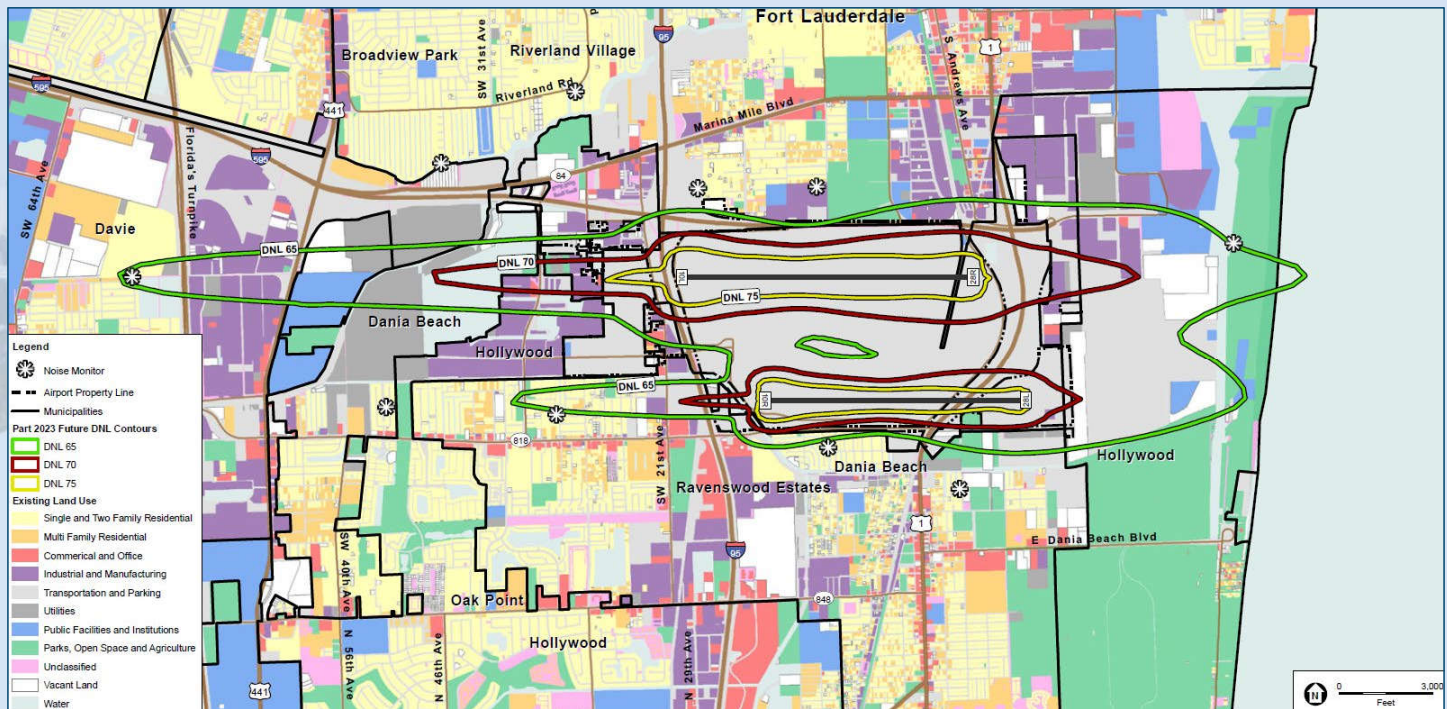
2018 NOISE EXPOSURE MAP



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

2023 NOISE EXPOSURE MAP



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NOISE EXPOSURE MAPS

TABLE 5-5
NOISE SENSITIVE SITES EXPOSED TO DNL 65 AND HIGHER - 2023

Noise Level ¹	Total Area (Acres)	Housing Units ²	Population ²	Religious	Schools ³	Hospitals	Historic Resources	Day Cares	Group Care	Libraries	Nursing Homes
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SOURCES:

- ¹ Noise contours from Environmental Science Associates (ESA)
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TABLE 5-6
HOUSING UNITS AND POPULATION NOT
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TOTAL:	106	231

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Note: Residential units that were addressed in current RSIP/CAR program are considered compatible for Part 150 purposes

FOR DISCUSSION PURPOSES ONLY



LAND USE COMPATIBILITY STRATEGIES

LAND USE COMPATIBILITY STRATEGIES

Common Strategies

Noise Abatement

- Noise abatement flight tracks
- Preferential runway use
- Arrival/departure procedures
- Airport layout modifications
- Runup enclosures
- Use restrictions
- Other actions proposed by stakeholders

Land Use

- Remedial Mitigation
 - Land acquisition
 - Sound insulation
- Preventative Mitigation
 - Land use controls
 - Zoning / overlay zoning
 - Building codes
 - Comprehensive plans
 - Real estate disclosures
- Other actions proposed by stakeholders

Programmatic

- Implementation tools
- Promotion, education, signage, etc.
- Monitoring
- Reporting
- NEM update
- NCP revision
- Other actions proposed by stakeholders

LAND USE COMPATIBILITY STRATEGIES

Observations

- Land area around FLL is **largely developed** (limited undeveloped property within airport environs)
- Residential areas within the 2018 and 2023 DNL 65 and higher contours are developed and **have been in place for years**
- Areas outside DNL 65 are typically not eligible for federally-funded noise mitigation actions
- Requires the **participation of multiple jurisdictions** to mitigate impacts within the 65 DNL contour

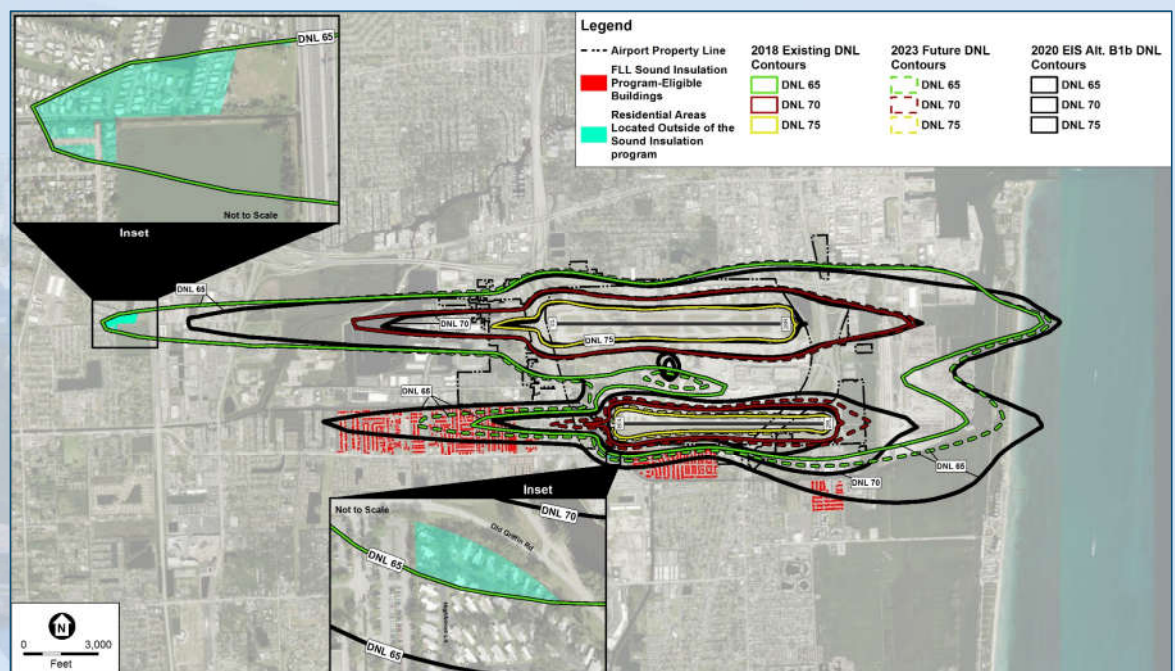
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LAND USE COMPATIBILITY STRATEGIES

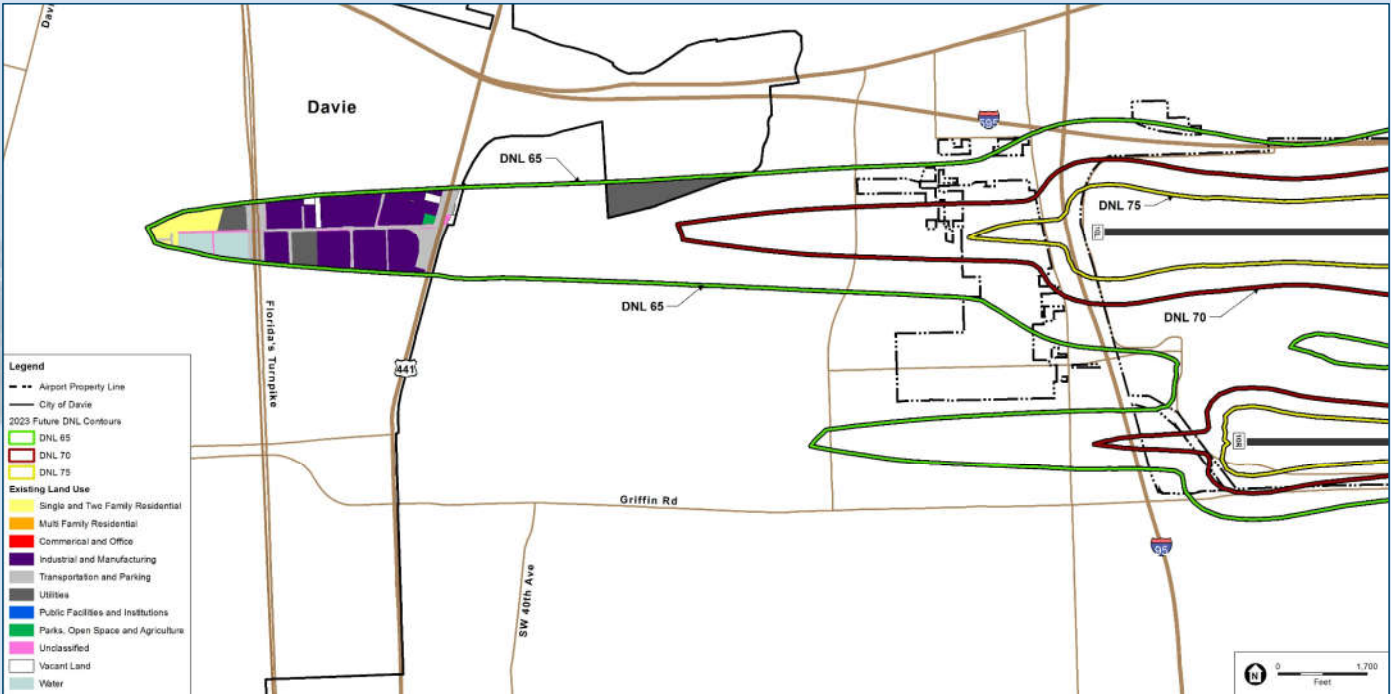
2018 & 2023 Part 150 Noise Contours with EIS 2020 Alternative

B1b Contours with EIS Sound Insulation Program



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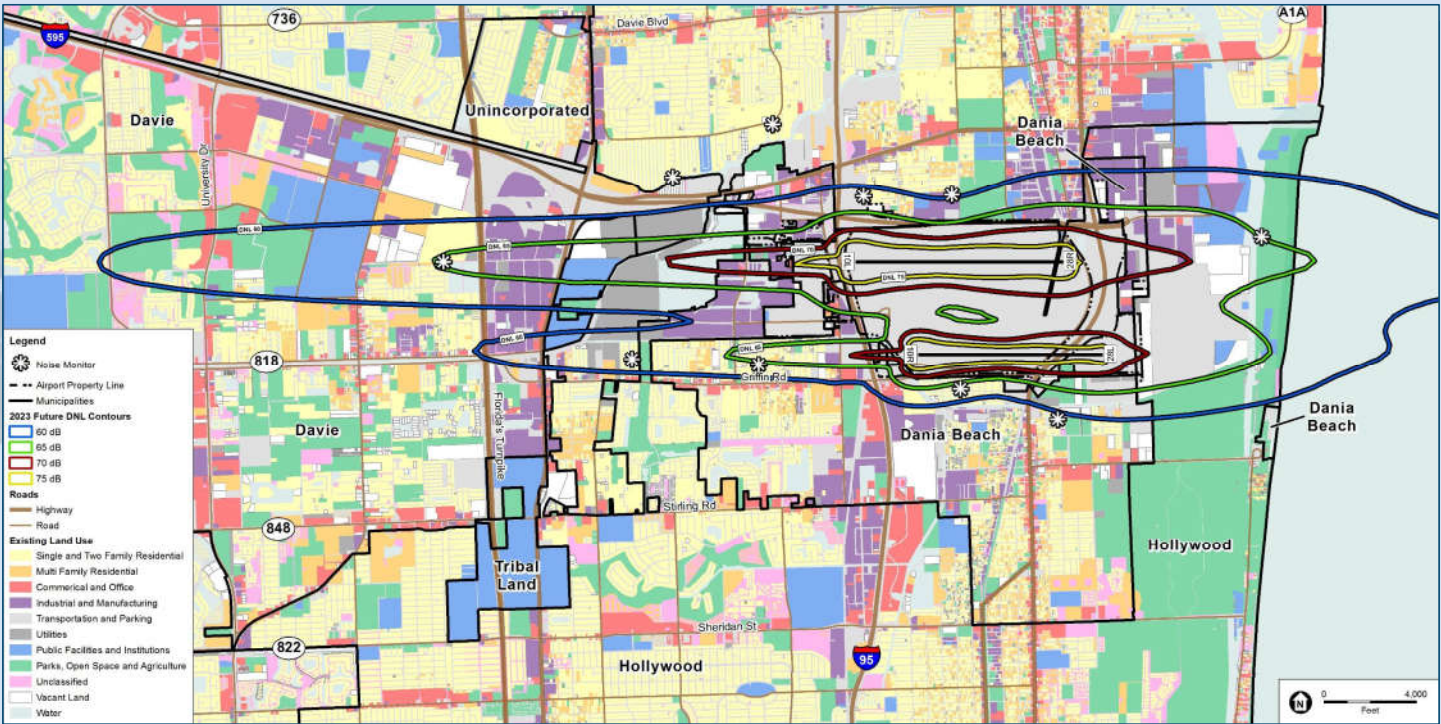
2023 NOISE EXPOSURE - DAVIE



SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

FOR DISCUSSION PURPOSES ONLY

2023 NOISE EXPOSURE MAP (WITH 60 DNL CONTOUR)



SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

FOR DISCUSSION PURPOSES ONLY

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning

- **Augments/enhances traditional zoning controls** by focusing on noise-related requirements for a specific area
- Implemented by local jurisdictions consistent with **state enabling legislation**
- Can be used based on noise contours and/or overflight activity (can exist beyond 65 DNL contour if desired)
- Typically includes provisions establishing:
 - Specific requirements tied to noise contours
 - Modifications to permitted land uses in underlying zones
 - Aviation easement/disclosure requirements for new or redeveloped noise sensitive uses
 - Required exterior-to-interior noise level reductions to provide a maximum interior noise level of 45 dBA
 - Procedures for variances
- Has been **successfully implemented** by other local jurisdictions in the State of Florida



FOR DISCUSSION PURPOSES ONLY

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning: Benefits

- Establishes **definitive requirements** within overlay zone for:
 - Permitted uses based on 14 CFR Part 150 criteria
 - Conditionally permitted uses based on sound level reduction construction/retrofitting
 - Criteria for new development vs. infill and improvements
- **Enhances compatibility** of new or redeveloped land uses within noise contours through **sound level reduction requirements**
- Focused on **mitigating key noise related issues** (i.e. sleep awakening and interruption, communication interruption)
- Can be used to implement actions **beyond the DNL 65 contour** (i.e. disclosure)
- Consistent with **protecting public, health, safety, and general welfare**
- Noise compatibility requirements are contained within a **single zoning section** in an ordinance rather than multiple sections
- Precedent for noise overlay zoning exists within the State of Florida



FOR DISCUSSION PURPOSES ONLY

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

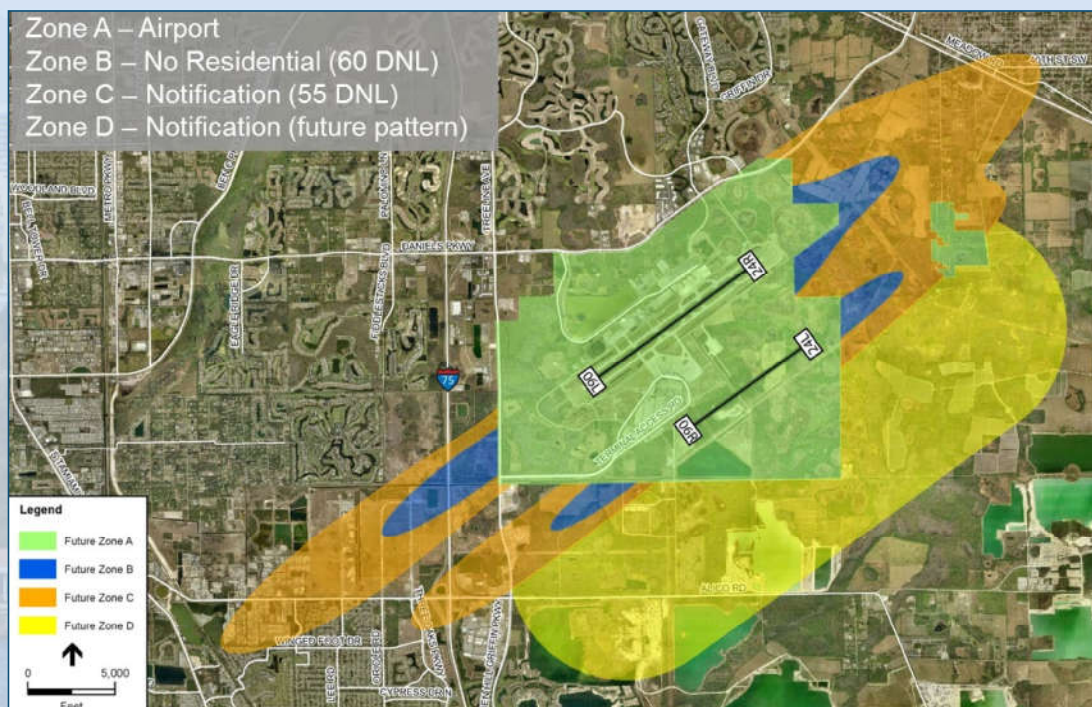
Noise Overlay Zoning: Challenges

- Most-suited areas experiencing new or large-scale redevelopment
- Increased regulations can be locally controversial
- Can create new non-conforming uses inside the noise zones
- Adds additional requirements to existing codes and administrative requirements
- More-stringent new construction/renovation requirements inside noise overlay zone can be politically sensitive
- Places additional workload on municipal land use planners

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning Example:

Southwest Florida
International
Airport

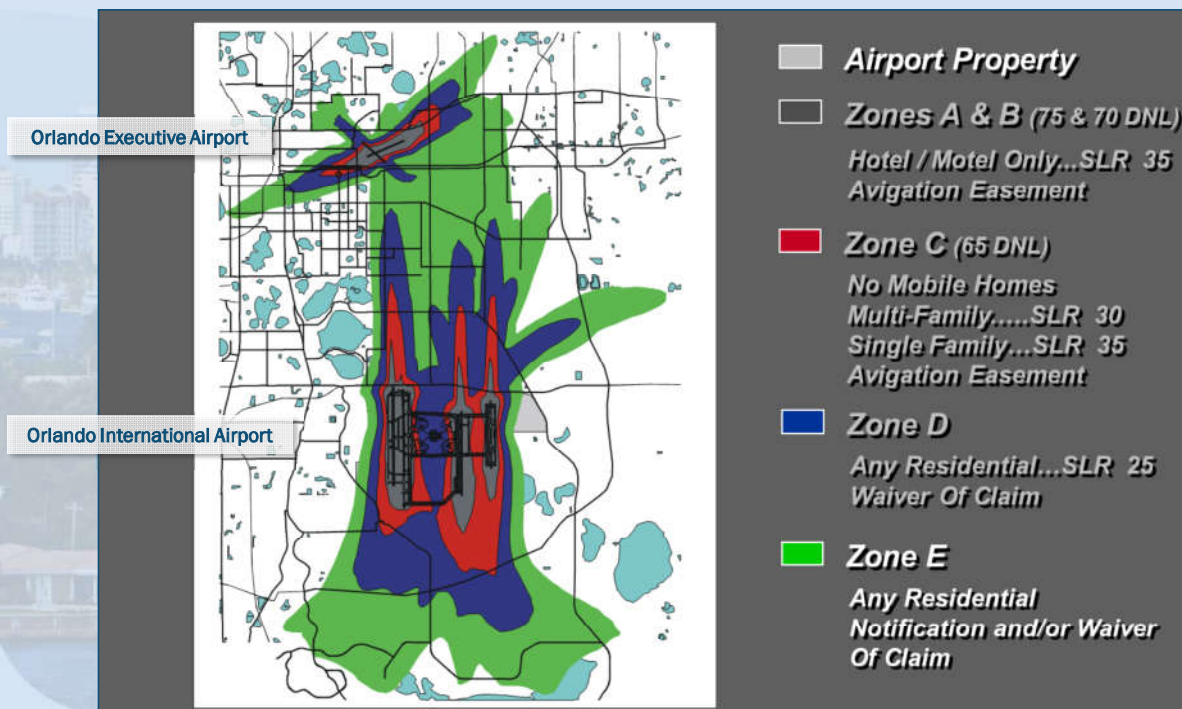


OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning Example:

Orlando
Airports

SLR = Sound Level Reduction



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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction

- Provides guidance to **planners, building officials, and contractors** not well-versed in noise compatibility
- Can work independently or in conjunction with **noise overlay zoning**
- Effective tool for **ensuring noise attenuation** in new development or significant reconstruction
- Improves interior **quality of life** for dwelling residents
- Provides **quieter internal living spaces**, mitigating impacts associated with:
 - Sleep awakening and interruption
 - Impacts to audio/TV entertainment
 - Disruption of normal conversation
- Currently, both Dania Beach and Davie have implemented noise attenuation construction requirements

FOR DISCUSSION PURPOSES ONLY

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction

- Applied to **new structures** considered to be noise sensitive (i.e. within the DNL 65 and higher contours)
- FAA criteria define an interior noise level of **not greater than 45 dBA***
- Extent of Noise Level Reduction (NLR) to meet a 45 dBA interior sound level varies by noise contour; minimum NLR is typically:
 - 25 dB reduction in the DNL 65-70 contour area
 - 30 dB reduction in the DNL 70-75 contour area
 - 35 dB reduction in the DNL 75+ contour area (noise sensitive uses should be precluded)
 - Typical newer construction achieves approximately 20 dB reduction

* Airport Improvement Program Handbook. FAA Order 5100.38D. Federal Aviation Administration. September 30, 2014.



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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction

- Applied to **existing structures** undergoing renovation, conversion, or expansion
 - Additions, alterations, and repairs to existing structures (typically applies only to the improvements being made)
 - Change of a non-noise sensitive building to a human occupancy use within a noise zone
- If soundproofing is undertaken, **specific construction requirements** will be required to guide material selection and construction

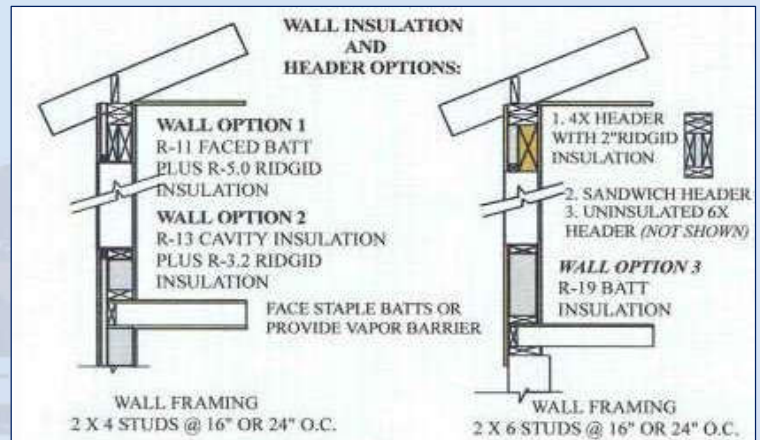


FOR DISCUSSION PURPOSES ONLY

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction: Challenges

- Increases construction costs in areas subject to requirements
- Defining renovation requirements for existing development is challenging
- Requires training of building officials and inspectors in noise attenuation
- Training seminars for local contractors could also be required
- Community reluctance due to added requirements, costs, and reaction by residents



SOURCE: Builders Guide: Mitigating Aircraft Noise in New Residential Construction. Metropolitan Council of Minneapolis-St Paul, March 2006.

FOR DISCUSSION PURPOSES ONLY

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing

- Retrofitting existing structures to **reduce exterior-to-interior noise levels**
- FLL has previously offered soundproofing as a mitigation measure required in the runway EIS
- **Significant data available** on construction techniques and building materials
- Retrofitting actions vary but may include:
 - Insulation
 - Walls and roofs (thicker roof sheeting, added depth of sheetrock)
 - Windows meeting a higher STC rating (generally rating 54 or above)
 - Solid-core exterior doors
 - Closure of external openings (e.g. baffling of vents and flues, caulking around windows and doors, weather-stripping)
 - Forced-air systems (to reduce the need to open windows)
- May include an upper limit on per-unit soundproofing cost

FOR DISCUSSION PURPOSES ONLY

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing: Benefits

- Mitigates key contributors to noise impact:
 - Sleep awakening and interruption
 - Impacts to audio/TV entertainment
 - Disruption of normal conversation
- Improved inside **quality of life** for residents
- **Increase energy efficiency** resulting from soundproofing upgrades to homes
- Improvements **add to value of residential uses**
- Provides a **positive economic impact** (jobs and housing values)

FOR DISCUSSION PURPOSES ONLY



OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing: Challenges

- Opening windows/doors negates value of soundproofing
- Does not mitigate impacts to outdoor activities
- Not all homes within a noise contour will qualify for soundproofing
 - Structures with interior sound levels below 45 dBA will not qualify
 - Structures requiring significant reconstruction may not be cost effective to soundproof
- The extent of improvements will vary from structure to structure which can cause adverse reactions by recipients
- Soundproofing is typically not a viable option for mobile homes

FOR DISCUSSION PURPOSES ONLY



OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing: Challenges (cont.)

- Soundproofing typically focuses on structures in highest noise exposure contour first then proceeds outward
- Costs can be significant, and implementation is based on availability of funding
- Soundproofing actions can vary considerably from structure to structure to meet the 45 dBA interior level
- Significant administrative requirements with the program

FOR DISCUSSION PURPOSES ONLY



OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure

- Florida law states a seller must **disclose all known defects or damage** to their property
- Per *Johnson v. Davis* - 480 So. 2d 625 (Fla. 1985):
 - The seller must have knowledge of a defect in the property
 - The defect must materially affect the property value
 - The defect must be not readily observable and unknown to the buyer
 - The buyer must establish the seller failed to disclose the defect
- The duty to disclose applies to **both sellers and their realtor**
- Sellers are advised to prepare a sellers property disclosure statement but not required to do so under Florida law
- Selling a property "as is" **does not release the seller** from the disclosure requirement

FOR DISCUSSION PURPOSES ONLY



OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure

- Current state law could **exempt sellers** from a requirement to disclose noise-related impact
- Disclosure would require local legislative action to include **aircraft related noise**
- Requires potential buyers be informed of proximity to airport, potential for aircraft noise, and information about the noise prior to purchase
- The signed disclosure document is legally filed with the deed at time of purchase
- Disclosure **can be limited to impacted areas, or be more broadly employed at jurisdiction's discretion** to include areas of concentrated flight operations
- General view is that disclosure requirements are not sufficient to trigger a regulatory taking

FOR DISCUSSION PURPOSES ONLY



OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure: Benefits

- Potential buyers can make informed decisions about noise; mitigates “not knowing” about airport activity
- Recordation of disclosure provides a level of protection for the airport, municipality, and seller
- Informs realty community of noise levels in the vicinity of the airport
- Reduces seller's liability for post-sale claims since buyers sign disclosure up-front

FOR DISCUSSION PURPOSES ONLY



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DNL SHAPE FILES FOR 2023 DNL CONTOURS

Appendix F-5

Land Use Coordination with City of Fort Lauderdale

March 04, 2020

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March 4, 2020

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FLL Part 150 Study
Land Use Alternatives Meeting
City of Fort Lauderdale
March 4, 2020

Name	Organization	Email	Phone
John Caliton	KH	John.Calita@kaimley-horn.com	407-427-1695
Dave Rickerson	KH	Dave.rickerson@kaimley-horn.com	407-404-0753
Michael Harold	ESA	mharold@esaassoc.com	407-312-1294
Winston Carmiche	BCAA/PGA	wcarmiche@broward.org	(954) 355-6181
Karen Friedman	BCAD	KFriedman@broward	(9) 359 6258
Michael Priotto	TCAD	mipriotto@broward.org	9-359-6105
NOB FERNANDEZ	CITY OF FTL	BLERNA@CITYOFFORTLAUDERDALE.GOV	-828.5758
Matthew Weber	FTL	mweber@fortlauderdale.gov	6342
FLORENCE STRAUSS	FTL-EXG	fstrauss@fortlauderdale.gov	954-828-4901
Loraine Tarpen	DSB	LTarpen@fortlauderdale.gov	9-828-5018
ELA PARKER	FTL-DSD	eparker@	954-828-3729
KARLANNE GRANT	FTL-ASD	Kgrant@fortlauderdale.gov	954-828-6162
Chris Cooper	FTL-DSD	Ccooper@fortlauderdale.gov	954-828-5180
CAMM. BEN SORENSON	CITY OF FTL	BSORENSEN@FORTLAUDERDALE.GOV	954-828-5004

Land Use Coordination with City of Fort Lauderdale

Materials Presented at Meeting



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City of Fort Lauderdale


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- Discuss current land use measures in place related to aircraft noise
- Review land use measures that support mitigation of aircraft-related noise
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FOR DISCUSSION PURPOSES ONLY



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2018 & 2023 NOISE EXPOSURE MAPS

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NOISE EXPOSURE MAPS

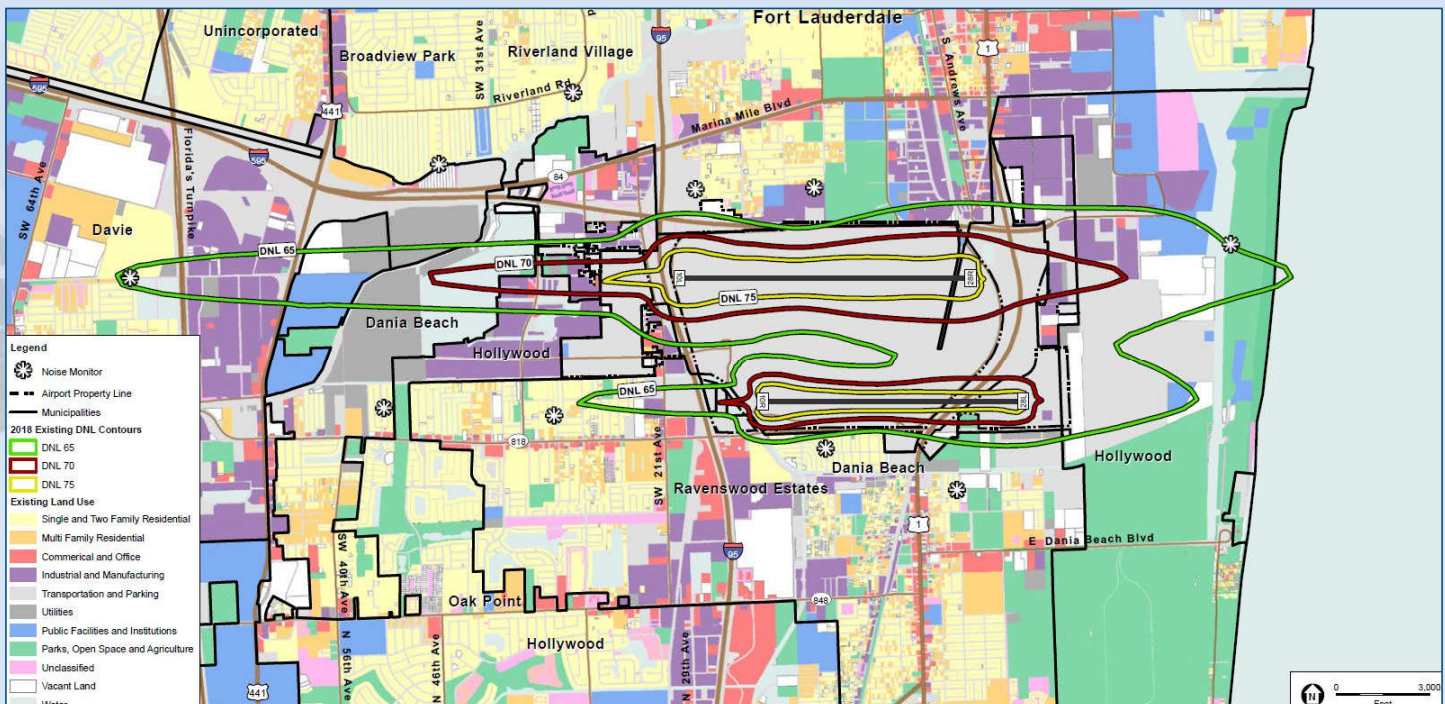
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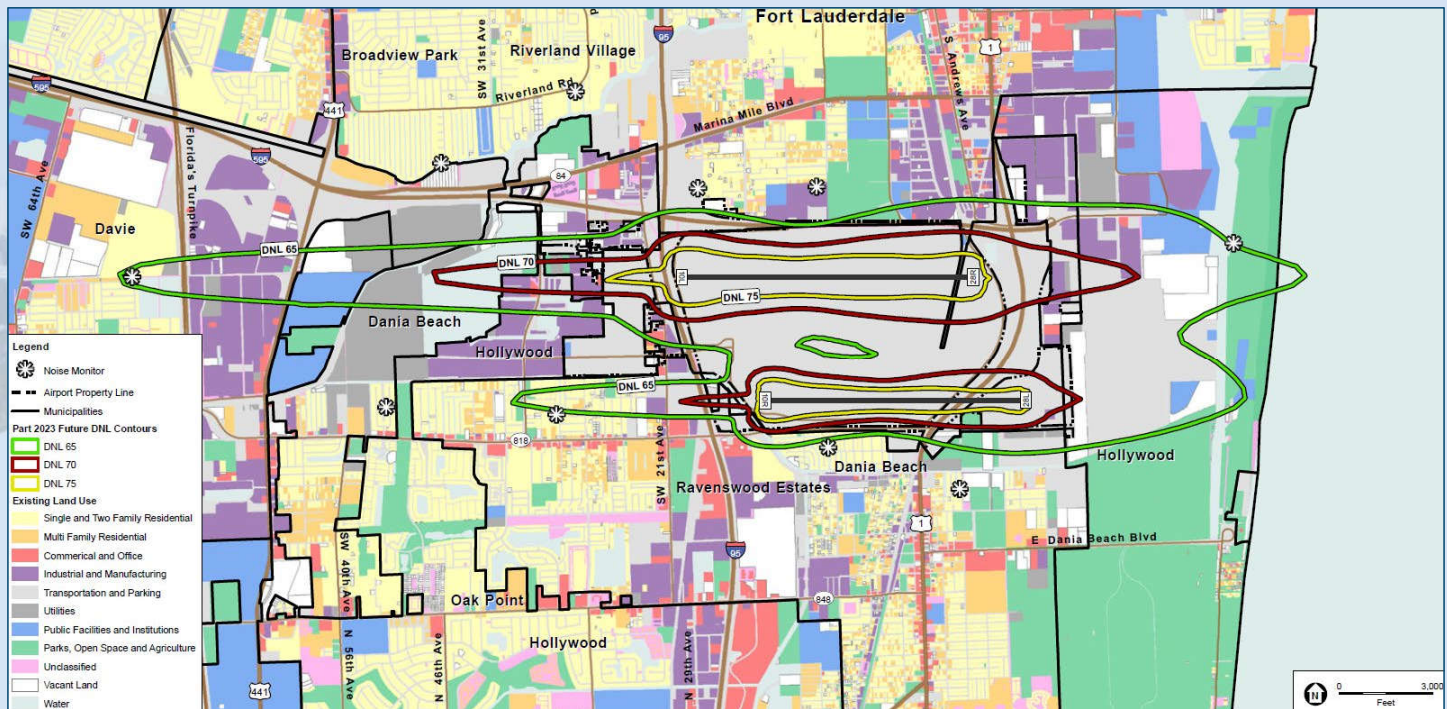
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2023 NOISE EXPOSURE MAP



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FOR DISCUSSION PURPOSES ONLY



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- Other actions proposed by stakeholders

LAND USE COMPATIBILITY STRATEGIES

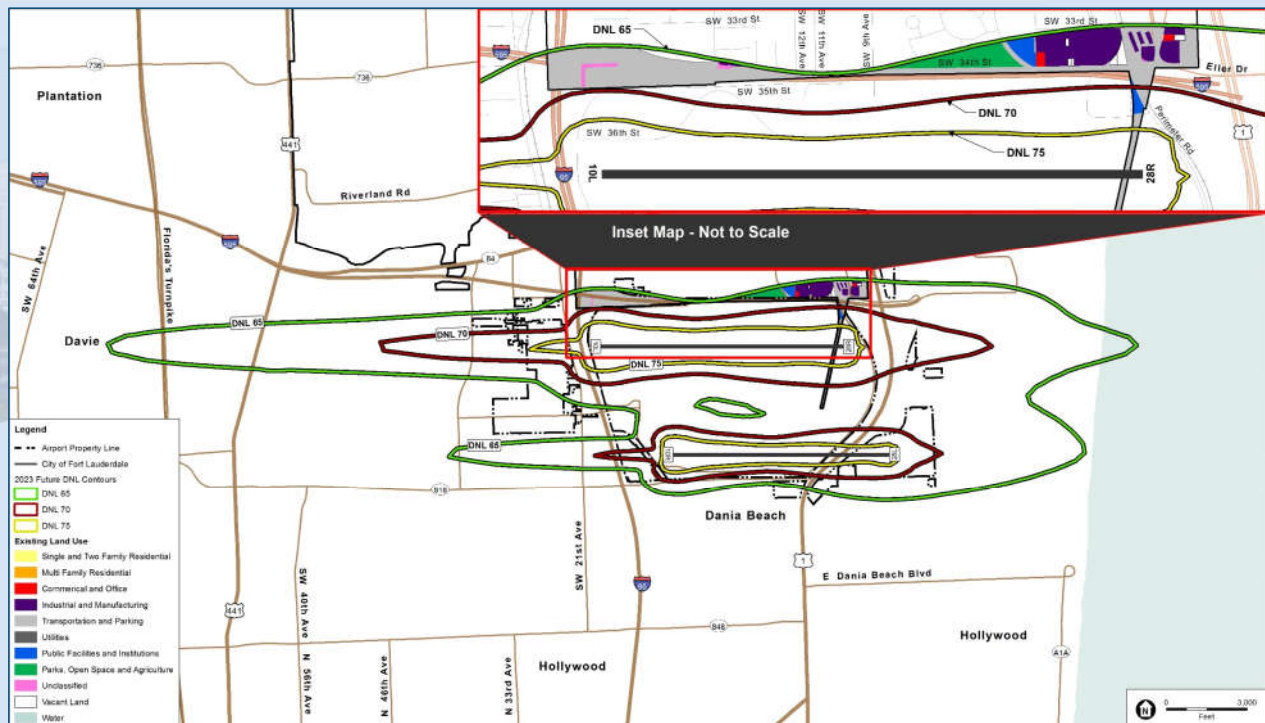
Observations

- Land area around FLL is **largely developed** (limited undeveloped property within airport environs)
- Residential areas within the 2018 and 2023 DNL 65 and higher contours are developed and **have been in place for years**
- Areas outside DNL 65 are typically not eligible for federally-funded noise mitigation actions
- Requires the **participation of multiple jurisdictions** to mitigate impacts within the 65 DNL contour

FOR DISCUSSION PURPOSES ONLY



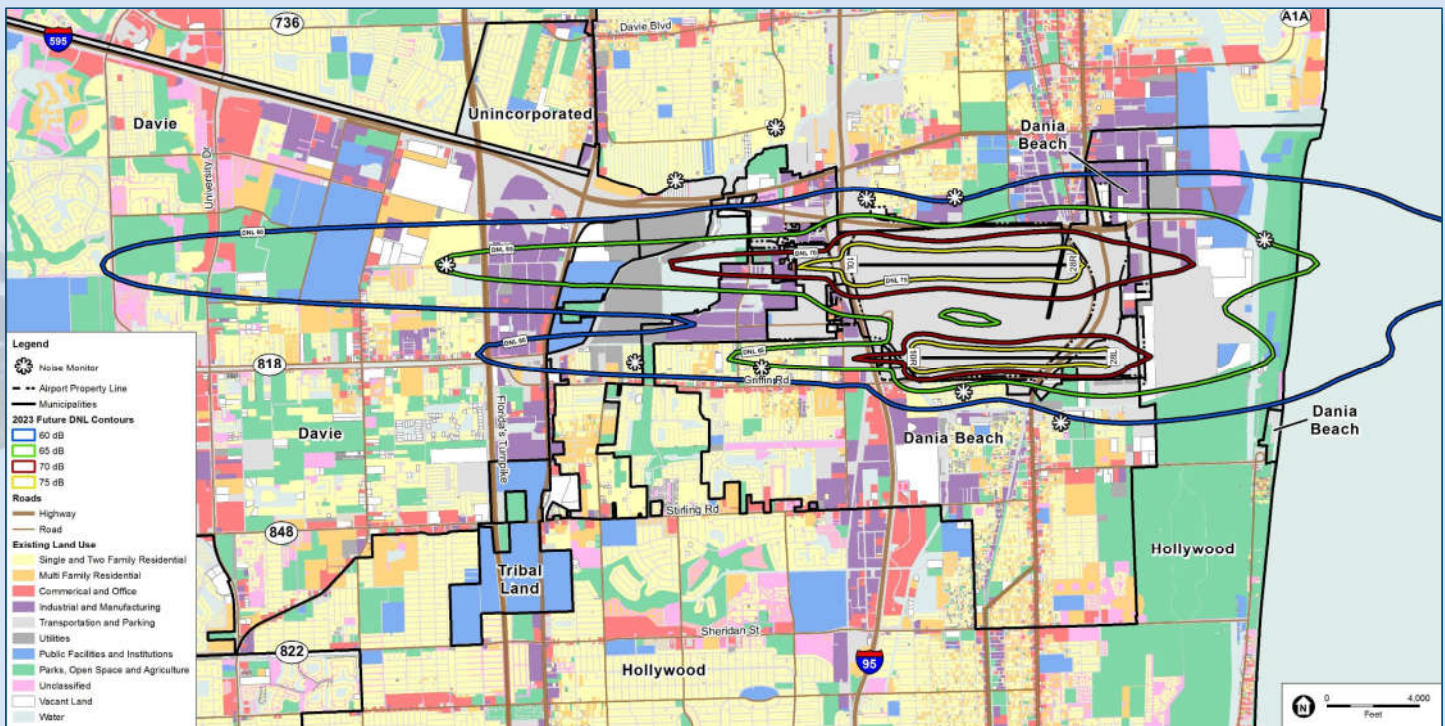
2023 NOISE EXPOSURE CITY OF FORT LAUDERDALE



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

2023 NOISE EXPOSURE MAP (WITH 60 DNL CONTOUR)



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure

- Florida law states a seller must **disclose all known defects or damage** to their property
- Per *Johnson v. Davis* - 480 So. 2d 625 (Fla. 1985):
 - The seller must have knowledge of a defect in the property
 - The defect must materially affect the property value
 - The defect must be not readily observable and unknown to the buyer
 - The buyer must establish the seller failed to disclose the defect
- The duty to disclose applies to **both sellers and their realtor**
- Sellers are advised to prepare a sellers property disclosure statement but not required to do so under Florida law
- Selling a property "as is" **does not release the seller** from the disclosure requirement

FOR DISCUSSION PURPOSES ONLY

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure

- Current state law could **exempt sellers** from a requirement to disclose noise-related impact
- Disclosure would require local legislative action to include **aircraft related noise**
- Requires potential buyers be informed of proximity to airport, potential for aircraft noise, and information about the noise prior to purchase
- The signed disclosure document is legally filed with the deed at time of purchase
- Disclosure **can be limited to impacted areas, or be more broadly employed at jurisdiction's discretion** to include areas of concentrated flight operations
- General view is that disclosure requirements are not sufficient to trigger a regulatory taking

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure: Benefits

- Potential buyers can make informed decisions about noise; mitigates “not knowing” about airport activity
- Recordation of disclosure provides a level of protection for the airport, municipality, and seller
- Informs realty community of noise levels in the vicinity of the airport
- Reduces seller's liability for post-sale claims since buyers sign disclosure up-front

OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Real Estate Fair Disclosure: Challenges

- Disclosures do not reduce noise
- Adverse reaction from:
 - Realty community
 - Property owners concerned with buyers walking away
- Amendments to legislative acts will need to occur on the local level
- To be successful, enforcement of policies is necessary

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction

- Provides guidance to **planners, building officials, and contractors** not well-versed in noise compatibility
- Can work independently or in conjunction with **noise overlay zoning**
- Effective tool for **ensuring noise attenuation** in new development or significant reconstruction
- Improves interior **quality of life** for dwelling residents
- Provides **quieter internal living spaces**, mitigating impacts associated with:
 - Sleep awakening and interruption
 - Impacts to audio/TV entertainment
 - Disruption of normal conversation
- Currently, both Dania Beach and Davie have implemented noise attenuation construction requirements

FOR DISCUSSION PURPOSES ONLY



OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction

- Applied to **new structures** considered to be noise sensitive (i.e. within the DNL 65 and higher contours)
- FAA criteria define an interior noise level of **not greater than 45 dBA***
- Extent of Noise Level Reduction (NLR) to meet a 45 dBA interior sound level varies by noise contour; minimum NLR is typically:
 - 25 dB reduction in the DNL 65-70 contour area
 - 30 dB reduction in the DNL 70-75 contour area
 - 35 dB reduction in the DNL 75+ contour area (noise sensitive uses should be precluded)
 - Typical newer construction achieves approximately 20 dB reduction

* Airport Improvement Program Handbook. FAA Order 5100.38D. Federal Aviation Administration. September 30, 2014.



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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction

- Applied to **existing structures** undergoing renovation, conversion, or expansion
 - Additions, alterations, and repairs to existing structures (typically applies only to the improvements being made)
 - Change of a non-noise sensitive building to a human occupancy use within a noise zone
- If soundproofing is undertaken, **specific construction requirements** will be required to guide material selection and construction

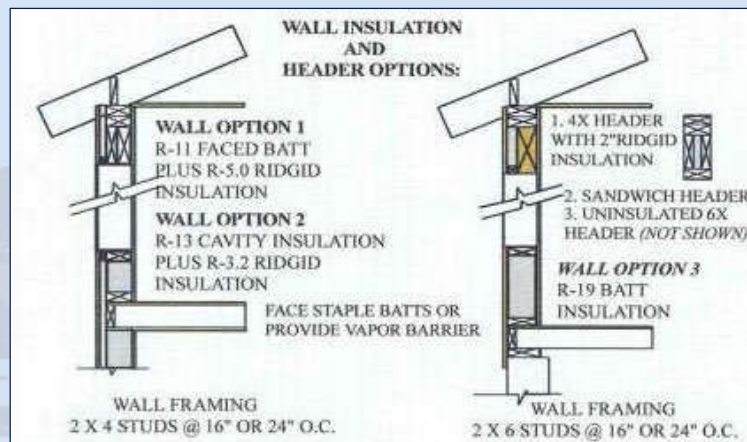


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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Building Code Revisions for Noise Level Reduction: Challenges

- Increases construction costs in areas subject to requirements
- Defining renovation requirements for existing development is challenging
- Requires training of building officials and inspectors in noise attenuation
- Training seminars for local contractors could also be required
- Community reluctance due to added requirements, costs, and reaction by residents



SOURCE: Builders Guide: Mitigating Aircraft Noise in New Residential Construction. Metropolitan Council of Minneapolis-St Paul, March 2006.

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning

- **Augments/enhances traditional zoning controls** by focusing on noise-related requirements for a specific area
- Implemented by local jurisdictions consistent with **state enabling legislation**
- Can be used based on noise contours and/or overflight activity (can exist beyond 65 DNL contour if desired)
- Typically includes provisions establishing:
 - Specific requirements tied to noise contours
 - Modifications to permitted land uses in underlying zones
 - Avigation easement/disclosure requirements for new or redeveloped noise sensitive uses
 - Required exterior-to-interior noise level reductions to provide a maximum interior noise level of 45 dBA
 - Procedures for variances
- Has been **successfully implemented** by other local jurisdictions in the State of Florida

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning: Benefits

- Establishes **definitive requirements** within overlay zone for:
 - Permitted uses based on 14 CFR Part 150 criteria
 - Conditionally permitted uses based on sound level reduction construction/retrofitting
 - Criteria for new development vs. infill and improvements
- **Enhances compatibility** of new or redeveloped land uses within noise contours through **sound level reduction requirements**
- Focused on **mitigating key noise related issues** (i.e. sleep awakening and interruption, communication interruption)
- Can be used to implement actions **beyond the DNL 65 contour** (i.e. disclosure)
- Consistent with **protecting public, health, safety, and general welfare**
- Noise compatibility requirements are contained within a **single zoning section** in an ordinance rather than multiple sections
- Precedent for noise overlay zoning exists within the State of Florida

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning: Challenges

- Most-suited areas experiencing new or large-scale redevelopment
- Increased regulations can be locally controversial
- Can create new non-conforming uses inside the noise zones
- Adds additional requirements to existing codes and administrative requirements
- More-stringent new construction/renovation requirements inside noise overlay zone can be politically sensitive
- Places additional workload on municipal land use planners

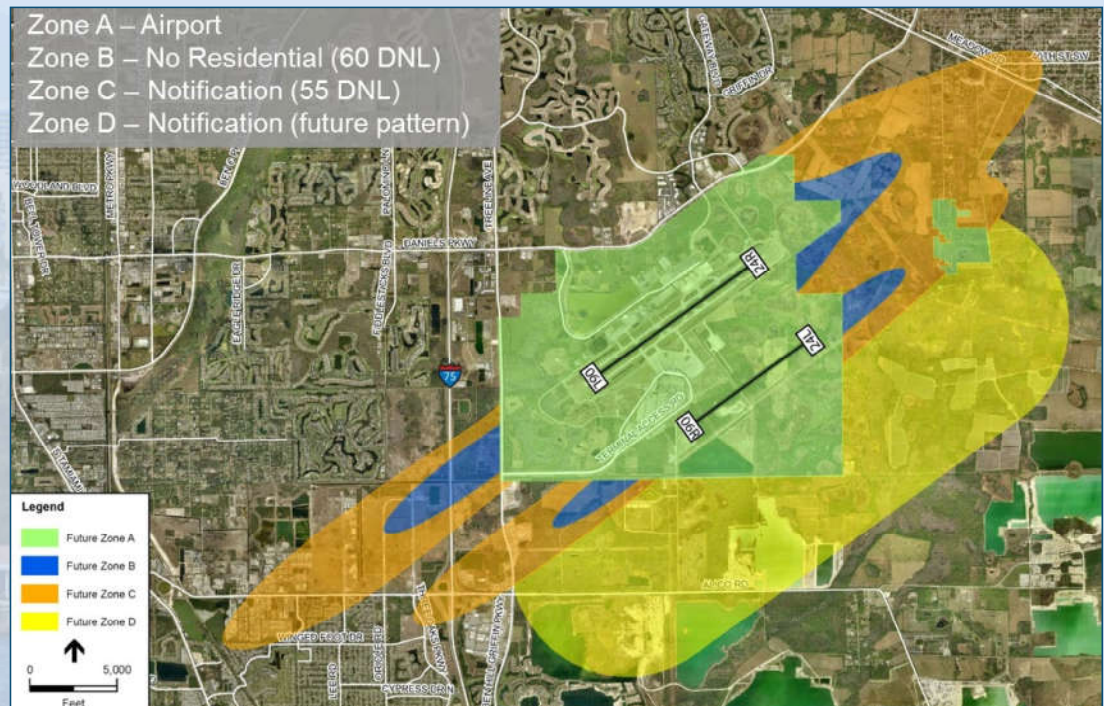
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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning Example:

Southwest Florida
International
Airport

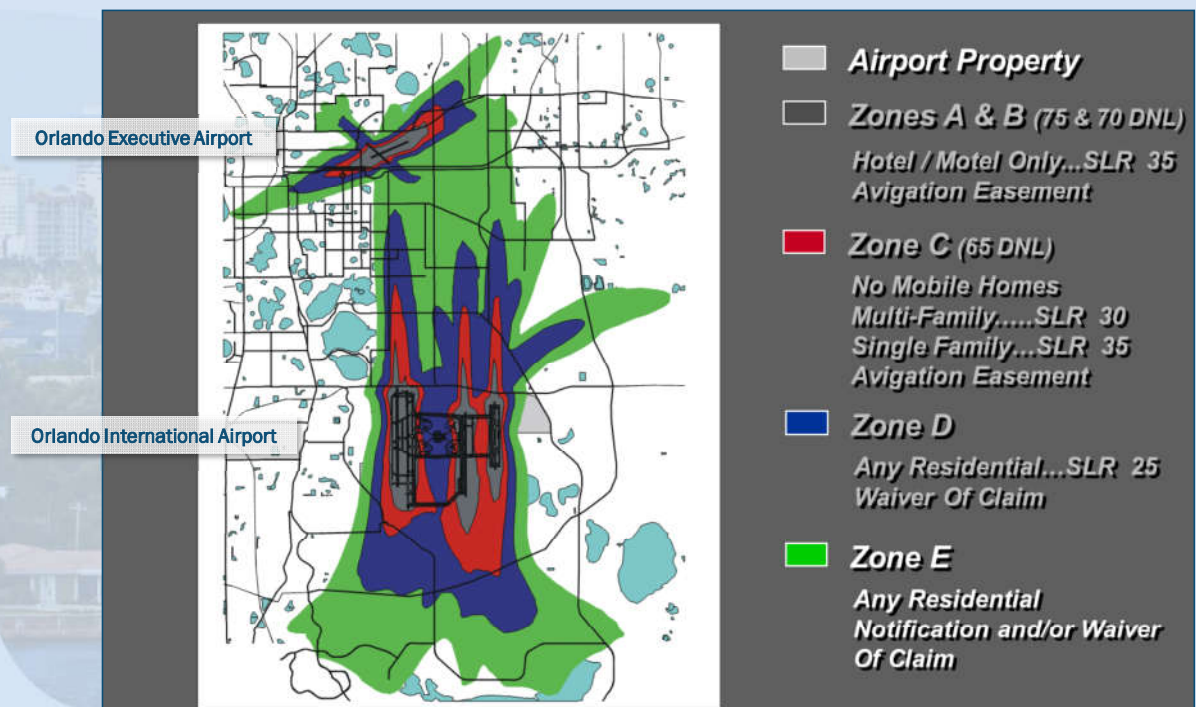


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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Noise Overlay Zoning Example:

Orlando
Airports



SLR = Sound Level Reduction

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing

- Retrofitting existing structures to **reduce exterior-to-interior noise levels**
- FLL has previously offered soundproofing as a mitigation measure required in the runway EIS
- **Significant data available** on construction techniques and building materials
- Retrofitting actions vary but may include:
 - Insulation
 - Walls and roofs (thicker roof sheeting, added depth of sheetrock)
 - Windows meeting a higher STC rating (generally rating 54 or above)
 - Solid-core exterior doors
 - Closure of external openings (e.g. baffling of vents and flues, caulking around windows and doors, weather-stripping)
 - Forced-air systems (to reduce the need to open windows)
- May include an upper limit on per-unit soundproofing cost

FOR DISCUSSION PURPOSES ONLY



OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing: Benefits

- Mitigates key contributors to noise impact:
 - Sleep awakening and interruption
 - Impacts to audio/TV entertainment
 - Disruption of normal conversation
- Improved inside **quality of life** for residents
- **Increase energy efficiency** resulting from soundproofing upgrades to homes
- Improvements **add to value of residential uses**
- Provides a **positive economic impact** (jobs and housing values)

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing: Challenges

- Opening windows/doors negates value of soundproofing
- Does not mitigate impacts to outdoor activities
- Not all homes within a noise contour will qualify for soundproofing
 - Structures with interior sound levels below 45 dBA will not qualify
 - Structures requiring significant reconstruction may not be cost effective to soundproof
- The extent of improvements will vary from structure to structure which can cause adverse reactions by recipients
- Soundproofing is typically not a viable option for mobile homes

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OPTIONS FOR CONSIDERATION BY MUNICIPALITIES

Structural Soundproofing: Challenges (cont.)

- Soundproofing typically focuses on structures in highest noise exposure contour first then proceeds outward
- Costs can be significant, and implementation is based on availability of funding
- Soundproofing actions can vary considerably from structure to structure to meet the 45 dBA interior level
- Significant administrative requirements with the program

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QUESTIONS?



DNL SHAPE FILES FOR 2023 DNL CONTOURS

Appendix F-6

Coordination with City of Hollywood

May 6, 2020

Coordination with City of Hollywood

Coordination Letter



5401 South Kirkman Road
Suite 475
Orlando, FL 32819
407.403.6300 **phone**
407.403.6301 **fax**

esassoc.com

May 6, 2020

Leslie DelMonte
Planning Manager
2600 Hollywood Boulevard
Room 315
Hollywood, FL 33021

Subject: Fort Lauderdale-Hollywood International Airport
14 CFR Part 150 Noise and Land Use Compatibility Study

Dear Ms. DelMonte:

We are contacting you on behalf of the Broward County Aviation Department (BCAD) regarding the ongoing 14 Code of Federal Regulations (CFR) Part 150 Noise and Land Use Compatibility Study being conducted for Fort Lauderdale-Hollywood International Airport. The City of Hollywood has been an active participant in the Part 150 Technical Committee (TC) with Lorie Mertens-Black serving as the City's TC representative. The Part 150 Noise Exposure Maps (NEMs) determined that four jurisdictions, including the City of Hollywood, own property within the DNL 65 contour. The DNL 65 represents the annual average day noise exposure level that the FAA and other federal agencies consider non-compatible with noise sensitive uses. A review of land uses within the DNL 65 the City limits indicates that there are no noise sensitive uses as classified by the FAA.

BCAD and its consultant have attempted to set up a meeting with the City in the first quarter of this year, but understand that folks were quite busy. We've attached a copy of the information that we were going to present and we'd be happy to review with you virtually. We've also included a memory stick that includes the shape files for the DNL 60 and greater contours. While areas beyond the DNL 65 are considered compatible with all land uses, some local governments have implemented notifications or other planning strategies that extend to the DNL 60.

The public release of the NCP document and draft recommendations is currently scheduled for early summer 2020 with a public hearing scheduled for midsummer. If you have any questions, please do not hesitate to reach out to me at 407-312-1294 or via e-mail marnold@esassoc.com. You can also reach out to BCAD's Project Manager, Winston Cannicle, directly at 954-359-6181 or wcannicle@broward.org.

Sincerely,

A handwritten signature in blue ink, appearing to read 'M. R. Arnold'.

Michael R. Arnold
Part 150 Project Manager

Cc: Winston Cannicle, BCAD

Coordination with City of Hollywood

Materials Presented at Meeting



14 CFR PART 150

AIRPORT NOISE AND LAND USE COMPATIBILITY PLANNING STUDY

Land Use Overview

City of Hollywood

May 2020



OVERVIEW OF PART 150 STUDY

FOR DISCUSSION PURPOSES ONLY



OVERVIEW OF PART 150 STUDY

The **14 CFR Part 150** process is the Airport's mechanism to **improve the compatibility** between airport operations and surrounding communities.

FLL's Part 150 efforts span three decades:

- **1987** – Initial FLL Part 150 study
- **1994** – FLL Part 150 update
- **2007** – FLL Part 150 initiated, later suspended

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OVERVIEW OF PART 150 STUDY

Study Elements

Noise Exposure Map Report (NEM)

- Develop a comprehensive database of current conditions
- Noise contour development and impact analysis
- Prepare and submit Noise Exposure Map (NEM) report

Noise Compatibility Program (NCP)

- Identify and evaluate noise abatement alternatives
- Identify and evaluate compatible land use alternatives
- Identify and evaluate administrative measures
- Prepare and submit Noise Compatibility Program (NCP) report

Stakeholder Outreach Program

- Local jurisdictions/agencies
- FAA
- Public (public workshops, project website, newsletters, technical committee)

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2018 & 2023 NOISE EXPOSURE MAPS

FOR DISCUSSION PURPOSES ONLY



NOISE EXPOSURE MAPS

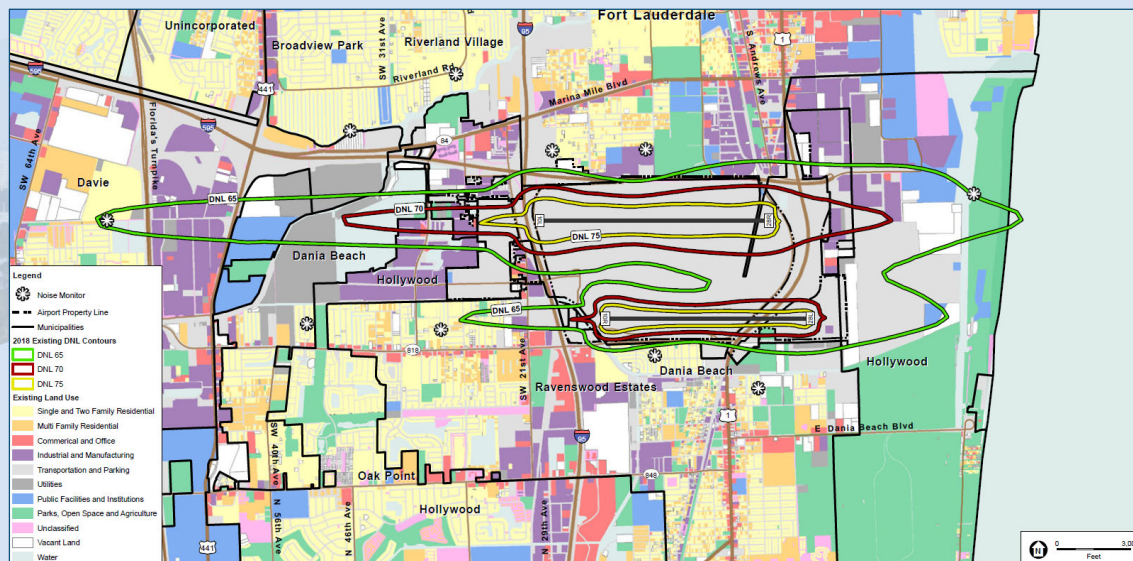
Noise Exposure Background

- **FAA requires the use of Day-Night Average Sound Level (DNL) for airport noise assessments**
 - 24-hour time weighted energy average noise level based on A-weighted decibels (dBA)
 - Noise occurring between 10 p.m. to 7 a.m. is penalized by 10 dB to account for the higher sensitivity to noise during nighttime hours
 - Average Annual Day aircraft noise exposure is calculated over a broad area and then depicted using contour lines of equal noise levels
 - Years of analysis: 2018 and 2023
- **FAA Determined the Noise Exposure Maps were in Compliance with Federal Regulation**
 - Federal Register Determination of Compliance – October 2019
 - Publication of Notice of Availability – three times each in English and Spanish, November 2019
- **FAA Land Use Compatibility Criteria - FAA Table 1 from Part 150**
 - FAA considers nearly all land uses compatible below the DNL 65

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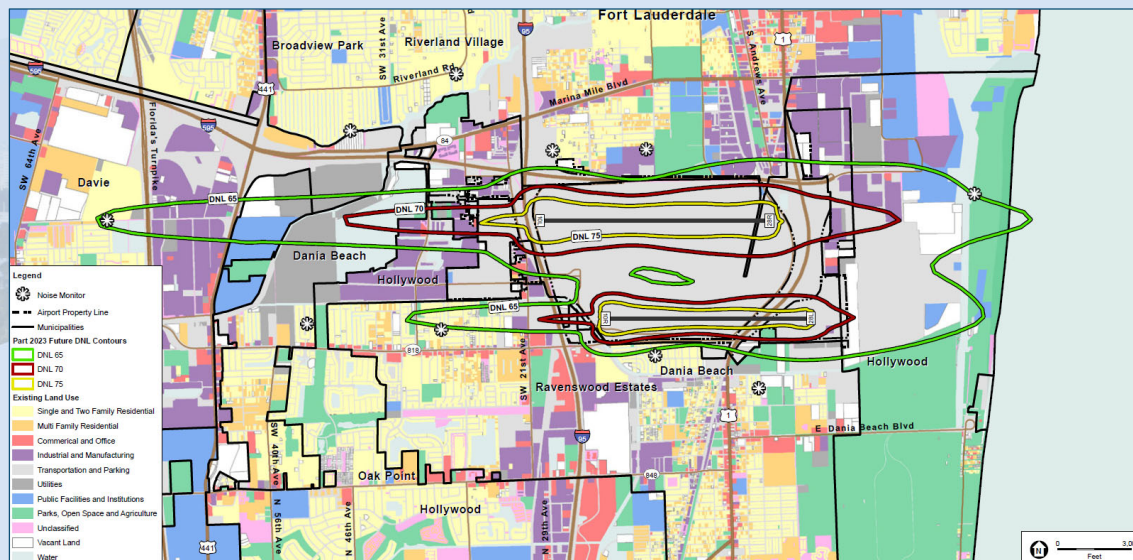
2018 NOISE EXPOSURE MAP



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

2023 NOISE EXPOSURE MAP



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

NOISE EXPOSURE MAPS

**TABLE 5-5
NOISE SENSITIVE SITES EXPOSED TO DNL 65 AND HIGHER - 2023**

Noise Level ¹	Total Area (Acres)	Housing Units ²	Population ²	Religious	Schools ³	Hospitals	Historic Resources	Day Cares	Group Care	Libraries	Nursing Homes
DNL 65-70	2,579.0	548	1,121	0	0	0	3	0	0	0	0
DNL 70-75	805.7	0	0	0	0	0	0	0	0	0	0
DNL 75+	503.3	0	0	0	0	0	0	0	0	0	0
Total	3,888.0	548	1,121	0	0	0	3	0	0	0	0

SOURCES:

- ¹ Noise contours from Environmental Science Associates (ESA)
² Housing units and population estimates derived from 2010 Census block-level data.
³ Public school data from Broward County Public Schools; private schools from Florida Geographic Data Library (FGDL).
⁴ All other noise sensitive site data from Florida Geographic Data Library (FGDL).

**TABLE 5-6
HOUSING UNITS AND POPULATION NOT
IN CURRENT FLL SOUND INSULATION PROGRAM¹ - 2023**

Noise Level ²	Housing Units ³	Population ³
DNL 65-70	106	231
DNL 70-75	0	0
DNL 75+	0	0
TOTAL:	106	231

SOURCES:

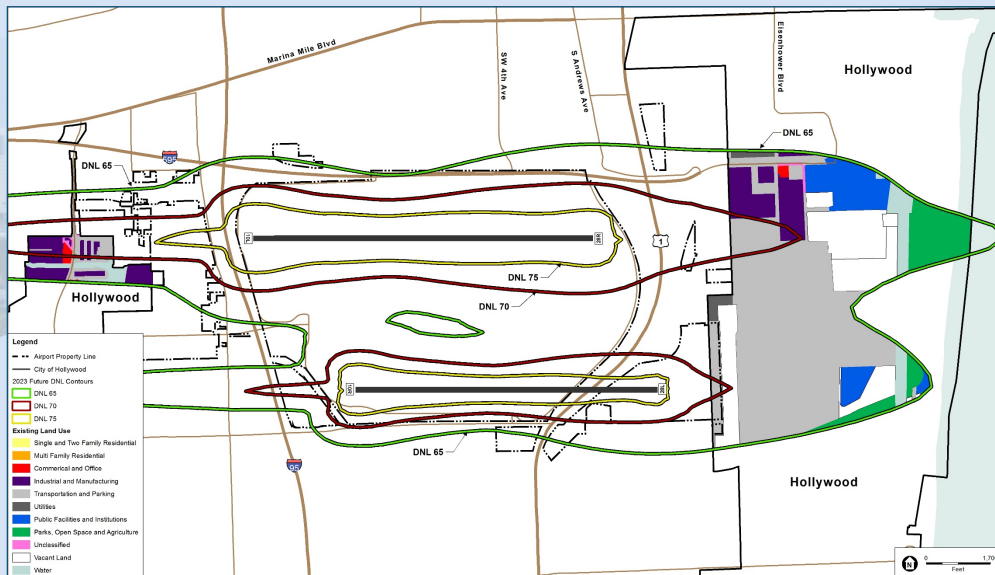
- ¹ FLL Sound Insulation Program housing unit data from Broward County Aviation Department. All housing units within the existing SIP boundary were excluded from this table regardless if they received treatment, elected to not participate or were deemed compatible through interior testing or deemed ineligible.
² Noise contours from Environmental Science Associates (ESA)
³ Housing units and population estimates derived from 2010 Census block-level data.

Note: Residential units that were addressed in current RSIP/CAR program are considered compatible for Part 150 purposes.

FOR DISCUSSION PURPOSES ONLY



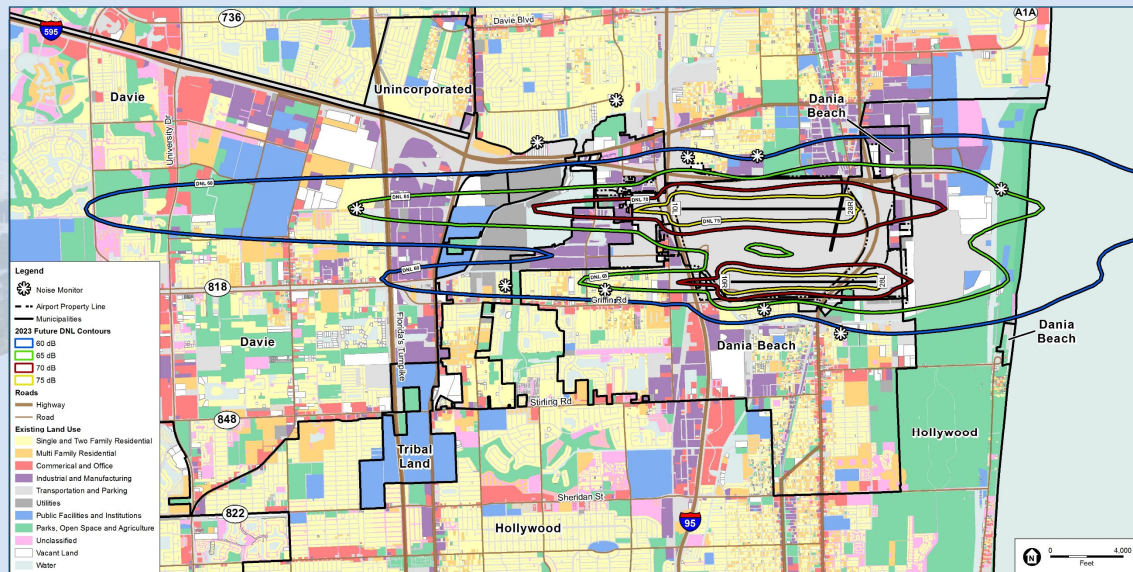
2023 NOISE EXPOSURE - HOLLYWOOD



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

2023 NOISE EXPOSURE MAP (WITH 60 DNL CONTOUR)



FOR DISCUSSION PURPOSES ONLY

SOURCE: Esri; Broward County GIS Parcel Data Set, October 2017; AEDT 2d; Adapted by Arora Engineers and ESA, 2018

City of Hollywood Land Uses within Noise Contours

- There are no non-compatible land uses in City of Hollywood situated in the DNL 65 or higher noise contours
 - Compatible commercial, industrial and transportation uses are located west of the airport
 - Compatible commercial, open space, and significant industrial and transportation uses are located to the east of the airport
 - Undeveloped property east of the airport is classified for compatible uses or is environmentally sensitive (Mangroves)
- Uses within the 60 DNL contour in the City are consistent with those noted above.

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LAND USE OPTIONS DISCUSSED WITH OTHER JURISDICTIONS

FOR DISCUSSION PURPOSES ONLY



LAND USE COMPATIBILITY STRATEGIES

Common Strategies

Noise Abatement

- Noise abatement flight tracks
- Preferential runway use
- Arrival/departure procedures
- Airport layout modifications
- Runup enclosures
- Use restrictions
- Other actions proposed by stakeholders

Land Use

- Remedial Mitigation
 - Land acquisition
 - Sound insulation
- Preventative Mitigation
 - Land use controls
 - Zoning / overlay zoning
 - Building codes
 - Comprehensive plans
 - Real estate disclosures
- Other actions proposed by stakeholders

Programmatic

- Implementation tools
- Promotion, education, signage, etc.
- Monitoring
- Reporting
- NEM update
- NCP revision
- Other actions proposed by stakeholders

FOR DISCUSSION PURPOSES ONLY





FLL PART 150 SCHEDULE

FOR DISCUSSION PURPOSES ONLY



FLL PART 150 SCHEDULE

- NEM is complete and has been accepted by the FAA
- NCP is in development with a draft programmed for Q2 2020
- Public release of draft NCP, workshop and hearing Q2/3 2020
- Submission of final report to the FAA Q3/4 2020

FOR DISCUSSION PURPOSES ONLY

