



14 CFR PART 150 NOISE AND LAND USE COMPATIBILITY STUDY

Technical Committee Meeting #8
February 5, 2020

Agenda

- Introductions
- Review of the Role of the TC Meeting Facilitator
- Review of TC Meetings
- Recaps
 - Suggested NCP Measures
 - Noise Abatement Measure Evaluation
 - Understanding Aircraft Noise Exposure with “What-If” Scenarios
- FLL NCP Measures
 - Noise Abatement Measures That May Be Recommended in the FLL NCP
 - Noise Abatement Measures Considered but Not Being Recommended
 - Land Use Measures That May Be Recommended in the FLL NCP
 - Land Use Measures Considered but Not Being Recommended
 - Program Management Measures That May Be Recommended in the FLL NCP
 - Program Management Measures Considered but Not Being Recommended
- Next Steps
- Questions from TC Members



Welcome and Introductions

Importance of TC Involvement During the Noise Compatibility Program (NCP) Phase

- TC members represent the interests of their organization and/or constituents
- TC involvement in the NCP phase is key for a successful NCP
 - Identify potential NCP measures
 - Provide subject matter expertise
 - Advise organization and/or constituents of NCP discussions
 - Solicit feedback from organization and/or constituents
- 14 CFR Part 150 requires consultation with the following stakeholders, and most are members of the TC:
 - FAA regional officials
 - Officials of the state and of any public agencies and planning agencies that have any area of jurisdiction within Day-Night Average Sound Level (DNL) 65
 - Other Federal officials having local responsibility of land uses in a Noise Exposure Map (NEM)
 - Aircraft operators using the airport
 - General public



TC Members

- BCAD
- ANAC
- Southwest Airlines
- Delta Airlines
- JetBlue
- Spirit Airlines
- UPS
- NBAA
- Greater Fort Lauderdale Chamber of Commerce
- Greater Hollywood Chamber of Commerce
- Greater Fort Lauderdale Alliance Economic Development Agency
- Broward Workshop
- City of Dania Beach
- City of Fort Lauderdale
- City of Hollywood
- Town of Davie
- City of Plantation
- City of Cooper City
- Town of Southwest Ranches
- City of Weston
- Broward County School Board
- FAA - Orlando Airports District Office
- Miami Air Traffic Management/Terminal Radar Approach Control (TRACON)
- FLL Airport Traffic Control Tower (ATCT)
- South Florida Flight Standards Division (FSDO)

Role of the TC Meeting Facilitator

- To ensure that the TC meetings are effective they will be facilitated by a professional meeting facilitator
- The meeting facilitator is responsible for ensuring that the TC meetings adhere to the published meeting agenda
- The meeting facilitator may extend or shorten the length of a discussion related to an agenda item at his or her sole discretion
- The meeting facilitator, or BCAD, may cancel or suspend a TC meeting due to disrespectful or disruptive behavior
- TC meetings will be open to the public, subject to space availability

Prior Technical Committee Meeting

TC #7 – October 23, 2019

- Summary of Noise Compatibility Program Measures at Other Airports, Years 2000 to 2016
- Recap of Suggested FLL Noise Compatibility Program Measures
- Recap of Noise Abatement Measure Evaluation
- Understanding Aircraft Noise Exposure with “What-If” Scenarios
- Altitudes of Aircraft Arriving from the West



Activities Since last Technical Committee Meeting

Since TC #7, we have:

- Selected noise abatement, land use, and programmatic measures that may be forwarded for recommendation in the NCP
- Determined which suggested NCP measures will likely not be forwarded for recommendation in the NCP
- Begun assembling the preliminary draft NCP document
 - No measures have been submitted to the FAA for formal review
 - After the draft NCP is released, a public comment period will open. During the comment period, a public workshop and public hearing will be held.
- Continued discussions with FAA's Orlando Airports District Office (ADO) about carrying forward certain measures that:
 - Do not reduce noncompatible land uses within the DNL 65 contour
 - Do not increase noncompatible land uses within the DNL 65 contour
 - Have the potential to reduce annoyance



Recap: Suggested FLL Noise Compatibility Program Measures

Summary of Stakeholder Noise Abatement Suggestions

• Arrival and Departure Procedures

- Keep aircraft higher during arrival
- Use a modified aircraft departure profile
- Use a modified aircraft arrival profile

• Flight Paths

- Route west-flow aircraft departures over compatible uses south of Interstate 595
- Route east-flow aircraft departures over water before turning north

• Preferential Runway Use

- Use the north runway as the preferred runway
- Use both runways at the same utilization
- Close the south runway at night
- Prefer arrivals on north runway and departures on south runway

• Use Restrictions

- Decrease frequency of flights
- Establish operational curfews
- Impose penalties or bans on aircraft operations



Summary of Stakeholder Land Use and Programmatic Suggestions

Land Use

- Sound Insulation

- Provide sound insulation to residents
- Provide more opportunities for inclusion in existing 2008 Environmental Impact Statement (EIS) Sound Insulation Program (SIP) and Conveyance and Release (CAR) program

- Aviation Easements

- Provide Conveyance and Release (CAR) program participation opportunity to Dania Beach homes included in 2023 DNL 65 contour

- Land Acquisition

- Relocate residents
- Compensate residents / purchase property

Programmatic

- Monitoring

- Update monitoring system
- Install more noise monitors

- Reporting

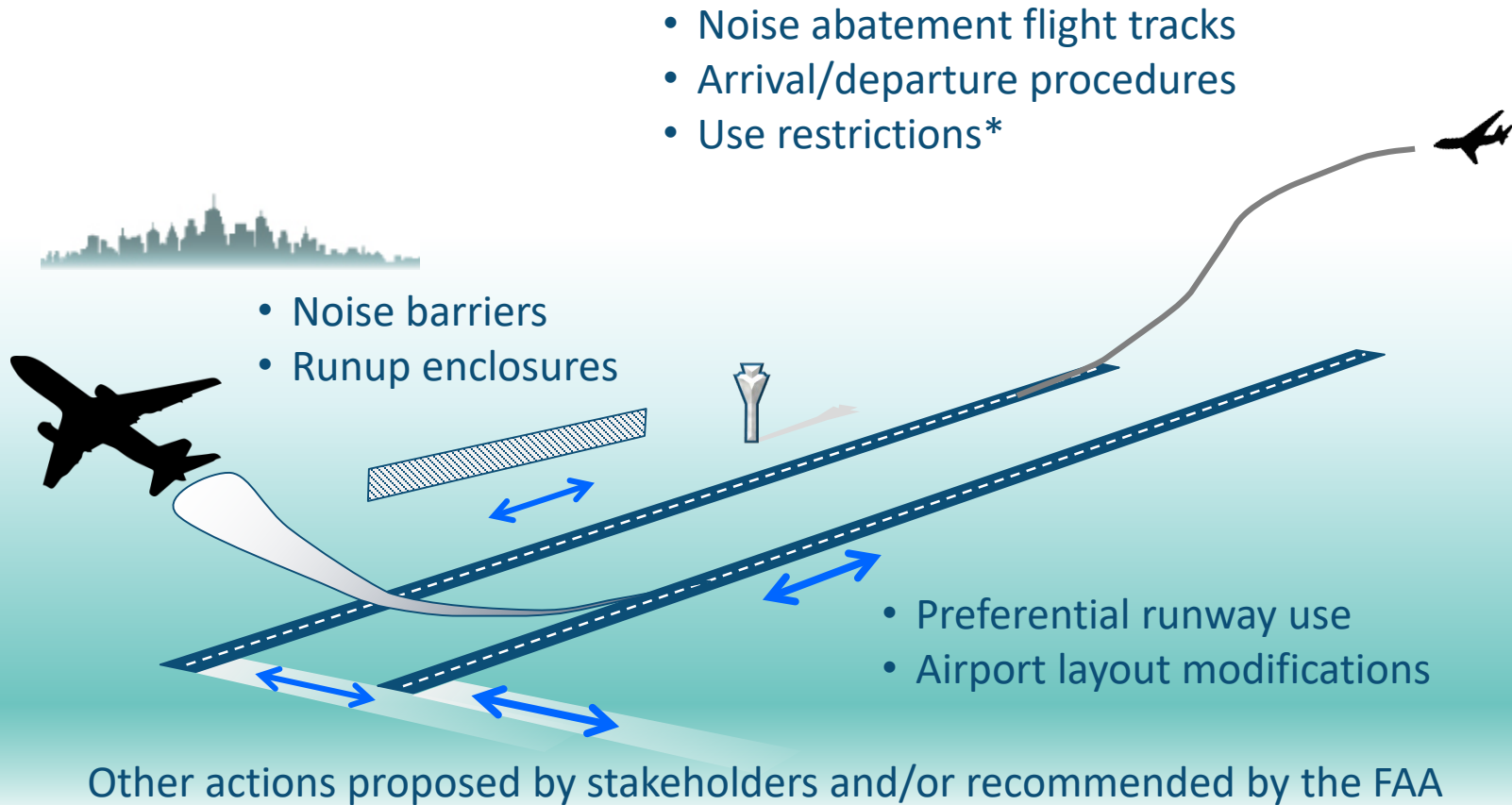
- Improve website reporting
- Evaluate flight tracks of smaller turboprop and prop aircraft
- Document simultaneous departures





Recap: Noise Abatement Measure Evaluation

Types of Noise Abatement Measures



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

Analysis of Each Measure

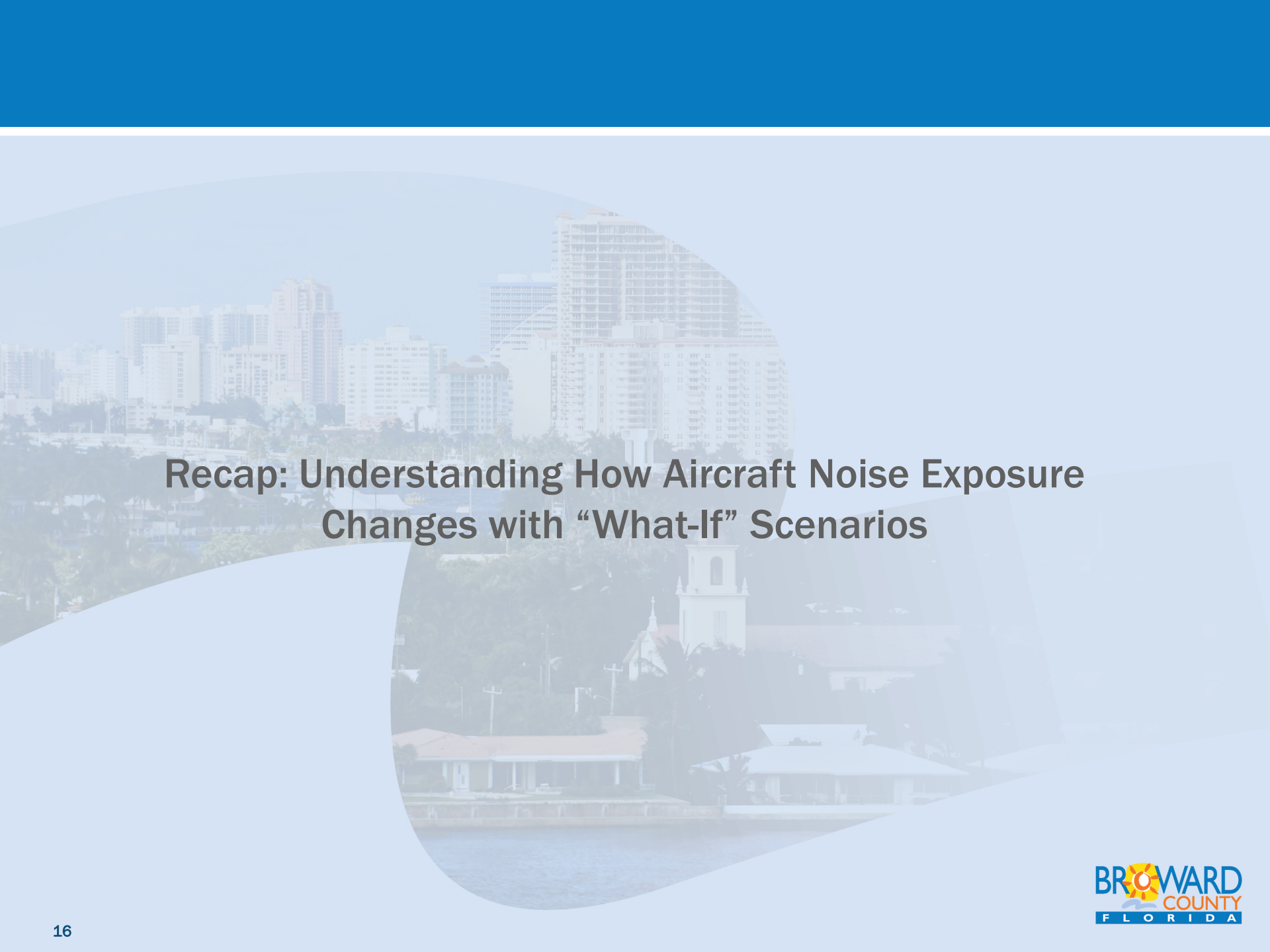
- Evaluate effectiveness of each measure in doing the following to the maximum extent practicable*:
 - Confining the DNL 75 contour to be within the airport property boundary
 - Establishing / maintaining compatible land use between DNL 65 and DNL 75
- The FAA cannot approve NCP measures that do not reduce noise exposure within DNL 65 and higher
- Evaluate feasibility (operational, safety, economic, etc.)
- Select preferred measures
- Identify implementation schedule, responsibilities, budget, funding sources, etc.
- If not recommended, document reasons why

* 14 CFR Part 150, Sec. B150.1(b)(3)

Standard Evaluation Criteria for Noise Abatement Measures

- Level of noise reduction: must reduce noise within DNL 65
- Effects on airfield capacity and aircraft delay
- Effects on airspace/air traffic control procedures
- Consistency with FAA safety and other standards
- Other environmental effects
 - National Environmental Policy Act (NEPA) review required
- Operational effects and costs
- Financial feasibility
- Consistency with policies adopted by Airport Proprietor



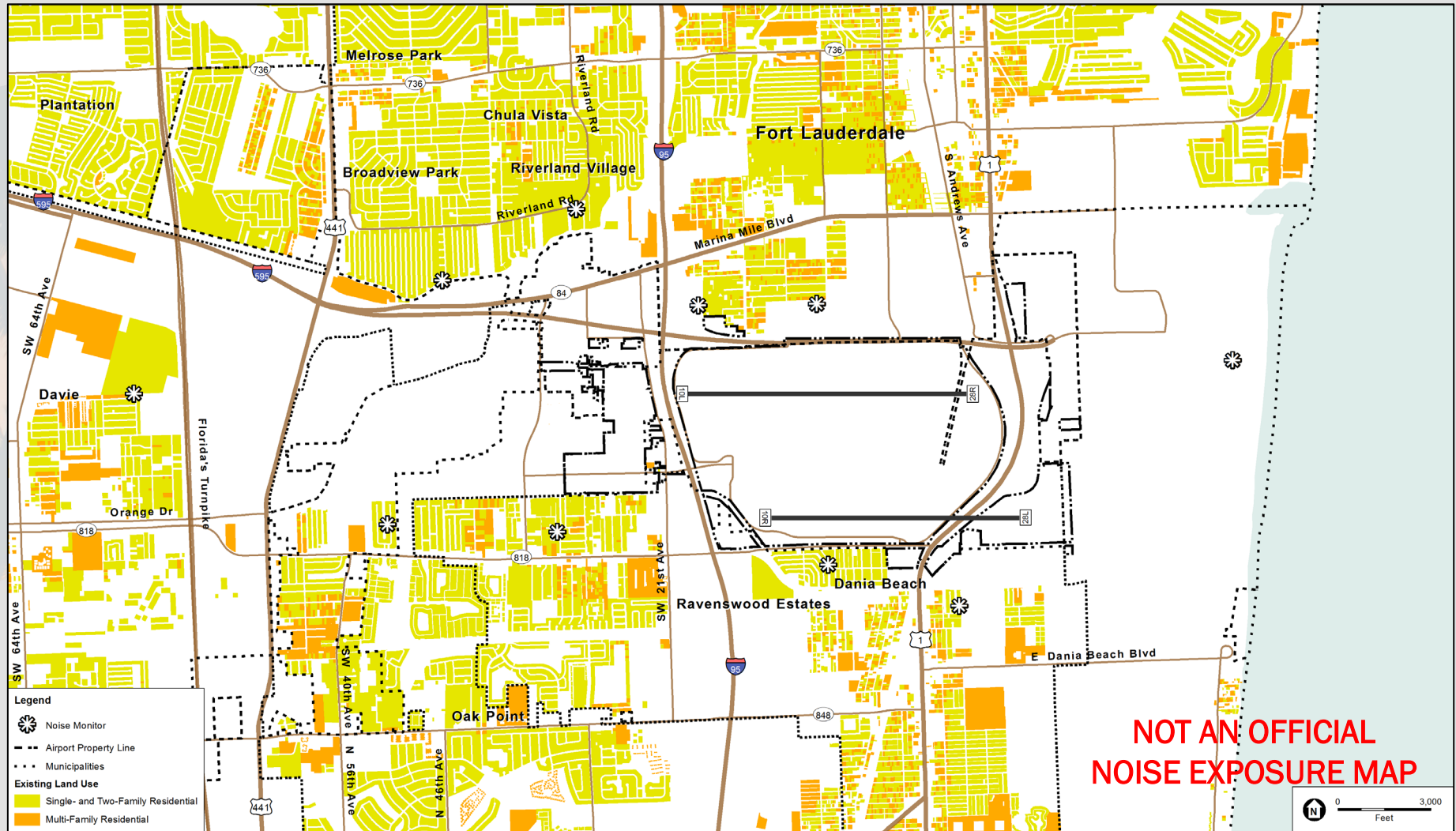


Recap: Understanding How Aircraft Noise Exposure Changes with “What-If” Scenarios

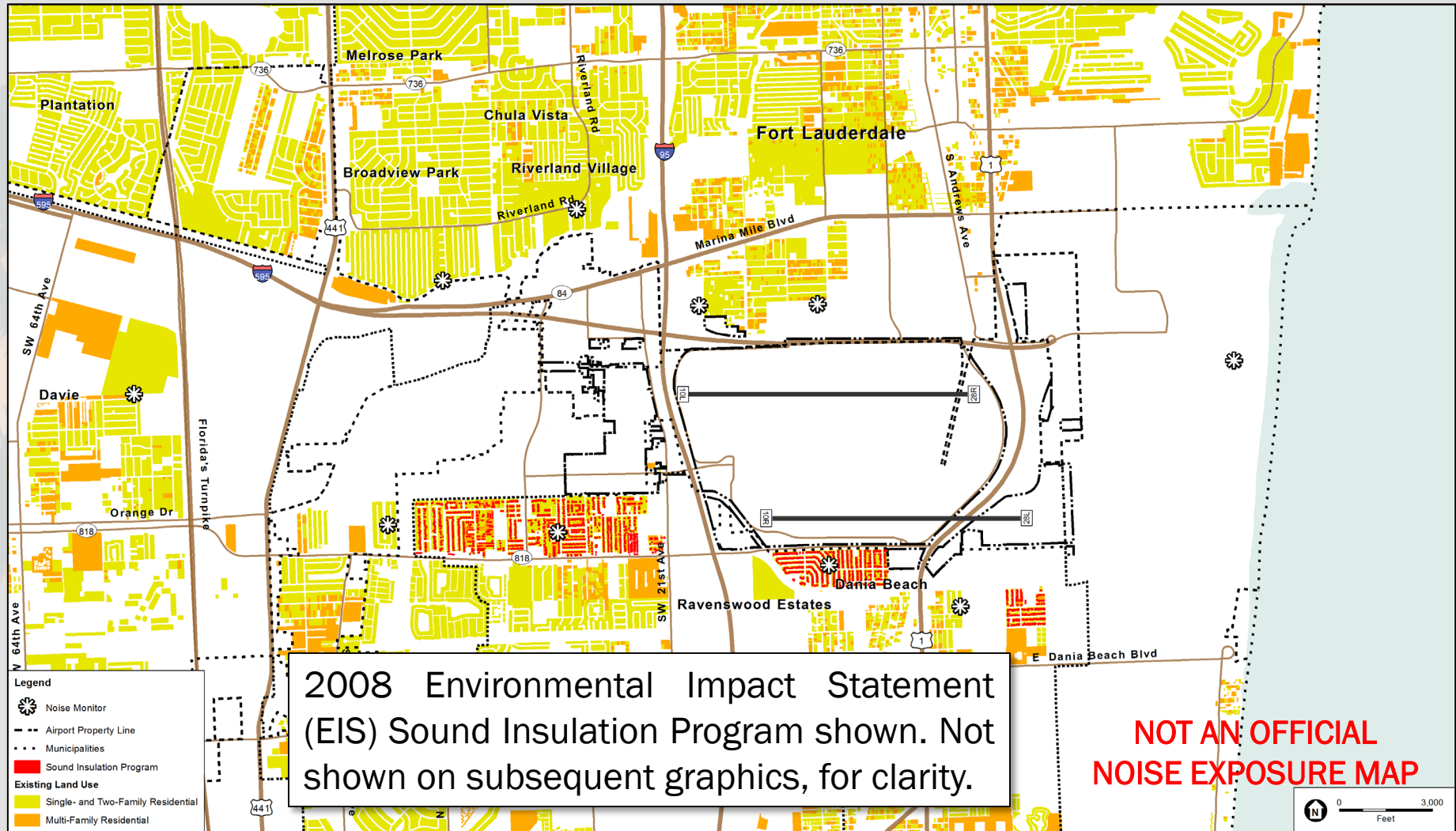
Purpose of “What-If” Scenarios

- BCAD received a large number of noise abatement measure suggestions from multiple stakeholders.
- Many suggested noise abatement measures were similar; they were therefore grouped into a smaller number of “what-if” scenarios to determine whether the suggested measures may reduce noncompatible uses within the 65 DNL contour in the vicinity of FLL.
- The next several slides illustrate the residential land uses in the vicinity of FLL, which was used to analyze effects of scenarios.
 - Residential land uses are normally considered noncompatible within the 65 DNL contour.
 - However, housing units that have been sound-insulated as an outcome of the 2008 EIS Sound Insulation Program are compatible with aircraft noise.

Residential Land Uses in the Vicinity of FLL



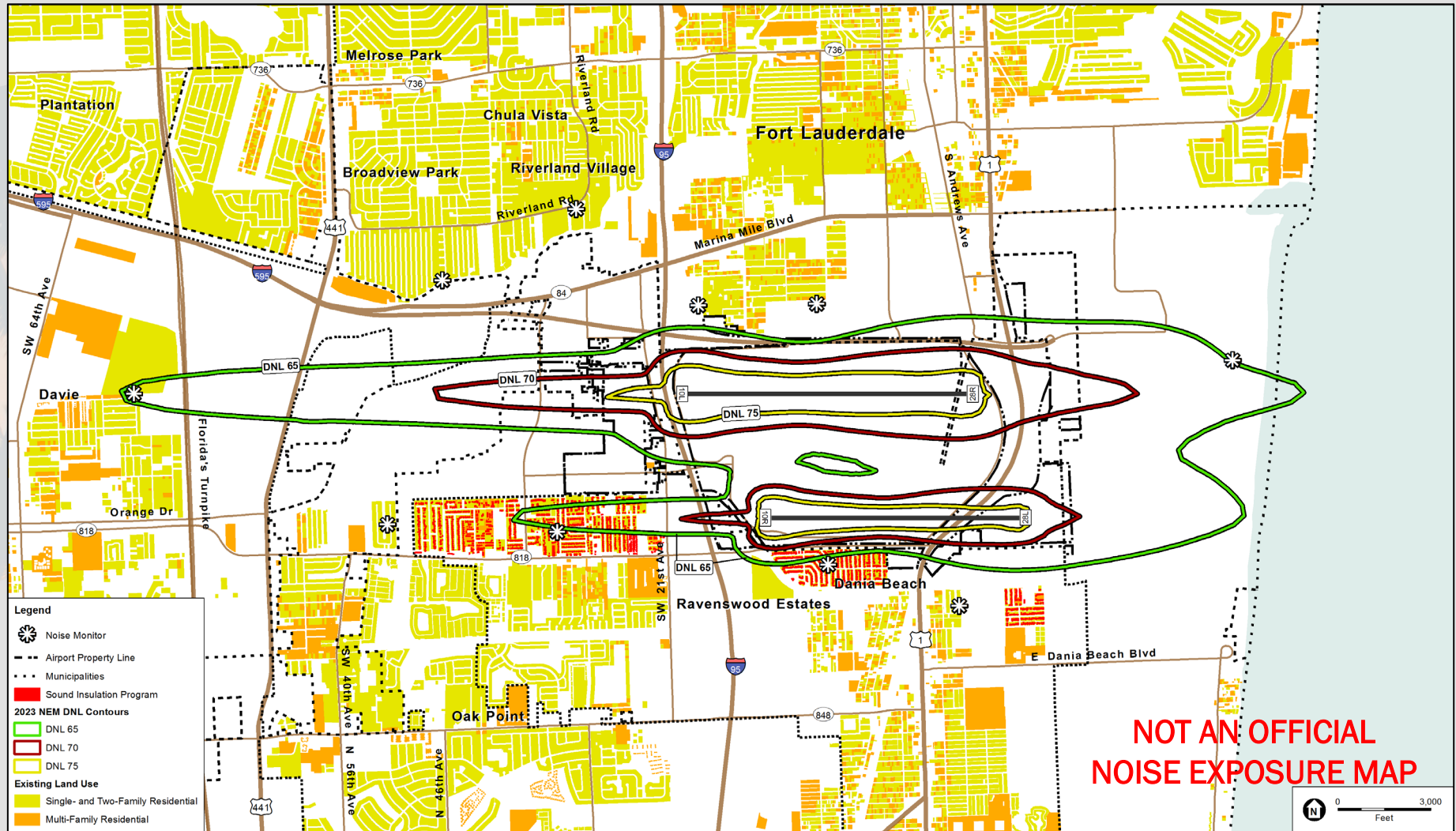
Residential Land Uses in the Vicinity of FLL



Sound Insulation Program Statuses

- Residential Sound Insulation Program
 - Participating Units: 1,224
 - Invited to Participate: 1,858
 - Completed Construction: 1,189
 - Under Construction: 3
 - On Hold: 35
 - Pending Bid/Award: 0
 - Deemed Compatible: 313
- Standard Sales Assistance (SSA) Program / Conveyance and Release (CAR) Program
 - Parcels Contacted to Date: 843 (100 percent of eligible parcels)
 - Participating: 68
 - Awaiting Response: 3
 - Ineligible: 152
 - Declined/Non-Responsive: 57
 - Payment Issued/Closed: 563

Residential Land Uses in the Vicinity of FLL and the 2023 DNL 65 - 75 Contours



Summary of Stakeholder Suggested Noise Abatement “What-If” Scenario Analysis

Potential Measure	Findings
What if the south runway were completely closed at night (10 PM – 7 AM)?	The number of noncompatible uses within the 65 DNL contour would <u>increase</u> .
What if west flow departure tracks were moved so that aircraft turn north later than they currently do?	The number of noncompatible uses within the 65 DNL contour would <u>not decrease</u> .
What if all turns close to the airport were eliminated?	The number of noncompatible uses within the 65 DNL contour would <u>not decrease</u> .
What if departing aircraft climbed more quickly?	Implementation of NADP1 may cause the number of noncompatible uses within the 65 DNL contour to <u>increase</u> .
What if the Interlocal Agreement Voluntary Night Closure were <u>not</u> in place?	The number of noncompatible uses within the 65 DNL contour would <u>decrease</u> .

The background of the slide features a photograph of a city skyline, likely Fort Lauderdale, Florida. In the foreground, there is a body of water with a white church building that has a prominent steeple. Behind the church, a dense cluster of high-rise apartment buildings and commercial structures rises into the sky. The entire image is overlaid with a semi-transparent blue graphic that has a wavy, organic shape, framing the central text.

Preliminary Noise Abatement Measures in the FLL Part 150 NCP

Noise Abatement Measures That May Be Recommended

Reduce West-Flow Aircraft Departure Turns Near FLL

- Description: Work with the FAA to reduce early northward turns that place west-flow departures over residential areas at low altitudes. This may involve new flight paths, such as an Equivalent Lateral Spacing Operations (ELSO)-like procedure, and/or flight track dispersion.
- Rationale: This program could reduce overflights of residential areas immediately to the northwest of FLL, reducing annoyance.
- Any proposed changes are contingent upon FAA safety and airport capacity analysis.
- BCAD and the FAA have held several conversations related to community concerns over early northward turns of aircraft departing FLL.

Noise Abatement Measures That May Be Recommended

Reduce East-Flow Aircraft Departure Turns Near FLL

- Description: Work with the FAA to reduce early northward turns that place east-flow aircraft departures over residential areas at low altitudes. This may involve new flight paths, such as an ELSO-like procedure, and/or flight track dispersion.
- Rationale: This program could reduce overflights of residential areas to the north of Dr. Von D. Mizell-Eula Johnson State Park by reducing the frequency of northward turns that occur before reaching the Atlantic Ocean. This could reduce community annoyance.
- Any proposed changes are contingent upon FAA safety and airport capacity analysis.
- BCAD and the FAA have held several conversations related to community concerns over early northward turns of aircraft departing FLL.

Noise Abatement Measures That May Be Recommended

Modify Aircraft Arrival Profiles to the West of FLL

- Description: Work with the FAA to modify altitude profiles of arriving aircraft and raise altitudes outside of the 65 DNL contour to the west of FLL. This may involve new procedures and/or increased use of the existing Required Navigation Performance (RNP) approach.
- Rationale: This program could reduce noise levels in residential areas to the west of FLL outside of the 65 DNL contour, reducing annoyance.
- This measure would primarily focus on increasing the altitude of aircraft as they transition from the downwind to final approach.
- Any proposed changes are contingent upon FAA safety and airport capacity analysis.
- BCAD and the FAA have held several conversations related to community concerns over aircraft arrival altitudes to the west of FLL.

Noise Abatement Measures That May Be Recommended

Continue Voluntary Nighttime Runway Use Program

- Description: Continue the current program that recommends the preferred runway for aircraft operations at night.
- Rationale: This program would largely represent a continuation of the existing Voluntary Use Program for Runway 10R-28L that has been reflected in the operational conditions at FLL since the opening of Runway 10R-28L. This program would continue to promote use of Runway 10L-28R instead of Runway 10R-28L during evening hours as specified by the program.
- A Voluntary Nighttime Runway Use program could provide additional operational flexibility such as the use of Runway 28L for arrivals at night during west flow conditions.

Noise Abatement Measures That May Be Recommended

Review the “Engine Run Up Restriction” Policy

- Description: Review the November 15, 1996 “Engine Run Up Restriction Policy” and evaluate its effectiveness. This policy was implemented as an outcome of the 1994 NCP Update.
- Rationale: The Policy would be reviewed to determine its effectiveness in limiting exposure of noise-sensitive uses to engine run-up noise while also meeting aircraft maintenance needs.
- The existing Engine Run Up Restriction Policy restricts engine maintenance run-ups to specific times and locations and also dictates when run-up activity must be coordinated with FLL airport management.

Noise Abatement Measures Considered but Not Recommended

Measures Considered but Not Recommended	Comments
Reduce or eliminate nighttime operations	BCAD does not have authority to establish and enforce reductions in aircraft flight operations.
Close the south runway at night	Moving all operations to the north runway at night would increase noncompatible uses in the 65 DNL contour. BCAD is instead recommending a preferential nighttime runway use program.
Operate north runway until it reaches max capacity regardless of time before using south runway	Any shift in arrivals from the south runway to the north runway would increase noncompatible uses in the 65 DNL contour.
Use north runway for arrivals and south runway for departures	Any shift in arrivals from the south runway to the north runway would increase non compatible uses in the 65 DNL contour.
Implement financial penalties for certain operations	BCAD does not have authority to establish and enforce noise-based operational penalties.

Noise Abatement Measures Considered but Not Recommended (Cont.)

Measures Considered but Not Recommended	Comments
Reduce frequency of operations in general	BCAD does not have authority to control the schedules of aircraft operations.
Implement NADP1	This may increase noncompatible land uses in the 65 DNL contour.
Construct noise barriers in residential areas	Noise barriers do not reduce noise from aircraft overflights.



Land Use Measures in the FLL Part 150 NCP

Land Use Measures That May Be Recommended

Consider a Sound Insulation Program for Eligible Residential Structures

- Description: This corrective measure involves insulating eligible noncompatible housing units to reduce interior noise to 45 DNL and provide at least a 5 dB improvement to the structures' noise level reduction.
- Rationale: This measure may reduce noncompatible land use within the 65 DNL contour. **Implementation would be contingent upon availability of federal funds.**
- Any proposed Sound Insulation Program would be separate from and additional to the 2008 Environmental Impact Statement (EIS) Residential Sound Insulation Program.
- The 2023 Noise Exposure Map (NEM) 65 DNL contour includes 106 housing units that are not a part of the 2008 EIS Residential Sound Insulation Program. Mobile homes or certain pre-manufactured homes would not qualify for this program.

Land Use Measures That May Be Recommended

Consider a Sound Insulation Program for Eligible Residential Structures (Cont.)

- To be eligible for federal funding, the FAA requires that the housing unit be within the 65 DNL contour and that the average interior noise level of habitable rooms with windows closed be at or above 45 DNL.¹ Other factors that influence eligibility may include, but are not limited to¹:
 - Previous sound reduction treatments
 - Ambient and self-generated noise levels
 - Whether a given use is considered temporary or permanent
 - Time frame within which the structure was constructed: Properties constructed after October 1, 1998 may be ineligible for federally funded noise mitigation.²
 - Compliance with the local building code³
- An aviation easement would be required in exchange for sound insulation.

¹ FAA Order 5100.38D Airport Improvement Program Handbook (AIP Handbook), Appendix R.

² Final Policy on Part 150 Approval of Noise Mitigation Measures: Effect on the Use of Federal Grants for Noise Mitigation Projects. 63 FR 16409.

³ Areas within a structure that do not meet the local building code are not "habitable" under FAA requirements and therefore are not eligible for sound insulation under the AIP. Example: "A resident has converted part of a basement to a bedroom and the bedroom conversion does not meet the building code requirements to be categorized as a bedroom. The converted bedroom is not considered habitable space."

Land Use Measures That May Be Recommended

Purchase Eligible Property Used for Mobile Homes

- Description: This corrective measure involves purchasing property used for mobile homes within the 65 DNL contour.
- Rationale: Mobile homes cannot be sound-insulated using federal funds, as it is generally infeasible to reduce interior noise levels to 45 DNL in mobile homes.
- There are 82 mobile homes included in the 2023 NEM 65 DNL contour.
- Purchase of property used for mobile homes, removal of the mobile homes, and rezoning of the property would remove noncompatible land uses.
- Implementation of this program would be contingent upon the availability of federal funds.

Land Use Measures That May Be Recommended

Promote and Support Local Government Notification and Disclosure Efforts

- Description: This preventative measure involves supporting local governments in their efforts with notification and disclosure related to aircraft noise exposure.
- Rationale: This measure may help inform potential property buyers about aircraft noise in the vicinity of FLL.
- BCAD does not have authority over local land use or notification and disclosure laws. If local governments wish to evaluate this preventative measure, BCAD would be available to provide assistance.

Land Use Measures Considered but Not Recommended

Measures Considered but Not Recommended	Comments
Provide opportunity for additional homes to participate in the Sound Insulation Program and Conveyance and Release program	The 2008 EIS Residential Sound Insulation Program and Conveyance and Release (CAR) Program are distinct and separate from any program established as an outcome of the FLL NCP.
Relocate residents per the 1995 Interlocal Agreement	The 1995 Interlocal agreement is no longer in effect. Not all homes are eligible for federally funded compensation or purchase.
Purchase or compensate all homes west of Griffin Road and north of Ravenwood Road	

The background of the slide features a photograph of a city skyline, likely Fort Lauderdale, Florida. In the foreground, there is a body of water and a white church with a prominent steeple. Behind the church, a dense cluster of high-rise apartment buildings and commercial structures rises against a clear sky. The image is partially obscured by large, light blue, abstract shapes that frame the central text.

Programmatic Measures in the FLL Part 150 NCP

Programmatic Measures That May Be Recommended

Establish and Manage a Voluntary Fly Quiet Program

- Description: This voluntary measure involves developing a program that would help the FAA, BCAD, and aircraft operators collaborate to minimize aircraft noise exposure where possible. The voluntary program may include:
 - Promotion of higher aircraft altitudes on arrival and departure. Example: higher altitudes east and west of FLL
 - Promotion of keeping aircraft away from noise-sensitive uses: Example: reduction of early northward turns of aircraft departures to the east and west
 - Periodic discussions with the FAA and aircraft operators regarding aircraft noise
 - Promotion of delaying the point at which landing gear are lowered
 - Integration of noise abatement considerations into aircraft operator materials
- Rationale: This measure would enable BCAD to work with the FAA and aircraft operators to minimize, where possible, aircraft noise exposure to noise-sensitive uses within as well as outside of the 65 DNL contour.

Programmatic Measures That May Be Recommended

Maintain the Existing Noise Office and Website

- Description: This measure involves continuing to operate the existing Noise Office and FLL aircraft noise website, which connects BCAD with communities and other FLL stakeholders.
- Rationale: This measure would enable maintenance of the principal BCAD office and portal for interacting with stakeholders on aircraft noise.



Programmatic Measures That May Be Recommended

Review Effectiveness of Noise Monitoring System

- Description: This measure involves reviewing the effectiveness of the existing noise monitoring system, which provides information about noise levels in the vicinity of FLL.
- Rationale: Most of the existing noise monitors were established when FLL was operating in a different runway configuration. This measure would enable BCAD to determine how best to continue providing information to communities and other FLL stakeholders about noise levels in the vicinity of the Airport.



Programmatic Measures That May Be Recommended

Maintain and Upgrade Flight Tracking System

- Description: This measure involves continuing to operate and upgrade the existing flight tracking system, which provides information about FLL aircraft operations.
- Rationale: This measure would enable BCAD to continue providing information to communities and other FLL stakeholders about aircraft operations at FLL.



Programmatic Measures That May Be Recommended

Maintain Noise Complaint Management System

- Description: This measure involves continuing to operate the existing noise complaint management system, which BCAD uses to collect and manage noise complaints regarding FLL operations.
- Rationale: This measure would enable BCAD to continue efficient collection, analysis, reporting, and communication associated with aircraft noise complaints regarding FLL operations.



Programmatic Measures That May Be Recommended

Continue Community Outreach Activities

- Description: This measure involves BCAD continuing to participate in community outreach activities, which include the Airport Noise Abatement Committee (ANAC).
- Rationale: This measure would enable BCAD to continue in-person communication with communities and other stakeholders regarding aircraft noise associated with operations at FLL.



Programmatic Measures That May Be Recommended

Install Runway Reminder Signs

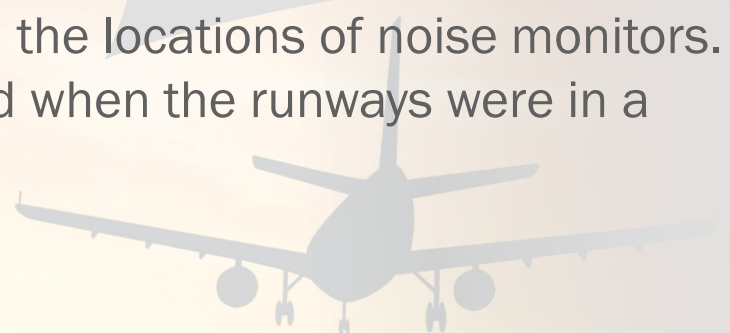
- Description: This measure involves installing signs at runway ends to remind aircraft operators of FLL noise abatement measures.
- Rationale: This measure may help to reduce noise exposure from FLL aircraft operations by encouraging aircraft operators to use FLL noise abatement measures.



Programmatic Measures That May Be Recommended

Evaluate the Composition of ANAC

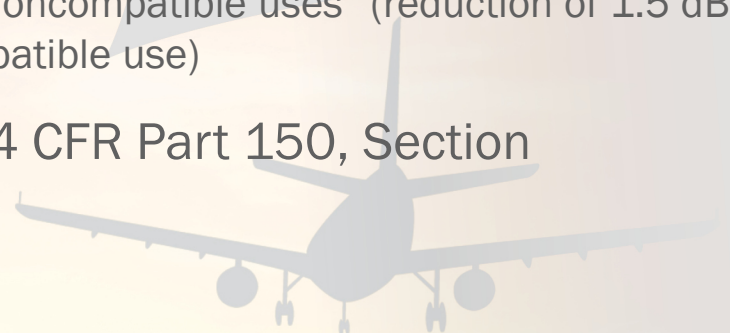
- Description: This measure involves an evaluation of ANAC's composition relative to the 2023 noise contours.
- Rationale: This measure would enable BCAD to consider and evaluate how to improve the effectiveness of its engagement with communities in the vicinity of FLL.
- Current ANAC representation is based on the locations of noise monitors. These monitor locations were established when the runways were in a different configuration.



Programmatic Measures That May Be Recommended

Update the Noise Exposure Maps

- Description: This measure involves updating the FLL NEMs in the future if any change in the operation of the airport creates one or both of the following (14 CFR Part 150, Section 150.21(d)):
 - A “substantial, new noncompatible use” (increase of 1.5 dB that creates a new noncompatible use)
 - A “significant reduction in noise over existing noncompatible uses” (reduction of 1.5 dB that changes a noncompatible use into a compatible use)
- Rationale: This measure is required by 14 CFR Part 150, Section 150.21(d).



Programmatic Measures That May Be Recommended

Update the Noise Compatibility Program

- Description: This measure involves updating the NCP if a revised NEM deems it necessary. Examples of changes that may require an NCP update include:
 - Large additions of noncompatible land uses
 - New NCP elements required to achieve land use compatibility
- Rationale: This measure is required by 14 CFR Part 150, Section 150.23(e)(9).



Programmatic Measures Considered but Not Recommended

Measures Considered but Not Recommended	Comments
Install additional noise monitors outside of the 65 DNL contour	Noise monitors located outside of the 65 DNL contour are not eligible for federal funds. BCAD is reviewing the current locations of noise monitors and may relocate existing monitors.
Evaluate flight tracks of smaller turboprop and prop aircraft	BCAD will continue to operate the existing flight tracking system, which monitors operations of propeller aircraft. BCAD does not have authority to assign specific flight tracks to aircraft. A voluntary Fly Quiet program may encourage keeping aircraft away from noise-sensitive uses.
Document simultaneous departures and associated headings	There is no current efficient means of tracking specific occurrences of simultaneous departures using historical data.



Preliminary NCP Summary

Summary of Preliminary Recommendations

Preliminary Recommendation	Type	Comments
Reduce west-flow aircraft departure turns near FLL	Voluntary Noise Abatement	Could reduce overflights of neighborhoods northwest of FLL, reducing noise beyond the 65 DNL contour
Reduce east-flow aircraft departure turns near FLL	Voluntary Noise Abatement	Could reduce overflights of neighborhoods northeast of FLL, reducing noise beyond the 65 DNL contour
Modify aircraft arrival profiles to the west of FLL	Voluntary Noise Abatement	Could raise altitudes of arriving aircraft in east flow, reducing noise beyond the 65 DNL contour
Continue voluntary nighttime runway use program	Noise Abatement	Reflects a continuation of the current Interlocal Agreement voluntary runway use program while providing improved operational flexibility in certain conditions
Review the “Engine Run Up Restriction” Policy	Noise Abatement	Would review effectiveness of existing Policy in reduce exposure of nearby communities to ground noise while supporting aircraft maintenance

Summary of Preliminary Recommendations (Cont.)

Preliminary Recommendation	Type	Comments
Consider a sound insulation program for eligible residential structures	Land Use – Corrective	Could reduce noncompatible land uses within the 65 DNL contour by reducing interior noise levels, subject to availability of federal funds
Purchase of eligible property used for mobile homes	Land Use - Corrective	Could reduce noncompatible land uses within the 65 DNL contour by purchasing property used for mobile homes and rezoning the property, subject to availability of federal funds
Promote and support local government notification and disclosure efforts	Land Use – Preventive	Could help inform potential property buyers about aircraft noise in the vicinity of FLL

Summary of Preliminary Recommendations (Cont.)

Preliminary Recommendation	Type	Comments
Establish and manage a voluntary Fly Quiet Program	Programmatic	Could provide a forum for collaborating to reduce noise exposure where possible within and outside of the 65 DNL contour
Maintain the existing Noise Office and website	Programmatic	Would enable maintenance of the principal BCAD office and portal for interacting with stakeholders on aircraft noise
Review noise monitoring system	Programmatic	Would enable BCAD to effectively continue providing information about noise levels in the vicinity of FLL
Maintain and upgrade flight tracking system	Programmatic	Would enable BCAD to continue providing information about aircraft operations in the vicinity of FLL
Maintain noise complaint management system	Programmatic	Would enable BCAD to continue collection and reporting of aircraft noise complaints regarding FLL operations

Summary of Preliminary Recommendations (Cont.)

Preliminary Recommendation	Type	Comments
Continue community outreach activities	Programmatic	Would enable BCAD to continue in-person communication regarding aircraft noise associated with operations at FLL
Install runway reminder signs	Programmatic	May help to reduce noise exposure from FLL by encouraging operators to use FLL noise abatement measures
Evaluate composition of ANAC	Programmatic	Would enable BCAD to evaluate how to improve community engagement on FLL aircraft noise
Update the Noise Exposure Maps	Programmatic	Required by 14 CFR Part 150, Sec. 150.21(d)
Update the Noise Compatibility Program	Programmatic	Required by 14 CFR Part 150, Sec. 150.23(e)(9)

Next Steps

- Assemble the preliminary draft and public draft FLL NCPs
- Release the public draft FLL NCP and open the public comment period
- Hold a public workshop and hearing regarding the public draft FLL NCP
- Address public comments and submit the final FLL NCP to the FAA for formal review
 - Once the FAA chooses to begin reviewing the FLL NCP, the FAA has 180 days to formally respond to each recommended NCP measure except for NCP measures recommending flight procedures, where the FAA has more than 180 days to formally respond.

Thank You!!



Questions from TC Members



Adjourn





BACKUP SLIDES

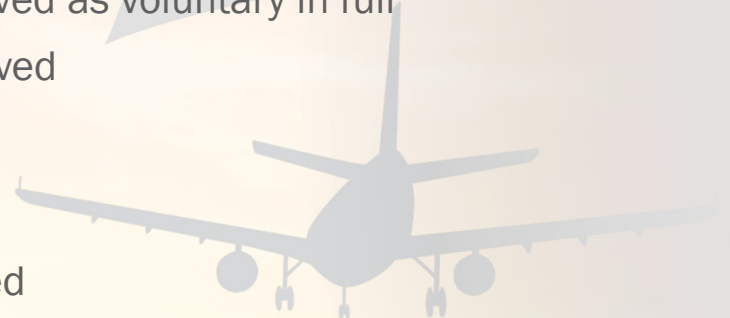
The background of the slide features a faded, semi-transparent image of a city skyline. In the foreground, there is a prominent white church with a tall steeple, situated near a body of water. Behind the church, several high-rise apartment buildings or hotels are visible, rising into the sky. The overall scene is presented in a light blue, monochromatic style.

BACKUP SLIDES

NCP Measures Approved and Disapproved in the 1994 NCP Update

NCP Measures Approved and Disapproved in the 1994 NCP Update

- The first Part 150 Study for FLL was completed in 1987
- In 1994, BCAD submitted an update of the 1987 NCP to the FAA
- The FAA produced its Record of Approval (ROA) for the 1994 NCP Update on December 12, 1995. 10 measures were approved in full; two were partially approved.
- Noise abatement:
 - Two noise abatement measures were approved in full
 - Three noise abatement measures were approved as voluntary in full
 - No noise abatement measures were disapproved
- Land use:
 - Four land use measures were approved in full
 - Two land use measures were partially approved
 - No land use measures were disapproved in full
- Programmatic:
 - One programmatic measure was approved in full



The information in this slide illustrates measures previously approved in the 1994 NCP Update. A measure previously approved by the FAA may not necessarily be approved again.

Noise Abatement Measures in the 1994 NCP Update

NCP Recommendation	FAA Action	Outcome
Continue 1987 NCP measure: Runway 13-31 preferential flight tracks.	Approved as voluntary	Included in an “Informal Runway Use Program” revised on March 15, 1998. No longer relevant due to decommissioning of Runway 13-31.
Continue 1987 NCP measure: Runway 9L/9R/27L/27R departures to remain on runway heading until 3,000 feet above Mean Sea Level (MSL) or 3.0 miles.*	Approved as voluntary	Included in an “Informal Runway Use Program” revised on March 15, 1998. No longer relevant due to south runway extension.
Continue 1987 NCP measure: Minimize use of Runway 9R-27L by Stage 2 aircraft; maximize east flow; concentrate cargo and nighttime operations on Runway 9L-27R*	Approved as voluntary	Included in an “Informal Runway Use Program” revised on March 15, 1998. Stage 2 aircraft no longer operate in the continental United States.

* Runways 9L, 9R, 27L, and 27R have since been renamed to Runways 10L, 10R, 28L, and 28R, respectively.

The information in this slide illustrates measures previously approved in the 1994 NCP Update. A measure previously approved by the FAA may not necessarily be approved again.

Noise Abatement Measures in the 1994 NCP Update (Cont.)

NCP Recommendation	FAA Action	Outcome
Analyze “close-in” and “distant” noise abatement departure procedures (NADPs) to determine whether they may have benefit.	Approved in concept	BCAD completed analysis and requested that airlines use the “distant” NADP (also known as NADP2).
Relocate engine maintenance run-up facility to east end of Runway 9L-27R.*	Approved	“Engine Run Up Restriction” Policy implemented on November 15, 1996.

* Runways 9L, 9R, 27L, and 27R have since been renamed to Runways 10L, 10R, 28L, and 28R, respectively.

The information in this slide illustrates measures previously approved in the 1994 NCP Update. A measure previously approved by the FAA may not necessarily be approved again.

Land Use Measures in the 1994 NCP Update

NCP Recommendation	FAA Action	Outcome
Acquire property in the 75 DNL contour.	Approved	BCAD received funding from FAA and Florida Department of Transportation (FDOT) for acquisitions.
Provide sound insulation for institutions in the 65 DNL contour.	Approved	Wesley Chapel United Methodist Church was sound-insulated in 1994 for \$190,000 and provided an aviation easement to BCAD.
Acquire aviation easements for residential areas in the 65-70 DNL contour.	Approved in part	A total of 28 eligible property owners were compensated \$2,400. FAA disapproved payments to mobile home owner occupants.
Implement relocation payments for areas in the 65-70 DNL contour.	Approved in part	Four property owners requested sales assistance. The amount expended was approximately \$66,000.

The information in this slide illustrates measures previously approved in the 1994 NCP Update. A measure previously approved by the FAA may not necessarily be approved again.

Programmatic Measures in the 1994 NCP Update

NCP Recommendation	FAA Action	Outcome
Continue runup monitoring program from 1987 NCP and request retroactive FAA approval and funding for an Airport Noise and Operations Management System (ANOMS).	Approved	BCAD received funding from FAA for the ANOMS.



BACKUP SLIDES

Stakeholder Noise Abatement Suggestions

Stakeholder Noise Abatement Suggestions

• Arrival and Departure Procedures

- Implement Noise Abatement Departure Procedure 1 (NADP1) (Dania Beach)
- 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 Area Navigation (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)
- Minimize low approaches (Public)

- Adhere to “RNAV to the Ground” principles in any Metroplex design (ANAC) – newly added
- Implement optimized profile descents (OPDs) (TC)

• 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)

Stakeholder Noise Abatement 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) – corrected from TC #6 presentation
- 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)

• Use Restrictions

- Implement penalties to deter operational negligence (Dania Beach)
- FAA Notices to Airmen (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)

Stakeholder Land Use Suggestions

• Sound Insulation

- Provide opportunity for new interior noise testing for Dania Beach homes located in the 2008 EIS DNL 65 contour and 2023 DNL 65 contour that were previously deemed compatible in the initial testing for the existing Sound Insulation Program (SIP)(Dania Beach)
- Dania Beach homes within the 2023 DNL 65 contour that were eligible for the existing SIP and did not receive testing for the SIP should be provided a new opportunity for noise testing (Dania Beach)
- Homes that are not mobile homes and are located in the Ocean Waterway MHP and also within the 2023 DNL 65 contour should be provided the opportunity to participate in a SIP and CAR (Dania Beach)
- Retest interior noise levels to determine qualification for sound-insulating windows (Public)
- Give proper noise insulation to residents (Public)

• Avigation Easements

- Provide Conveyance and Release (CAR) program participation opportunity to Dania Beach homes included in 2023 DNL 65 contour (Dania Beach)

• Land Acquisition

- Relocate residents (Public)
- Purchase or compensate all homes north of Griffin and west of Ravenwood (Public)



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

Stakeholder Programmatic Suggestions

• Monitoring

- Update monitoring system (ANAC)
- Install more noise monitors in Southeast Fort Lauderdale (Public)
- Put noise monitor in Plantation Harbor (Public)
- Install noise monitor in neighborhood (Public)
- Establish sufficient off-site noise sensors to monitor effectiveness and compliance of arrival and departure management (Dania Beach)

• Other Types of Strategies

- Continued Voluntary Night Closure (Dania Beach Interlocal Agreement) (TC)

• Reporting

- Improve website reporting (ANAC)
- Evaluate flight tracks of smaller turboprop and prop aircraft (TC)
- Document Runway 28L/28R simultaneous departures: how many times there were 0 degrees of separation (i.e. both planes on runways 28L and 28R depart with a 290 heading) and how many times there were 15 degrees of separation (one plane departs with a 275 heading and the other plane in the other runway departs with a 290 heading) (Public)
- Document how many simultaneous departures occur on 28L and 28R per day as an annual average for 2015, 2016, 2017, and 2018 (Public)



BACKUP SLIDES

Understanding Aircraft Noise Exposure With “What-If” Scenarios

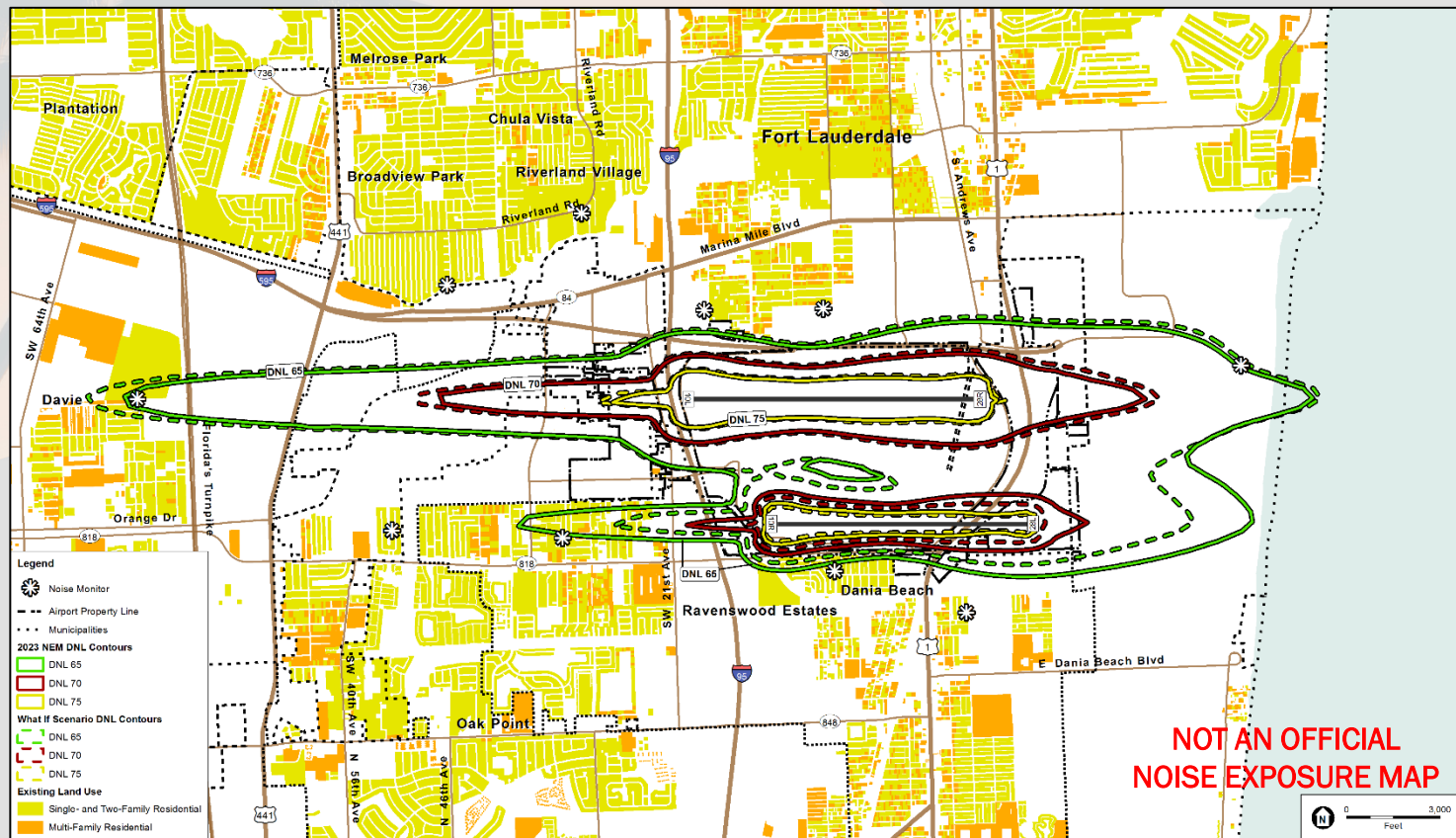
What if the South Runway Were Closed at Night?

- BCAD received multiple suggestions to reduce or eliminate use of the south runway at night (10:00 P.M. to 6:59:59 A.M.).
- To explore how noise contours would change if operations on the south runway were eliminated at night, the Study Team produced a hypothetical “what-if” scenario by moving all nighttime aircraft operations to the north runway.
- The next slide compares the 2023 Future Condition noise contours with the noise contours resulting from modeling this “what-if” scenario.



What if the South Runway Were Closed at Night?

Contour Comparison: 2023 Future Condition vs. Hypothetical "What-If" Scenario

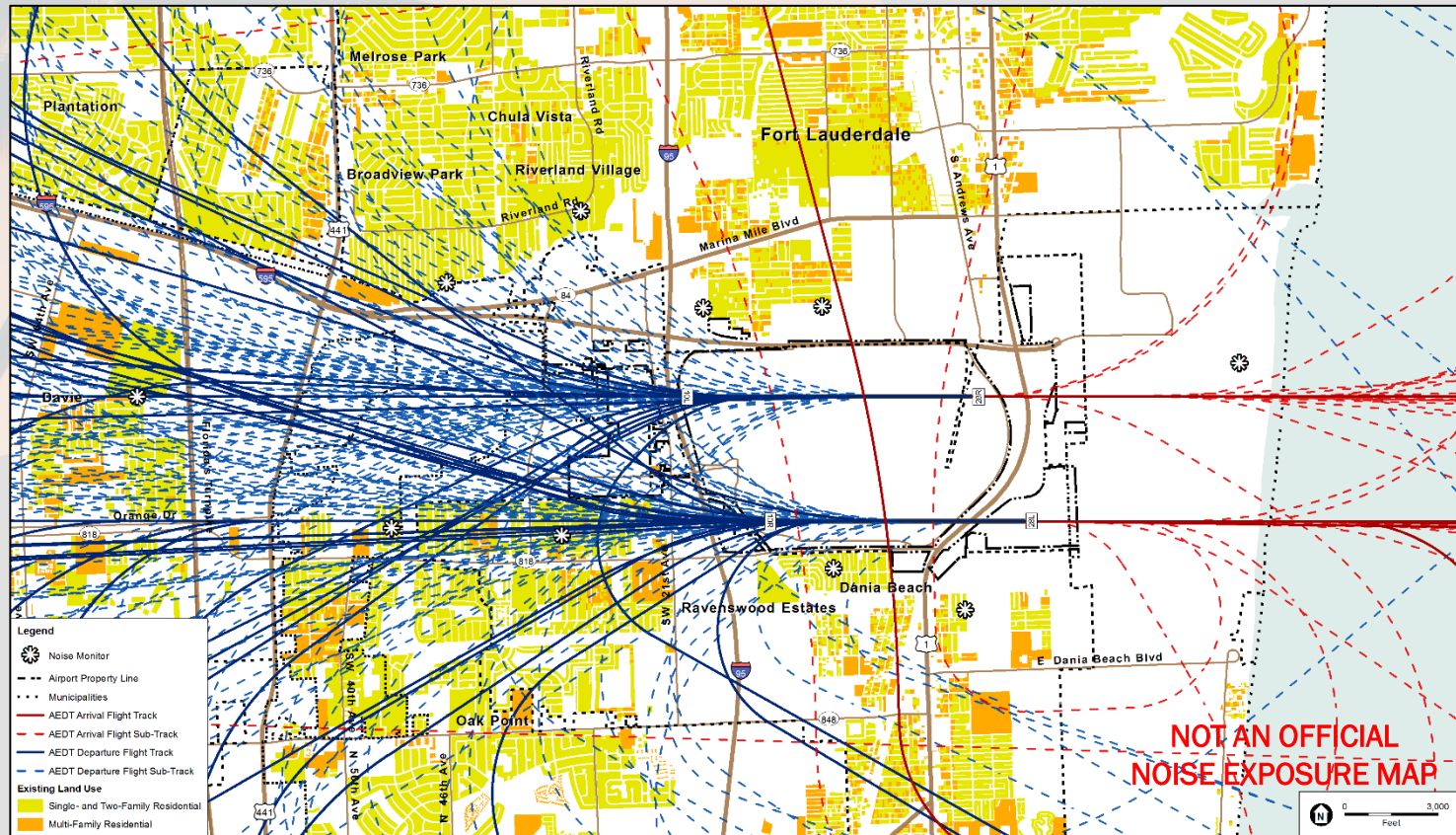


What if West Flow Departure Tracks Were Moved?

- BCAD received multiple suggestions for aircraft to maintain runway heading for longer time periods during departures and/or arrivals, avoiding turns close to FLL.
- To explore how noise contours would change if west flow departure turns close to FLL were modified, the Study Team and the FAA produced a notional departure procedure that may move northerly departure turns further away from FLL.
- The procedure was produced strictly for the purpose of exploring changes in noise exposure.
- Using this notional procedure, the Study Team produced a hypothetical “what-if” noise analysis scenario.
- The next two slides show the flight tracks used in this “what-if” scenario along with the resulting noise contours.

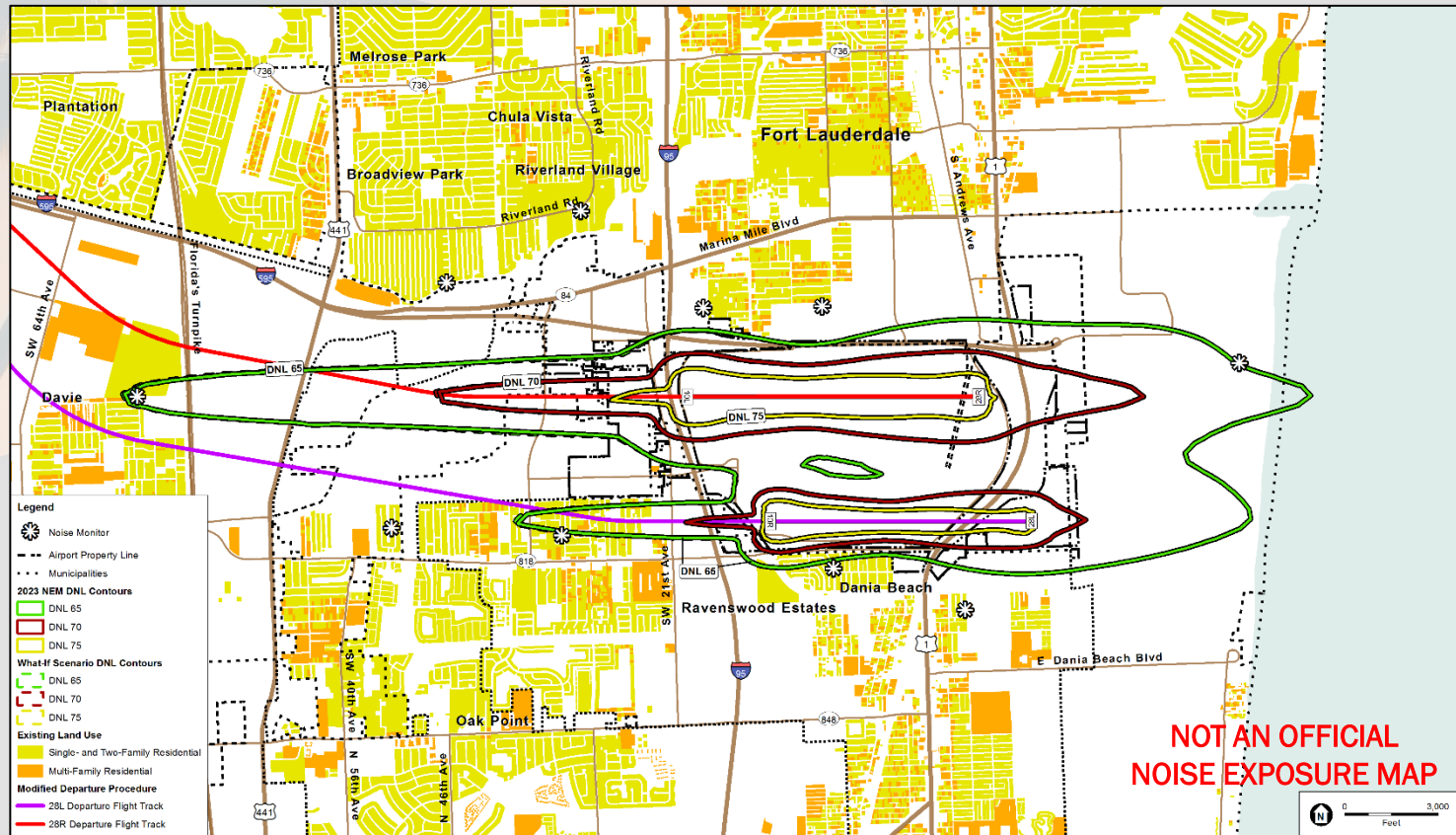
What if West Flow Departure Tracks Were Moved?

West Flow Flight Tracks Used for the 2023 Future Condition NEM



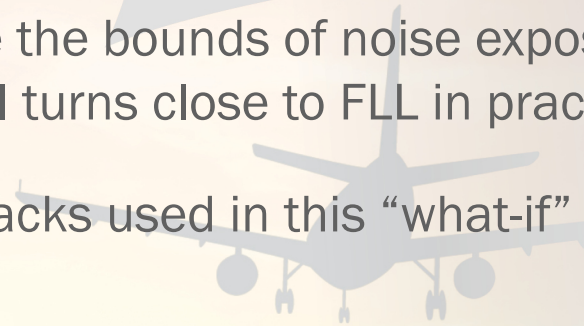
What if West Flow Departure Tracks Were Moved?

Contour Comparison: 2023 Future Condition vs. Hypothetical "What-If" Scenario, With Notional Procedure



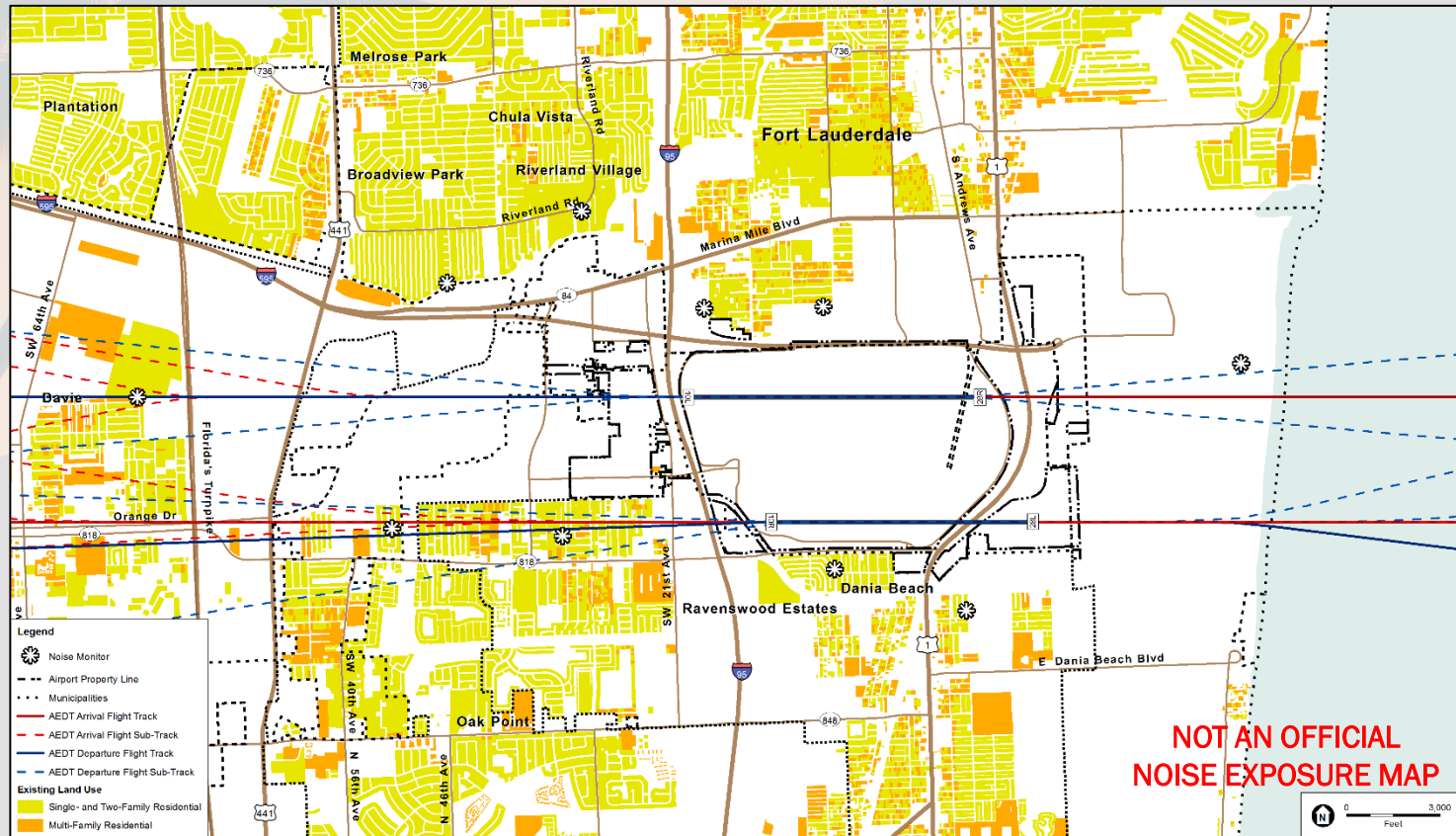
What if All Turns Close to the Airport Were Eliminated?

- Based on the suggestions received for aircraft to maintain runway heading for longer time periods during departures and/or arrivals, the Study Team explored how noise contours would change if turns close to FLL were eliminated entirely.
- The Study Team produced a hypothetical “what-if” scenario by modeling all fixed-wing aircraft operations as maintaining runway heading during departures and arrivals.
- The purpose of the scenario is to explore the bounds of noise exposure changes. It is not feasible to eliminate all turns close to FLL in practice.
- The next several slides show the flight tracks used in this “what-if” scenario along with the resulting noise contours.



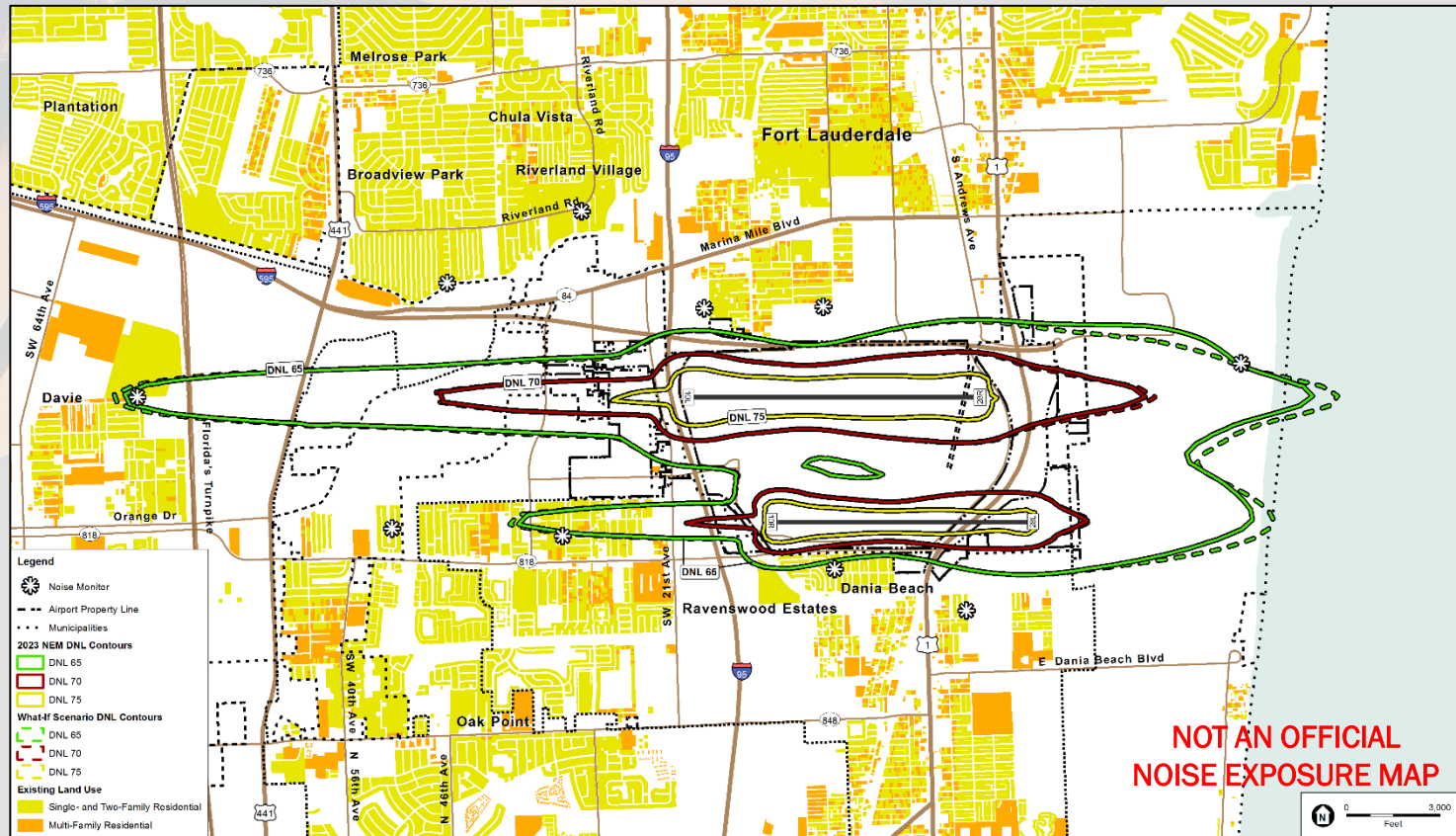
What if All Turns Close to the Airport Were Eliminated?

Flight Tracks Used for the Hypothetical "What-If" Scenario



What if All Turns Close to the Airport Were Eliminated?

Contour Comparison: 2023 Future Condition vs. Hypothetical "What-If" Scenario



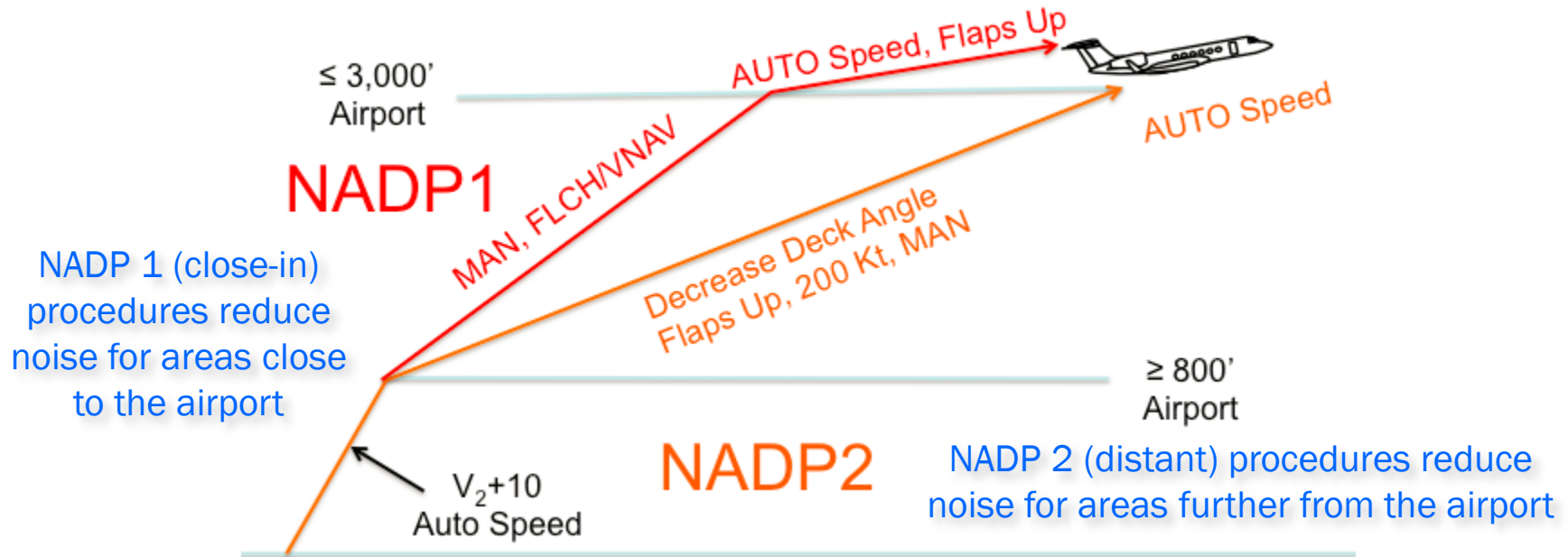
What if Departing Aircraft Climbed More Quickly?

- BCAD received several suggestions for aircraft to climb more quickly when departing FLL.
- To explore how noise contours would change if departing aircraft climbed more quickly, the Study Team produced a hypothetical “what-if” scenario by modeling the top 5 most frequently-occurring aircraft types at FLL (representing 73 percent of all departures) as using Noise Abatement Departure Procedure 1 (NADP1).
 - Airbus A320-200 Series
 - Boeing 737-800 Series
 - Airbus A321-200 Series
 - Boeing 737-700 Series
 - Embraer ERJ190
- The next two slides give an overview of NADPs and compare the 2023 Future Condition noise contours with the noise contours resulting from modeling this “what-if” scenario.

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

What if Departing Aircraft Climbed More Quickly?

EXAMPLE: Noise Abatement Departure Procedures

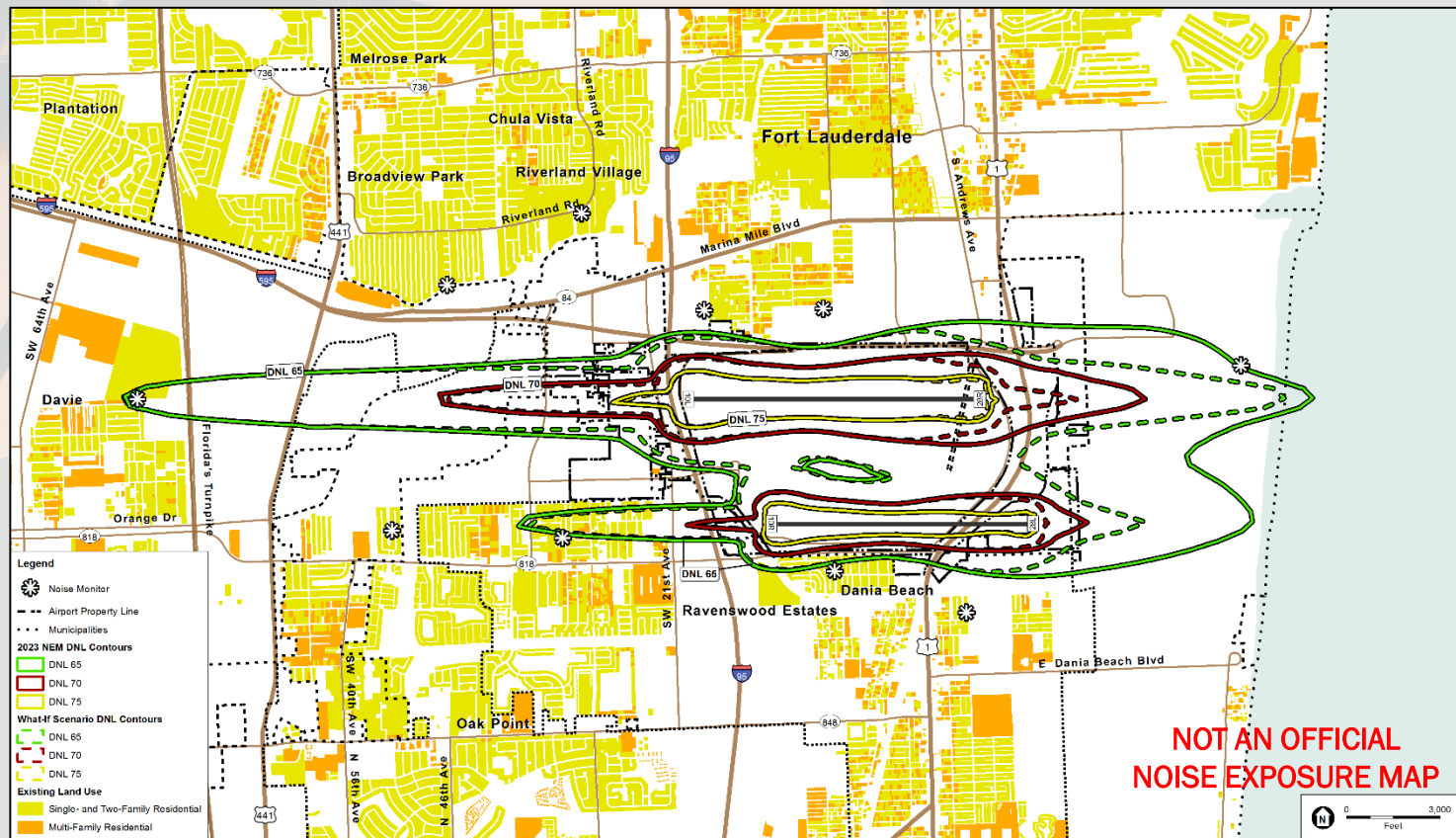


Actual noise abatement departure procedures are aircraft- and operator-specific.

- 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.

What if Departing Aircraft Climbed More Quickly?

Contour Comparison: 2023 Future Condition vs. Hypothetical "What-If" Scenario



What if the Interlocal Agreement Voluntary Night Closure Were Not in Place?

The November 19, 2013 Interlocal Agreement between Broward County and Dania Beach contains a voluntary closure of the south runway between the hours of 10:00 P.M. and 5:00 A.M.:

- **Paragraph 2(a):** *“The County will implement a voluntary night closure of the Expanded South Runway pursuant to the following conditions (‘the Voluntary Night Closure’), by seeking an agreement with Airport users concerning a voluntary nighttime limitation on use of the Expanded South Runway. . . . The coordination and agreement requirement in the immediately preceding sentence shall be in effect only until the New Part 150 Study . . . is completed.”*



What if the Interlocal Agreement Voluntary Night Closure Were Not in Place?

- **Paragraph 2(a)(iii)(b):** *“The Voluntary Night Closure shall remain in effect until a new Part 150 noise study (“New Part 150 Study”) for the Airport is completed by the County and the FAA has made a determination based on the New Part 150 Study. The FAA’s determination as a result of the New Part 150 Study shall establish whether or not the Voluntary Night Closure of the Expanded South Runway will remain in effect and, if so, for what periods of time and under what conditions.”*
- **Paragraph 2(a)(iii)(c):** *“The County agrees that in the development of the New Part 150 Study, as described in subparagraph 2(a)(iii)(b), above, the County will include the Voluntary Night Closure as an abatement measure to be analyzed as part of such New Part 150 Study. The County further agrees that it will include continuation of the Voluntary Night Closure in its recommendations to the FAA in connection with such New Part 150 Study unless the City agrees in writing to the contrary.”*

What if the Interlocal Agreement Voluntary Night Closure Were Not in Place?

- The effects of the Voluntary Night Closure are captured in the 2018 and 2023 NEMs for FLL
- The Study Team produced a “what-if” scenario exploring how noise exposure might change if the Voluntary Night Closure were not in place
 - Nighttime runway use was assumed to be the same as daytime runway use
 - Using this assumption, “what-if” noise contours were produced



What if the Interlocal Agreement Voluntary Night Closure Were Not in Place?

East Flow Runway Use

For the hypothetical “what-if” scenario, daytime runway use was assigned to nighttime operations.

**Day: 52%
Night: 74%**

**Day: 29%
Night: 7%**

**Day: 49%
Night: 65%**

**Day: 32%
Night: 16%**

Legend



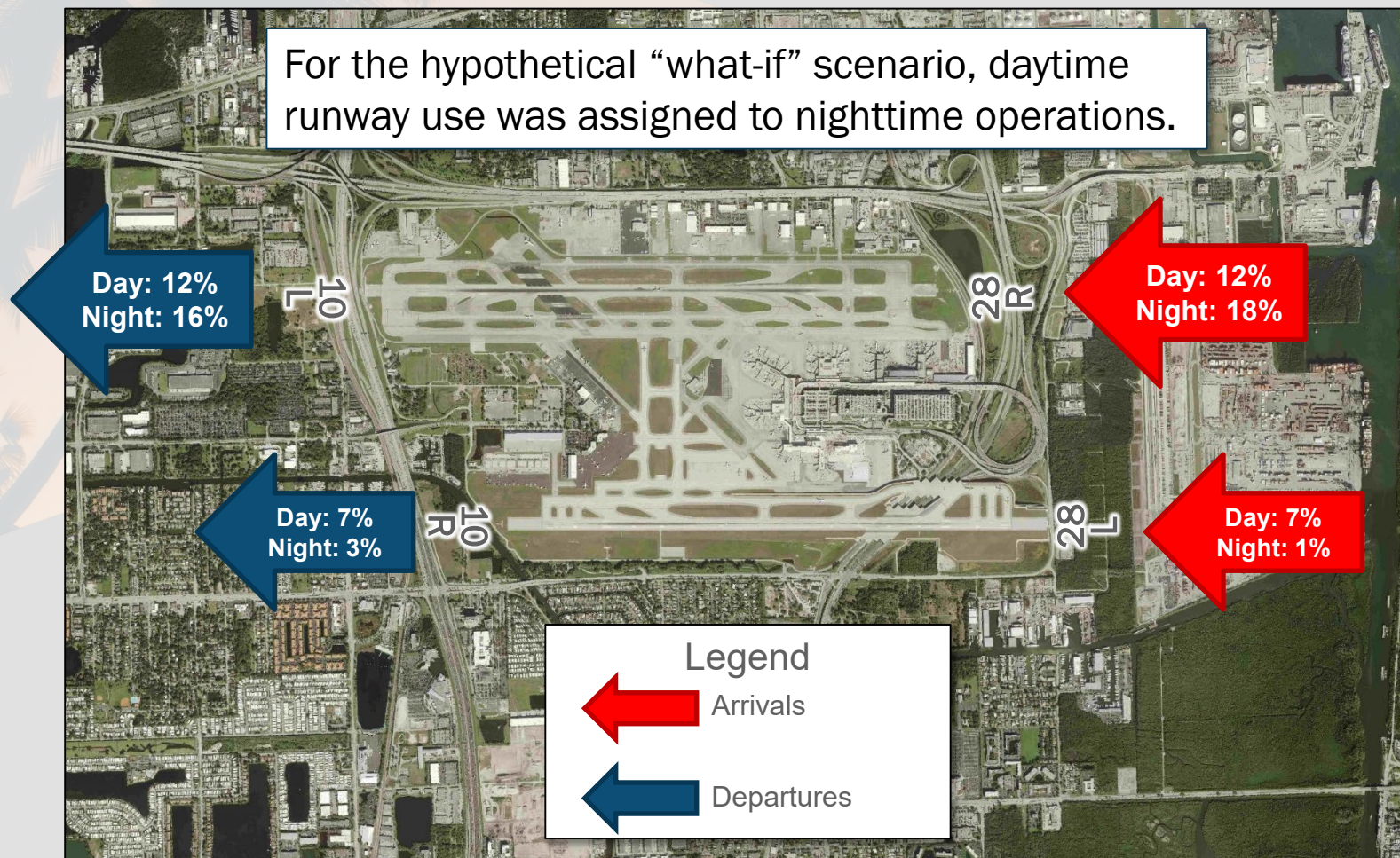
Arrivals



Departures

What if the Interlocal Agreement Voluntary Night Closure Were Not in Place?

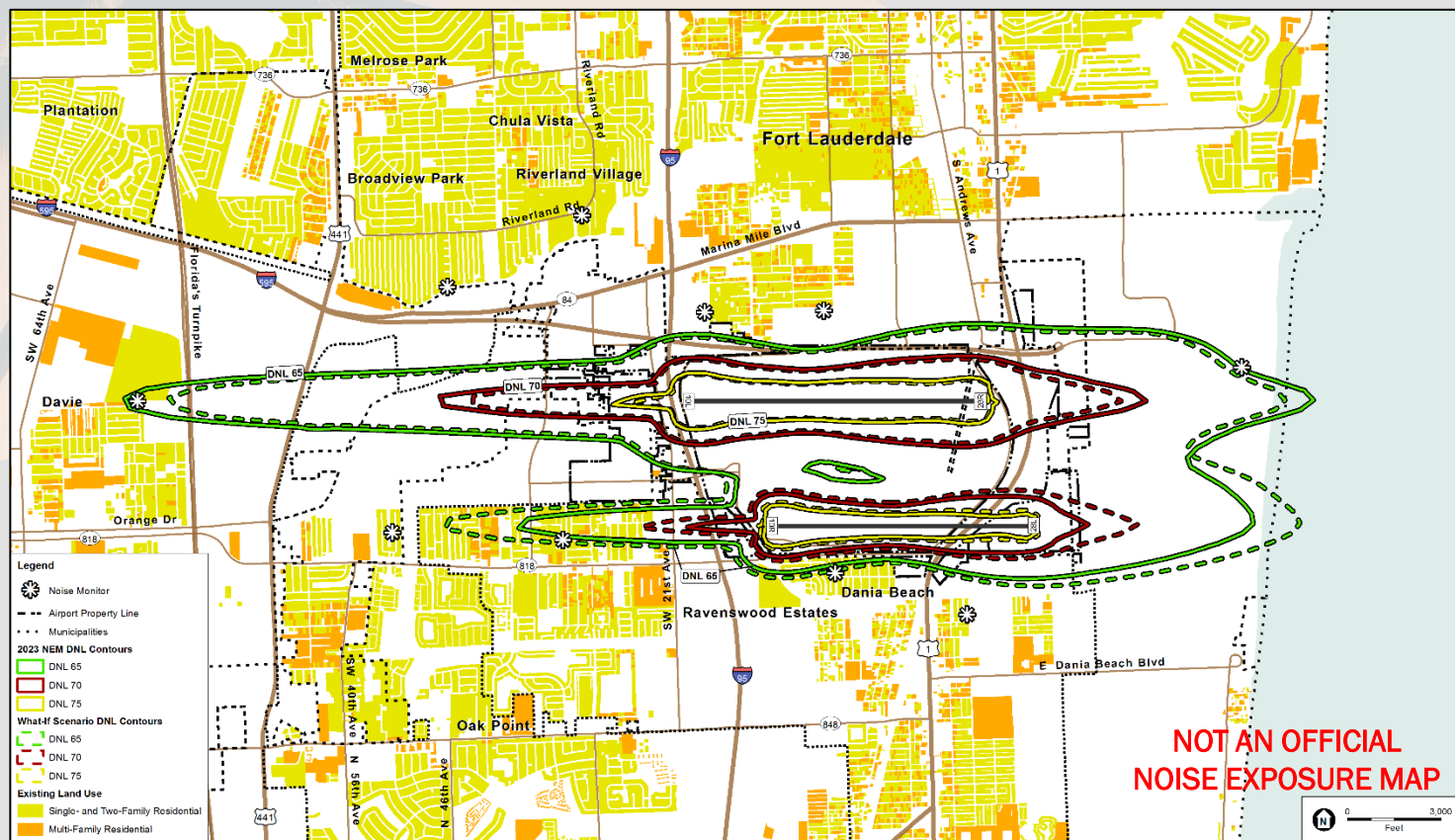
West Flow Runway Use



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

What if the Interlocal Agreement Voluntary Night Closure Were Not in Place?

Contour Comparison: 2023 Future Condition vs. Hypothetical "What-If" Scenario



What if the Interlocal Agreement Voluntary Night Closure Were Not in Place?

Contour Comparison: 2023 Future Condition vs. Hypothetical "What-If" Scenario

