Noise Compatibility Program

Pursuant to Title 14 of the Code of Federal Regulations Part 150

Dane County Regional Airport

Draft

HMMH Report No. 312360
February 2024

Prepared for:

Dane County Regional Airport
4000 International Lane
Madison, WI 53704

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Prepared for:

Dane County Regional Airport
4000 International Lane
Madison, WI 53704

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Sponsor's Certification

The Noise Compatibility Program (NCP) for Dane County Regional Airport (MSN) is hereby submitted in accordance with Title 14 of the Code of Federal Regulations Part 150. MSN is owned and operated by Dane County, Wisconsin. The Program was prepared with the best available information and is certified as true and complete to the best of my knowledge and belief.

The Noise Exposure Map (NEM) was prepared and submitted under separate cover in December 2022 and accepted by the Federal Aviation Administration (FAA) December 21, 2023. The NCP is submitted in two volumes: the NCP document and the appendices with background and supporting material.

The NCP Report was prepared in consultation with local public and planning agencies whose area or any portion of whose area of jurisdiction is within the 65 Day-Night Average Sound Level (DNL) contour depicted on the NEM and might be affected by any Dane County-recommended measures. The consultation also included federal and local officials having oversight responsibility and regular aeronautic users of the airport. The proposed NCP measures are recommended by the County.

It is further certified that adequate opportunity has been afforded to interested persons to submit their views, data, and comments concerning the formulation and adequacy of the NCP Report and the supporting documentation. The required public hearing was held on February 20, 2024 to obtain public comments related to the County-recommended NCP measures.

By:	Kimberly Jones
Title:	Airport Director
Date:	TBD
Airport name:	Dane County Regional Airport
Airport Owner/Operator:	Dane County, Wisconsin
Address:	400 International Lane, Madison, WI 53704

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FAA Part 150 Checklist

The FAA has developed checklists for their internal use in reviewing NEM and NCP submissions. For ease of review, the County has included the FAA's NCP checklist with appropriate page numbers or other references and other notes and comments to assist in the document's review, as presented below.

Source: FAA/APP, Washington, DC, March 1989; updated December 2007, published February 2008 (confirmed November 2023)

14 CFR Part 150 Noise Compatibility Program Checklist: Part I	
Airport Name: Dane County Regional Airport	REVIEWER:

Program Requirement	Yes/No/ N/A	Supporting Pages/Review Comments
I. SUBMITTING AND IDENTIFYING THE NCP:		
A. Submission is properly identified:		
1. 14 C.F.R. Part 150 NCP?	Y	
2. NEMs and NCP together?	N	This document is the NCP Update. The NEM Update was submitted on December 28, 2022, and accepted on December 21, 2023.
3. Program revision? (To what extent has it been revised?)	Y	Proposed program revisions to the NCP are included in Chapter 2, 3, and 4.
B. Airport and Airport Sponsor's name are identified?	Y	Sponsor's Certification, page v
C. NCP is transmitted by airport sponsor's cover letter?	Y	Sponsor's Certification, page v
II. CONSULTATION (INCLUDING PUBLIC PARTICIPATION): [150.23]		
A. Documentation includes narrative of public participation and consultation process?	Y	Chapter 5 (page 5-1) and Appendix E
B. Identification of consulted parties:		
1. All parties in 150.23(c) consulted?	Y	Chapter 1 (Section 1.4) and Chapter 5 (page 5-1)
2. Public and planning agencies identified?	Y	Chapter 5 (page 5-1)
3. Agencies in 2. above correspond to those affected by the NEM noise contours?	Y	Chapter 5 (page 5-1)
C. Satisfies 150.23(d) requirements by:		
1. Documentation shows active and direct participation of parties in B. above?	Y	Chapter 5 (page 5-1) and Appendix E
2. Active and direct participation of general public and opportunity to submit their views, data, and comments on the formulation and adequacy of the NCP?	Y	Chapter 5 (page 5-1) and Appendix E
3. Participation was prior to and during development of NCP and prior to submittal to FAA?	Y	Chapter 5 (page 5-1) and Appendix E
4. Indicates adequate opportunity afforded to all consulted parties to submit views, data, etc.?	Y	Chapter 5 (page 5-1) and Appendix E
D. Evidence is included there was notice and opportunity for a public hearing on the final NCP?	Y	Chapter 5 (page 5-1) and Appendix E
E. Documentation of comments:		

Program Requirement	Yes/No/ N/A	Supporting Pages/Review Comments
1. Includes summary of public hearing comments, if hearing was held?	Y	Appendix F
2. Includes copy of all written material submitted to operator?	Y	Appendix E
3. Includes operator's response/disposition of written and verbal comments?	Y	Appendix F
F. Is there written evidence from the appropriate office within the FAA that the sponsor received informal agreement to carry out proposed flight procedures?	N/A	N/A
III. NOISE EXPOSURE MAPS: [150.23, B150.3; 150.35(f)] (This section of the checklist is not a substitute for the Noise Exposure Map checklist. It deals with maps in the context of the Noise Compatibility Program submission.)		
A. Inclusion of NEMs and supporting documentation:		
1. Map documentation either included or incorporated by reference?	Y	Chapter 1 (Section 1.7)
2. Maps previously found in compliance by FAA?	Y	Chapter 1 (Section 1.7)
3. FAA's compliance determination still valid?		
(a) Existing condition NEM represents conditions at the airport at the time of submittal of the NCP for FAA approval?	Y	Chapter 1 (Section 1.7, Figure 1-3)
(b) Forecast condition NEM represents conditions at the airport at least 5 years into the future from the date of submittal of the NCP to the FAA for approval?	Y	Chapter 1 (Section 1.7, Figure 1-4)
(c) Sponsor letter confirming elements (a) and (b), above, if date of submission is either different than the year of submittal of the previously approved NEMs or over 12 months from the date shown on the face of the NEM?	Y	Sponsor's Certification, page v
(d) If (a) through (c) cannot be validated, the NEMs must be redone and resubmitted as per 150.21.	N/A	N/A
4. Does 180-day period have to wait for map compliance finding?	N	Acceptance of the NEM by FAA occurred on December 21, 2023.
B. Revised NEMs submitted with program: (Review using NEM checklist if map revisions included in NCP submittal. Report the applicable findings in the spaces below after a full review using the NEM checklist and narrative.)		
1. Revised NEMs included with program?	N	N/A
2. Has airport sponsor requested in writing that FAA make a determination on the NEM(s), showing NCP measures in place, when NCP approval is made?	N	N/A
C. If program analysis uses noise modeling:		
1. INM, HNM, or FAA-approved equivalent?	Y	AEDT Version 3e
2. Monitoring in accordance with A150.5?	N/A	N/A
D. One existing condition and one forecast-year map clearly identified as the official NEMs?	Y	Chapter 1 (Section 1.7, Figure 1-3 and Figure 1-4)
IV. CONSIDERATION OF ALTERNATIVES: [B150.7, 150.23€(2)]		
A. At a minimum, were the alternatives below considered, or if they were rejected was the reason for rejection reasonable and based on accurate technical information and local circumstances?		

Program Requirement	Yes/No/ N/A	Supporting Pages/Review Comments
1. Land acquisition and interests therein, including air rights, easements, and developmental rights?	Y	Chapter 3
2. Barriers, acoustical shielding, public building soundproofing	Y	Chapters 2 and 3
3. Preferential runway system	Y	Chapter 2
4. Voluntary flight procedures	Y	Chapter 2
5. Restrictions described in B150.7 (taking into account Part 161 requirements)	Y	Chapter 2
6. Other actions with beneficial impact not listed in the regulation	Y	Chapters 2, 3 and 4
7. Other FAA recommendations (see D, below)	N/A	N/A
B. Responsible implementing authority identified for each considered alternative?	Y	Chapters 2, 3 and 4
C. Analysis of alternative measures:		
1. Measures clearly described?	Y	Chapters 2, 3 and 4
2. Measures adequately analyzed?	Y	Chapters 2, 3 and 4
3. Adequate reasoning for rejecting alternatives?	Y	Chapters 2, 3 and 4
D. Other actions recommended by the FAA: As the FAA staff person familiar with the local airport circumstances, determine whether other actions should be added? (list separately, or on back, actions and describe discussions with airport sponsor to have them included prior to the start of the 180-day cycle. New measures recommended by the airport sponsor must meet applicable public participation and consultation with officials before they can be submitted to the FAA for action. See E. below.)	N/A	N/A
V. ALTERNATIVES RECOMMENDED FOR IMPLEMENTATION: [150.23(E), B150.7(C); 150.35(B), B150.5]		
A. Document clearly indicates:		
1. Alternatives that are recommended for implementation?	Y	Chapters 2, 3 and 4
2. Final recommendations are airport sponsor's, not those of consultant or third party?	Y	Sponsor's Certification, page v
B. Do all program recommendations:		
1. Relate directly or indirectly to reduction of noise and noncompatible land uses? (Note: All program recommendations, regardless of whether previously approved by the FAA in an earlier Part 150 study, must demonstrate a noise benefit if the airport sponsor wants FAA to consider the measure for approval in a program update. See E. below.)	Y	Chapters 2, 3 and 4
2. Contain description of each measure's relative contribution to overall effectiveness of the program?	Y	Chapters 2, 3 and 4
3. Noise/land use benefits quantified to extent possible to be quantified? (Note: some program management measures cannot be readily quantified and should be described in other terms to show their implementation contributes to overall effectiveness of the program.)	Y	Chapters 2, 3 and 4

Program Requirement	Yes/No/ N/A	Supporting Pages/Review Comments
4. Does each alternative include actual/anticipated effect on reducing noise exposure within noncompatible area shown on NEM?	Y	Chapters 2, 3 and 4
5. Effects based on relevant and reasonable expressed assumptions?	Y	Chapters 2, 3 and 4
6. Does the document have adequate supporting data that the measure contributes to noise/land use compatibility?	Y	Chapters 2, 3 and 4
C. Analysis appears to support program standards set forth in 150.35(b) and B150.5?	Y	Chapters 2, 3 and 4
D. When use restrictions are recommended for approval by the FAA:		
1. Does (or could) the restriction affect Stage 2 or Stage 3 aircraft operations (regardless of whether they presently operate at the airport)? (If the restriction affects Stage 2 helicopters, Part 161 also applies.)	N/A	N/A
2. If the answer to D.1 is yes, has the airport sponsor completed the Part 161 process and received FAA Part 161 approval for a restriction affecting Stage 3 aircraft? Is the FAA's approval documented? For restrictions affecting only Stage 2 aircraft, has the airport sponsor successfully completed the Stage 2 analysis and consultation process required by Part 161 and met the regulatory requirements, and is there evidenced by letter from FAA stating this fact?	N/A	N/A
3. Are non-restrictive alternatives with potentially significant noise/compatible land use benefits thoroughly analyzed so that appropriate comparisons and conclusions among all alternatives can be made?	N/A	N/A
4. Did the FAA regional or ADO reviewer coordinate the use restriction with APP-400 prior to making determination on start of 180-days?	N/A	N/A
E. Do the following also meet Part 150 analytical standards?		
1. Recommendations that continue existing practices and that are submitted for FAA re-approval? (Note: An airport sponsor does not have to request FAA re-approval if noise compatibility measures are in place from previously approved Part 150 studies. If the airport has implemented the measures as approved in the previous NCP, the measures may be reported and modeled as baseline conditions at the airport.)	N/A	N/A
2. New recommendations or changes proposed at the end of the Part 150 process?	N/A	N/A
F. Documentation indicates how recommendations may change previously adopted noise compatibility plans, programs, or measures?	Y	Chapters 2, 3 and 4
G. Documentation also:		

Program Requirement	Yes/No/ N/A	Supporting Pages/Review Comments
1. Identifies agencies that are responsible for implementing each recommendation?	Y	Chapters 2, 3 and 4
2. Indicates whether those agencies have agreed to implement?	Y	Chapters 2, 3 and 4
3. Indicates essential government actions necessary to implement recommendations?	Y	Chapters 2, 3 and 4
H. Timeframe:		
1. Includes agreed-upon schedule to implement alternatives?	Y	Chapters 2, 3 and 4
2. Indicates period covered by the program?	Y	Chapters 2, 3 and 4
I. Funding/Costs:		
1. Includes costs to implement alternatives?	Y	Chapters 2, 3 and 4
2. Includes anticipated funding sources?	Y	Chapters 2, 3 and 4
VI. PROGRAM REVISION: [150.23(E)(9)] Supporting documentation includes provision for revision? (Note: Revision should occur when it is likely a change has taken place at the airport that will cause a significant increase or decrease in the DNL noise contour of 1.5 dB or greater over noncompatible land uses. See §150.21(d))	N	N/A

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Acronyms

Acronym	Definition
AAD	Annual Average Day
ADO	Airport District Office
AEDT	Aviation Environmental Design Tool
AIP	Airport Improvement Program
ASDA	Accelerate Stop Distance Available
ASNA	Aviation Safety and Noise Abatement Act
ATCT	Airport Traffic Control Tower
CFR	Code of Federal Regulations
dB	decibel(s)
DNL	Day-Night Average Sound Level
DMA	Wisconsin Department of Military Affairs
EIS	Environmental Impact Statement
FAA	Federal Aviation Administration
FTZ	Foreign Trade Zone
HMMH	Harris Miller Miller & Hanson Inc.
LDA	Landing Distance Available
LU	Land Use
METAR	Meteorological Aerodrome Report
MSL	Mean Sea Level
MSN	Dane County Regional Airport
NA	Noise Abatement
NADP	Noise Abatement Departure Profile
NCP	Noise Compatibility Program
NEM	Noise Exposure Map
NEPA	National Environmental Policy Act
NES	Neighborhood Environmental Survey
OITC	Outdoor Indoor Transmission Class
PM	Program Management
ROFA	Runway Object Free Area
RPZ	Runway Protection Zone
RSA	Runway Safety Area
TAC	Technical Advisory Committee
TAF	Terminal Area Forecast
TODA	Take-off Distance Available
TORA	Take-off Run Available
UDC	Uniform Dwelling Code
USAF	United States Air Force
WBOA	Wisconsin Bureau of Aeronautics
WIANG	Wisconsin Air National Guard
WIARNG	Wisconsin Army National Guard

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1 Introduction to Noise Compatibility Planning

Dane County, as the owner and operator of Dane County Regional Airport (MSN), has prepared an update to the MSN Noise Compatibility Program (NCP) in accordance with the voluntary Federal Aviation Administration (FAA) Airport Noise Compatibility Planning regulation,[1] specifically Title 14 of the Code of Federal Regulations Part 150 (14 CFR Part 150, or simply Part 150). Dane County began this MSN Part 150 update after the completion of the Department of Defense Environmental Impact Statement (EIS) associated with the Wisconsin Air National Guard (WIANG) replacement of F-16C aircraft with the F-35A Lightning II aircraft. The EIS included a recommendation for Dane County to update the MSN Part 150 to address noncompatible land uses resulting from the WIANG fleet upgrade.

1.1 Part 150 Overview

In 1968, Congress responded to widespread community concern with aircraft noise resulting from the dawn of the jet age by passing the Aircraft Noise and Sonic Boom Act, which set standards for measurement of aircraft noise and established noise abatement regulations associated with the certification of aircraft. The FAA's emphasis on the relationship between aircraft noise and land use compatibility planning began with the passage of the Aviation Safety and Noise Abatement Act of 1979 (ASNA). This act gives the FAA the authority to issue regulations on noise compatibility planning. The Airport and Airway Improvement Act of 1982 provides a means for federal funding of projects to improve land use compatibility around airports. In response to ASNA, the FAA developed regulations as currently codified in 14 CFR Part 150, "Airport Noise Compatibility Planning."

These voluntary Part 150 regulations set forth standards for airport operators to use when documenting noise exposure around airports and for establishing programs to minimize aircraft noise-related land use incompatibilities. By regulation, a Part 150 Study includes the following two principal elements:

1. Noise Exposure Map (NEM)
2. Noise Compatibility Program (NCP)

Acceptance of an NEM by the FAA is a prerequisite to their subsequent review and approval of measures recommended in an NCP. Figure 1-1 provides an overview of the FAA Part 150 process.

[1] U.S. Government Publishing Office. Electronic Code of Federal Regulations, Title 14 CFR Part 150 – Airport Noise Compatibility Planning. Accessed at https://www.ecfr.gov/cgi-bin/text-idx?tpl=/ecfrbrowse/Title14/14cfr150_main_02.tpl on 12/07/2022.

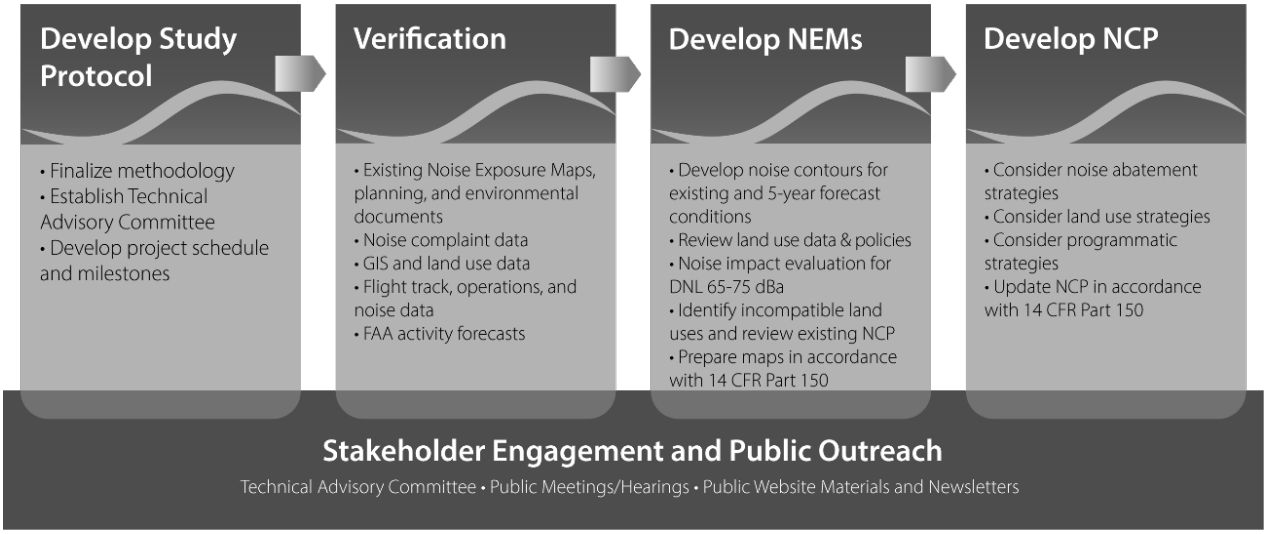

Figure 1-1. Overview of the FAA Part 150 Process
Source: HMMH

1.1.1 Noise Exposure Map

The NEM document describes the airport layout and operation, aircraft-related noise exposure, land uses in the airport environs, and the resulting land use compatibility with MSN aircraft operations. Aircraft noise exposure is expressed in terms of the annual-average Day-Night Average Sound Level (DNL). DNL represents noise as it occurs over a 24-hour period, with 10 decibels (dB) added to noise events occurring at night (10 p.m. to 7 a.m.). A brief summary of noise terminology is provided in Section 1.5.

Contours of equal DNL values, similar to terrain contours of equal elevation, form the basis for evaluating aircraft noise exposure and land use compatibility, based on FAA designations (presented in the Table 1-1) for both the existing and forecast conditions.

Part 150 requires that NEM documentation address aircraft operations during two time periods:

1. The year of submission (the "existing conditions")
2. A forecast year that is at least five years following the year of submission (the "forecast conditions")

The County submitted the most recent NEM documentation to the FAA in December 2022. The FAA accepted the NEMs in a letter dated December 21, 2023 (see Appendix A of this NCP). The FAA-accepted NEMs and respective land use compatibility summaries for 2022 and 2027 are provided in Section 1.7 for reference.

1.1.2 Noise Compatibility Program

An NCP is a list of actions an airport proprietor recommends for addressing existing and/or future noncompatible land uses resulting from the noise of aircraft operations. Per Part 150 regulation, the NCP document includes:

- The development of the program.
- Each measure the airport sponsor considered.
- The reasons the airport sponsor elected to recommend or exclude each measure.
- The entities responsible for implementing each recommended measure.
- Implementation and funding mechanisms.
- The predicted effectiveness of both the individual measures and the overall program.

The FAA reviews and approves specific measures based on information contained in the NCP. Dane County may apply for grant funding for implementation of FAA-approved measures. A Dane County-recommended and FAA-approved measure does not require implementation of the measure, but merely demonstrates that the measure is in compliance with Part 150. Additionally, if a measure requires subsequent FAA action, its implementation may require environmental study under the National Environmental Policy Act of 1969 (NEPA).

1.2 NCP Content and Organization

Under the first phase of the current Part 150 Study, Dane County prepared the NEM documentation and submitted it to the FAA in December 2022. The FAA subsequently accepted the NEMs as being developed in accordance with Part 150 on December 21, 2023. The preparation of this NCP represents the culmination of the second phase of the Study. Dane County expects to submit the NCP in 2024 with their recommended measures to address the noncompatible land uses identified in the NEM document.

The NCP considers three categories of potential measures to address noncompatible land use:

1. Noise Abatement (NA)
2. Land Use (LU)
3. Program Management (PM)

This NCP represents steps undertaken in accordance with requirements of 14 CFR Part 150. It provides the Dane County-recommended NCP measures, representing an update to the previous 1991 NCP. Each recommended measure contains the necessary information for compliance with 14 CFR 150.23(e)(8). This information includes the period covered by the program, the schedule for implementation of the program, the persons responsible for implementation of each measure in the program, and, for each measure, documentation supporting the feasibility of implementation (including any essential governmental actions, costs, and anticipated sources of funding) that will demonstrate that the program is reasonably consistent with achieving the goals of airport noise compatibility planning under this part. The FAA checklist that outlines the requirements for NCP documentation and associated text addressing those requirements are included in this NCP for FAA ease of review.

This NCP is organized as follows:

- **Section 1** introduces the location and setting of MSN, the Part 150 Study process, roles and responsibilities of stakeholders in the process, noise terminology, aircraft noise and land use compatibility, and the FAA-accepted NEMs submitted in 2022.
- **Section 2** provides an overview of the County's existing noise abatement measures, recommended noise abatement measures, and noise abatement measures that are not recommended.
- **Section 3** provides an overview of the County's existing land use measures, recommended land use measures, and land use measures that are not recommended.
- **Section 4** provides an overview of the County's existing program management measures, recommended program management measures, and program management measures that are not recommended.
- **Section 5** provides the County's stakeholder engagement efforts undertaken during the NCP phase of the Part 150 process.
- The **Appendices A-F**, a separate volume of this document, provide technical information, supporting documentation, and public outreach meeting materials referenced in this NCP.

1.3 Project History, Location, and Setting

Dane County is committed to reducing the effects of aircraft noise in nearby communities and has a long history of addressing community noise concerns associated with MSN aircraft operations. Dane County completed its first Part 150 Study for MSN in 1991. The NEM was accepted by the FAA in 1992, and NCP measures were approved by the FAA in 1993. Many of the recommended measures from the prior study have been successfully implemented by the County and were reviewed during the development of the 2022 NEM documentation.

MSN has served both civilian and military operations since the late 1940s. The military refers to the Airport as Truax Field, the WIANG 115th Fighter Wing Installation is a tenant and uses the airfield at MSN for training and the 64th Troop Command of the Wisconsin Army National Guard (WIARNG) also has a presence on the airfield. In 2020, the United States Air Force (USAF) selected the 115th Fighter Wing to receive the latest technology fleet of F-35A Lightning II to replace the aging F-16C aircraft.[2] This decision was based on public and agency consultation and analysis presented in the *USAF F-35A Operational Beddown Air National Guard Final Environmental Impact Statement* (USAF F-35 EIS)[3] and finalized by the USAF in the associated Record of Decision.[4] The 115th Fighter Wing received the first F-35A Lightning II aircraft in April 2023, with the entire fleet expected to transition to F-35A aircraft by 2025. MSN is undertaking the Part 150 Study to ensure that the NEM reflects existing and future aircraft operations,

[2] https://www.115fw.ang.af.mil/News/Article-Display/Article/2151068/truax-field-selected-to-receive-f-35-joint-strike-fighter.

[3] US Department of Defense. United States Air Force. "United States Air Force F-35A Operational Beddown Air National Guard Environmental Impact Statement", on file with US Environmental Protection Agency as EIS No. 20200051. Published February 28, 2020. Available at https://cdxapps.epa.gov/cdx-enepa-II/public/action/eis/details?eisId=290711.

[4] US Department of Defense. United States Air Force. "Record of Decisions for the Environmental Impact Statement United States Air Force F-35A Operational Beddown Air National Guard." Published April 23, 2020. Available at https://www.federalregister.gov/documents/2020/04/23/2020-08597/record-of-decisions-for-the-environmental-impact-statement-united-states-air-force-f-35a-operational.

and that the NCP addresses any noncompatible land uses resulting from MSN aircraft operations, including the introduction of the F-35A Lightning II aircraft.

1.3.1 Airport History

Madison Municipal Airport, as it was originally named, opened in 1939 and included four 3,500-foot paved runways, a small terminal building, and a stone hangar. In 1942, the City of Madison leased the Airport to the U.S. Army Air Corps for use as a radio technical training school during World War II. During the time the U.S. Army Corps occupied the Airport, the airfield was expanded to 2,140 acres and the runways were rebuilt. The airfield was renamed Truax Field in honor of Lt. Thomas Leroy Truax, the first person from Madison, Wisconsin to lose his life in an air crash while serving his country during World War II.

After World War II ended, the Federal Government deactivated Truax Field and returned control to the City of Madison. In 1948, the WIANG was established and stationed in Madison. In 1951, following the start of the Korean War, the USAF took control of the airfield and the WIANG was activated. During that time, the north/south runway (Runway 18/36) was extended 2,000 feet south, making it the primary runway, totaling 7,600 feet. Truax Field was among several facilities the Department of Defense closed in 1964, and the USAF phased out its presence at the airfield by 1968.

The City of Madison completed a long-range master plan in 1962, designing a new terminal and taxiway system. The city also completed an airport improvement study in 1967, which kickstarted several construction projects after its approval. Airport ownership transferred from the City of Madison to Dane County in 1974 and upon transfer, the Airport was renamed Dane County Regional/Truax Field. Throughout the 1970s and 1980s, the runways were reconstructed and expanded, and the terminal tripled in size with an extensive expansion.

In 1990, the Airport served over 1 million passengers, and in 1991, the terminal was expanded again to over 125,000 square feet. The first Part 150 study began in 1990, and the NCP led to the construction of Runway 3/21 to reduce the effects of aircraft noise on surrounding communities. The 7,200-foot runway opened in 1998, and it was the first new runway built on the airfield since 1942.

In the 2000s, the Airport continued to modernize with runway reconstruction, parking expansion, and a terminal modernization that doubled it in size to 274,000 square feet. In the 2010s, the Airport completed several projects intended to protect environmental resources and improve the safety of the airfield, such as installing a glycol management system, improving snow removal infrastructure, and constructing Taxiway M. In 2020, a two-phase terminal modernization program began to improve passenger facilities and work continues.[5]

1.3.2 Airport Location and Purpose

Dane County Regional Airport is located in south central Wisconsin approximately 4 miles northeast of downtown Madison and 5 miles from the University of Wisconsin campus. It is owned and operated by

[5] https://www.msnairport.com/about/facilities_maps/history; Dane County Regional Airport. Airport Master Plan and FAR Part 150 Noise Compatibility Study. September 1991.

Dane County. The small hub Airport provides commercial and general aviation service to the Madison Metropolitan Area. The WIANG 115th Fighter Wing is a tenant and uses the airfield at MSN for training.

1.3.3 Airport Facilities

Airside facilities at MSN currently include three runways, an extensive taxiway system, and four ramp areas that support general aviation, air carrier, military, and air cargo services. Landside facilities include an airport traffic control tower (ATCT), a fixed-base operator (Wisconsin Aviation) that operates the south and east ramps, a terminal building located on the west ramp, air cargo support buildings located on the south ramp, and WIANG and WIARNG facilities located on the southeast side of the Airport. MSN has an extensive road network around the airfield with surface parking lots and a multistory parking structure that is connected to the terminal on the ground floor and via a skywalk on the second level.

The terminal building contains two levels: one ticketing level and one concourse level. The ticketing level contains ticket counters, baggage claim, meeting rooms, the Robert B. Skuldt Conference Room, an art display area, and car rental counters, along with access to ground transportation. The secure concourse level encompasses 13 gates, administrative offices, concessions, two security checkpoints, and passenger amenities such as a business center, mother's lounge, and restrooms.

1.3.4 Truax Field

The military refers to their portion of MSN (located on the southern part of the airfield) as Truax Field. The WIANG 115th Fighter Wing is equipped with F-35A Lightning II as their primary aircraft and the RC-26B Metroliner as a secondary aircraft. The WIARNG 64th Troop Command operates the UH-60M helicopter out of Truax Field. The WIANG is tasked with carrying out both federal and state missions. The federal mission is to ensure the security of America's skies. As part of the total force WIANG provides operationally ready combat units and personnel to fulfill wartime, peacetime, and contingency commitments when called to action. The unit's state mission includes providing protection of life and property, and preserving peace, order, and public safety. The 115th Fighter Wing staffs and trains flying units to provide disaster relief in times of earthquakes, hurricanes, floods and forest fires, search and rescue, protection of vital public services, and defense support to civil authorities. The 64th Troop Command provides administrative, training, and logistical support to specialized units within the WIARNG.

1.3.5 Contribution to Local Economy

Based on 2012 data, MSN contributes approximately $500 million to the regional economy annually and directly and indirectly supports 10,000 jobs. Nearly 6,500 workers are employed in Dane County as a direct result of airport operations and facilities use, ranking the Airport as the third largest full-time employer in the County. This generates over $140 million in wages to airport-related workers in Dane County, with over $82 million in secondary wages paid to workers throughout the County.[6]

[6] Dane County Regional Airport. Sustainability Plan Highlights. 2014. https://www.msnairport.com/documents/pdf/Highlights.pdF; Accessed on 12/07/2022.

The Airport receives no local tax revenue, and airport funds are derived from airport operations. The primary tenants of the Airport are the commercial airlines, which currently include American Airlines, Delta Air Lines, Frontier Airlines, Sun Country Airlines, and United Airlines, along with FedEx that provides air cargo services.

Other revenue sources include parking revenues, terminal building tenants such as rental car agencies and restaurants, and multiple airport property tenants. MSN owns land along the International Lane corridor to the west and along US Highway 51 to the east. Referred to as the AirPark, it covers approximately 300 acres and major tenants include the Madison Area Technical College, Wisconsin Aviation, and Great Lakes Higher Education Corp.[7] Fixed-base operator, Wisconsin Aviation, provides general aviation services at MSN.

The Airport contains two Foreign Trade Zone (FTZ) sites, totaling 123 acres, that provide another source of revenue for Dane County. FTZ sites are established through the U.S. Department of Commerce and refer to areas located in or near a port of entry where certain merchandise can be imported without going through formal customs entry procedures or paying import duties. Companies value these zones as they are typically not charged tariffs on their inventory until it is sold, saving money and improving cash flow.[8] FTZs enhance business development and air cargo demand in the greater Madison and Dane County area.

1.3.6 Airport Part 150 History

Dane County completed its first Part 150 Study for MSN in 1991. The NEM was accepted by the FAA in 1992 as adhering to the requirements of Part 150, and the FAA issued their Record of Approval in 1993 for the airport-recommended NCP measures (see Appendix B of this NCP).

MSN works closely with airport partners to reduce noise in the surrounding community by encouraging the use of noise abatement procedures and other takeoff/landing methods that reduce aircraft noise over noise sensitive areas. The success of noise abatement strategy depends largely on the cooperation of pilots, air traffic controllers, and airport officials. MSN has implemented several strategies to assist in noise abatement, including:

- Construction of Runway 3/21 for noise reduction purposes.
- Creation of a Preferential Runway Use Program and preferred runway take-off procedures for military and commercial aircraft.
- Installation of signage at ramp exit points that detail airport noise abatement procedures.
- Construction of a “Hush House” that deflects noise skyward when testing military aircraft engines as part of regular maintenance.[9]

Historically, the Airport has successfully implemented land use measures related to land use compatibility planning. MSN completed a Home Sales Assistance Program and purchased property

[7] https://www.msnairport.com/about/news/economic_impact; Accessed on 12/07/2022.

[8] https://www.msnairport.com/about/facilities_maps/Foreign-Trade-Zone; Accessed on 12/07/2022.

[9] https://www.msnairport.com/about/ecomentality/Noise-Abatement; Accessed on 12/07/2022.

surrounding the Airport to prevent noncompatible land uses. The Airport worked with local jurisdictions to define an "airport affected area" to limit noncompatible development in noise sensitive areas.[10]

Additionally, MSN continues to work with communities surrounding the Airport to address their noise concerns and devotes resources to monitoring and responding to noise complaints. Prior to the COVID-19 pandemic, which temporarily halted many in-person meetings, the Airport regularly held a semi-annual noise meeting with the community and stakeholders.[11]

In terms of military noise abatement operations, the 115th Fighter Wing attempts to arrive from and depart to the north of Truax Field as a noise abatement procedure to avoid overflying of noise-sensitive areas to the south of the Airport. Additionally, the 115th Fighter Wing minimizes nighttime flight hours to limit sleep disturbances. However, use of these abatement procedures is not always possible due to weather and operational conditions or other air traffic management constraints.

1.4 Roles and Responsibilities

Several groups are involved in the preparation of the MSN Part 150 Study and have provided important information to the Study Team that has been incorporated into this NCP, including the following:

- The Wisconsin Bureau of Aeronautics (WBOA)
- Dane County, including its staff and consultant team
- The 115th Fighter Wing of the WIANG
- The 64th Troop Command of the WIARNG
- The MSN Part 150 Technical Advisory Committee (TAC)
- Local land use jurisdictions
- The FAA
- The public

1.4.1 Wisconsin Bureau of Aeronautics

In the state of Wisconsin, the WBOA administers all state and federal aid for airport improvements. The WBOA retained a team of consultants led by Harris Miller Miller & Hanson Inc. (HMMH), a national leader in airport noise compatibility planning and analysis, to assist with the technical tasks required to fulfill Part 150 analysis and documentation requirements. The consultant team included Mead & Hunt, a national airport planning and engineering firm with local knowledge and presence at MSN, and the Jones Payne Group, a national firm at the forefront of the airport noise mitigation industry.

[10] https://www.msnairport.com/about/ecomentality/noise_faq; Accessed on 12/07/2022.

[11] https://www.msnairport.com/about/ecomentality/Noise-Abatement; Accessed on 12/07/2022.

1.4.2 Dane County

As the airport operator, Dane County submits the NEM documentation, recommends NCP measures, pursues implementation of the adopted NCP measures, and manages the consultant team. Dane County also leads public engagement efforts related to the Part 150 Study.

1.4.3 115th Fighter Wing of the Wisconsin Air National Guard (WIANG)

The WIANG has three main bases in the state of Wisconsin. The 115th Fighter Wing Installation of the WIANG is located at Truax Field within MSN. The 115th Fighter Wing is tasked with both a state and a federal mission. As of 2022, the installation operated 23 F-16C Block 30 fighter aircraft and one RC-26B Metroliner. The USAF selected the 115th Fighter Wing to host the F-35A mission and receive a new fleet of F-35A Lightning II aircraft. The 115th Fighter Wing began a phased replacement of the F-16C fleet with F-35A aircraft in Spring 2023. The Study Team consulted with the 115th Fighter Wing to understand their plans for operation of F-35A aircraft during the forecast year timeframe and obtain military operational activity. The Study Team worked with the 115th Fighter Wing to develop potential noise abatement procedures for the F-35A aircraft operations intended to reduce noise exposure to noise-sensitive areas of the communities surrounding the Airport. The Study Team obtained concurrence from the 115th Fighter Wing on recommended noise abatement procedures.

To fulfill its mission, the WIANG primarily performs two types of departure operations: standard departures and scramble departures. Scramble departures are emergency departures intended to launch aircraft as fast as possible to intercept incoming threats. Typically, at MSN, 90 percent of scrambles depart from Runway 3 since it is the closest runway to the WIANG apron. The other type of departure operation performed at MSN by the WIANG is the standard departure. Standard departures are far more common than scrambles and consist of the aircraft departing like civilian aircraft (using the active runway designated by ATCT) and then flying north to a training area.

1.4.4 64th Troop Command of the Wisconsin Army National Guard (WIARNG)

The WIARNG is made up of approximately 7,700 soldiers including a headquarters staff in Madison and four major commands located throughout 67 Wisconsin communities. The 64th Troop Command (one of the four major commands) is located at Truax Field in MSN. Administered by the National Guard Bureau (a joint bureau of the departments of the Army and USAF), the WIARNG has both a federal and state mission. The dual mission, a provision of the U.S. Constitution and the U.S. Code of Laws, results in each soldier holding membership in both the National Guard of their state and in the U.S. Army. The WIARNG operates UH-60M Black Hawk helicopters at Truax Field within MSN. The Study Team obtained concurrence from the 64th Troop Command for military noise model inputs during the NEM phase and had access to the WIARNG for support during the NCP phase.

1.4.5 Technical Advisory Committee

Part 150 studies benefit from the creation and participation of a TAC. Representatives invited to serve on the TAC represent their respective groups and/or constituencies. The purpose of the TAC is to bring a broad range of stakeholder perspectives to the Study. TAC members participate in regular meetings, distribute information about the Study to their constituencies/ organizations, and review technical components of the Study. The TAC's role is advisory in nature; members do not have decision-making authority over elements of the Study. That is, the TAC may offer opinions, advice, and guidance to the Study, but Dane County as the Airport operator has the sole discretion to accept or reject the TAC recommendations in accordance with Part 150 regulations.

TAC membership includes:

- MSN staff
- WBOA staff
- FAA Airport District Office (ADO)
- FAA air traffic control tower (ATCT)
- 115th Fighter Wing of the WIANG
- 64th Troop Command of the WIARNG
- Airport tenants, users, and operators
- Local land use jurisdictions

1.4.6 Local Land Use Jurisdictions

Local land use jurisdictions, including Dane County, the City of Madison, and the Town of Burke, were involved via the TAC to provide input to the Part 150 study. Specific to the NCP, the local land use jurisdictions assisted in formulation of the recommended measures. Regardless, the recommended measures in the NCP are those of Dane County, as the owner and operator of the Airport, and inclusion does not assume the full cooperation of the local land use jurisdictions to implement the measure as recommended. Cooperation with local land use jurisdictions on the Part 150 NCP is critical as they have sole responsibility to implement land use controls where the FAA and Airport do not.

1.4.7 Federal Aviation Administration

The FAA maintains involvement throughout the Part 150 study process. The FAA reviews the operational forecast for consistency with their Terminal Area Forecast (TAF) and any nonstandard noise modeling requests. The FAA reviews the Part 150 submission to determine whether the technical work, consultation, and documentation comply with Part 150 requirements. The FAA provides acceptance of the NEM.

The FAA evaluates recommended NCP measures individually with respect to a criteria framework and determines whether each measure merits approval, disapproval, or further review for the purposes of Part 150. In addition, the FAA reviews the details of the technical documentation for broader issues of safety and ensures consistency of recommended noise abatement measures with applicable federal law. Finally, the FAA issues the Record of Approval for the recommended measures in the NCP.

FAA involvement includes participation by staff from at least three parts of the agency:

- The Office of Environment and Energy
- The Air Traffic Organization
- The Office of Airports

The Office of Environment and Energy, located in FAA headquarters, reviews complex technical, regulatory, and legal matters of national environmental policy significance.

The Air Traffic Organization includes the Air Traffic Controllers and support staff. MSN's ATCT provided input on operational data, judgment regarding safety and capacity effects of alternative noise abatement measures, and shared input on implementation requirements.

Three groups in the Office of Airports are involved as described below:

1. The Chicago ADO is the main point of contact for reviews, compliance, and direction as the Part 150 Update study progresses.

2. The Great Lakes Region Office is responsible for determining if the documentation satisfies all Part 150 requirements and completes final review of the NCP for adequacy in satisfying technical and legal requirements.

3. Headquarters ensures consistency with Part 150 regulations and reviews of national importance.

Prior to acceptance of the NEM/NCP documentation and approval of the airport-recommended NCP measures, the FAA conducts a Lines-of-Business review, which includes Air Traffic, Flight Standards, Legal, Special Programs, Planning and Requirements, Flight Procedures, and Regional Review.

1.4.8 Public

Members of the public were given opportunities to follow the Study's progress and provide input. The public was encouraged to stay abreast of progress by visiting the Study website, reviewing the project newsletters, participating in the public open houses, and submitting comments on the draft documents. The public was provided four in-person opportunities to learn of study progress and provide public comment, in addition to access to a project email address in which the public could log comments continually: (1) public open house providing an overview of the Part 150 study and its objectives; (2) public open house presenting the updated draft NEM, where the Airport received many comments on potential NCP measures; (3) additional public open house added to present the NCP measures considered to date; and (4) final public open house and public hearing for the presentation of the Dane County-recommended NCP measures. Additional information on stakeholder engagement can be found in Section 5.

1.5 Introduction to Noise Terminology

Information presented in this NCP Report relies upon a reader's understanding of the characteristics of noise (unwanted sound), the effects noise has on persons and communities, and the metrics or descriptors commonly used to quantify noise. The properties, measurement, and presentation of noise involve specialized terminology. This section presents an overview of noise terminology.

Sound is a physical phenomenon consisting of minute vibrations (waveforms) that travel through a medium such as air or water. **Noise** is sound that is unwelcome.

Noise metrics may be thought of as measures of noise "dose." There are two main types, describing (1) single noise events (single-event noise metrics) and (2) total noise experienced over longer time periods (cumulative noise metrics). Single-event metrics indicate the intrusiveness, loudness, or noisiness of individual aircraft events. Cumulative metrics consider the frequency of noise events as well as the time of day in which they occur. Unless otherwise noted, all noise metrics presented in Part 150 documentation are reported in terms of the A-weighted decibel or dB.

Noise sensitivity is greater at night because background (ambient) sound levels tend to be lower at night and people tend to be sleeping. DNL represents noise as it occurs over a 24-hour period, treating noise events occurring at night (10 p.m. to 7 a.m.) with a 10 dB weighting.[12] This 10 dB weighting is applied to account for greater sensitivity to nighttime noise and the fact that events at night are often perceived to be more intrusive than daytime (see Figure 1-2). An alternative way of describing this adjustment is that each event occurring during the nighttime period is calculated as if it were equivalent to ten daytime events. For purposes of Part 150, DNL is normally calculated through use of aircraft operations data averaged over a longer period, such as a year, to smooth out fluctuations occurring in day-to-day operations.

[12] For the regulatory definition of DNL see 14CFR Part 150 §150.7 Definitions. http://www.ecfr.gov/cgi-bin/text-idx?SID=f8e6df268e3dad2edb848f61b9a0fb51&mc=true&node=pt14.3.150&rgn=div5; Accessed on 12/07/2022.

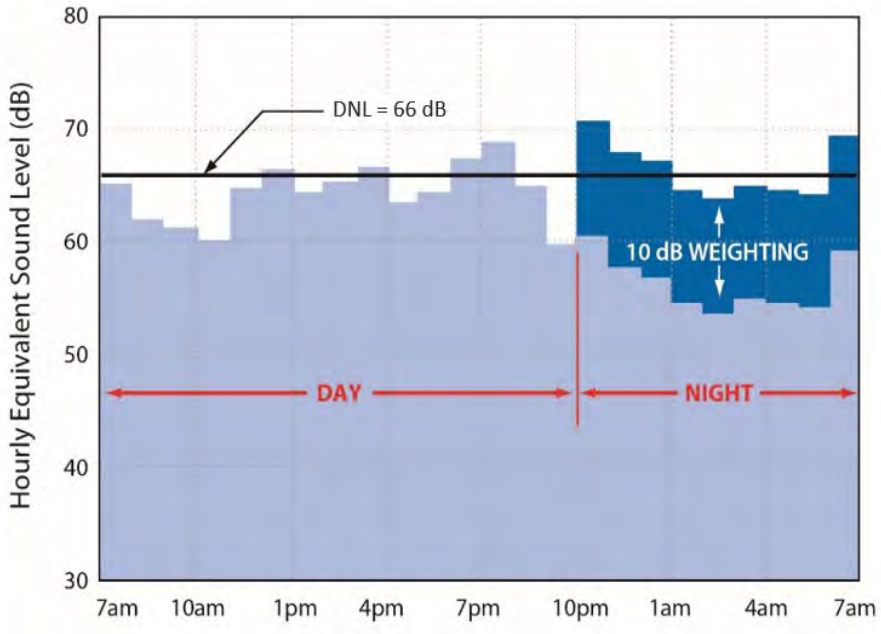

Figure 1-2. Example of a Day-Night Average Sound Level Calculation
Source: HMMH

1.6 Aircraft Noise and Land Use Compatibility

The objective of airport noise compatibility planning is to promote compatible land use in communities surrounding airports. Part 150 requires the review of existing land uses surrounding an airport to determine land use compatibility associated with aircraft activity at the airport.

The FAA has published land use compatibility designations, as set forth in 14 CFR Part 150, Appendix A, Table 1 (reproduced here as Table 1-1). As the table indicates, the FAA generally considers all land uses to be compatible with aircraft-related DNL below 65 dB, including hotels, retirement homes, intermediate care facilities, hospitals, nursing homes, schools, preschools, and libraries. These categories will be referenced throughout the Part 150 process.

The County established a study area during the 2022 NEM study and collected detailed land use information from municipalities throughout the study area. The collected land use and zoning information was summarized to match the Part 150 land use categories. The NEMs reproduced in Section 1.7 from the 2022 MSN NEM document (Figure 1-3) include the results of the aircraft noise and land use analysis pursuant to FAA-provided land use compatibility designations.

Table 1-1. 14 CFR Part 150 Land Use Compatibility Guidelines with Yearly Day-Night Average Sound Levels
Source: Part 150, Appendix A, Table 1

Land Use	Yearly Day-Night Average Sound Level, Ldn [DNL], in Decibels (Key and notes on following page)					
	<65	65-70	70-75	75-80	80-85	>85
Residential Use						
Residential other than mobile homes and transient lodgings	Y	N(1)	N(1)	N	N	N
Mobile home park	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
Public Use						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Governmental services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
Commercial Use						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail--building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade—general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
Manufacturing and Production						
Manufacturing general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
Recreational						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts and camps	Y	Y	Y	N	N	N
Golf courses, riding stables, and water recreation	Y	Y	25	30	N	N

Key to Table 1-1

SLUCM: Standard Land Use Coding Manual.
Y(Yes): Land use and related structures compatible without restrictions.
N(No): Land use and related structures are not compatible and should be prohibited.
NLR: Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.
25, 30, or 35: Land use and related structures generally compatible; measures to achieve NLR of 25, 30, or 35 dBA must be incorporated into design and construction of structure.

Notes for Table 1-1

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dBA and 30 dBA should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dBA, thus, the reduction requirements are often stated as 5, 10, or 15 dBA over standard construction and normally assume mechanical ventilation and closed windows year-round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR of 25 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

(3) Measures to achieve NLR of 30 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

(4) Measures to achieve NLR of 35 dBA must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas, or where the normal noise level is low.

(5) Land use compatible provided special sound reinforcement systems are installed.

(6) Residential buildings require an NLR of 25

(7) Residential buildings require an NLR of 30

(8) Residential buildings not permitted

1.7 FAA-Accepted Noise Exposure Maps

This section provides a summary of the current FAA-accepted 2022 NEMs. On December 21, 2023, the FAA accepted the most recent (2022) NEM update for MSN as summarized here for reference. The fundamental noise elements of NEMs are aircraft noise exposure contours for existing and five-year forecast conditions (i.e., 2022 and 2027) for the current FAA-accepted NEM.

The noise contours for this study were prepared using the FAA's computer model Aviation Environmental Design Tool (AEDT), which was used for the modelling of civilian aircraft, and the Department of Defense's computer model NoiseMAP was used for the modeling of military aircraft. Both models use airport-specific information (e.g., runway data); flight track information; aircraft operation levels distributed by time of day, aircraft fleet mix, and aircraft altitude profiles to develop noise exposure contours.

For ease of reference, the existing (2022) and forecast condition (2027) aircraft noise exposure contours, as included in the FAA-accepted MSN 2022 NEM, are provided below in Figure 1-3 and Figure 1-4, respectively. The 2027 forecast condition was solely used as the basis for all noise benefit analyses conducted in evaluating the effectiveness of proposed noise abatement measures (see Section 2 of this document).

The 65 DNL contour in both the existing and forecast conditions is located within the geographic limits of Dane County, Wisconsin and within the land use planning municipalities of the Town of Burke and the City of Madison. For the existing and forecast conditions, Table 1-2 shows estimations of the population and housing units, and Table 1-3 identifies noise-sensitive parcels exposed to DNL[13] greater than 65 dB, which is the threshold for potential noncompatible land uses per current FAA guidance (see Table 1-1 above). The land use analysis shows that 1,250 residential units and four noise-sensitive parcels are potentially noncompatible with noise from MSN aircraft operations under the 2027 forecast condition. The FAA considers all land uses compatible that are exposed to DNL less than 65.

Table 1-2. Existing 2022 and Forecast 2027 Land Use Compatibility

Source: HMMH, 2022

Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2022	2027	2022	2027	2022	2027	2022	2027	2022	2027
65-70 DNL	1,070.54	1,823.31	503	2,424	0	276	225	1,227	0	151
70-75 DNL	534.13	935.53	12	57	0	0	3	23	0	0
>75 DNL	626.02	971.30	0	0	0	0	0	0	0	0
Total			**515**	**2,481**	**0**	**276**	**228**	**1,250**	**0**	**151**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

Table 1-3. Existing 2022 and Forecast 2027 Noise-Sensitive Sites

Source: HMMH, 2022

Contour Interval	Schools		Place of Worship		Day Care		Transient Lodging	
	2022	2027	2022	2027	2022	2027	2022	2027
65-70 DNL	0	0	0	1	0	1	0	1
70-75 DNL	1	1	0	0	0	0	0	0
>75 DNL	0	0	0	0	0	0	0	0
Total	**1**	**1**	**0**	**1**	**0**	**1**	**0**	**1**

[13] Day-Night Average Sound Level (DNL) noise contours represent lines of equal noise exposure as it occurs over a 24-hour period, with the assumption that noise events occurring at night (10 p.m. to 7 a.m.) are 10 dB louder than actual.

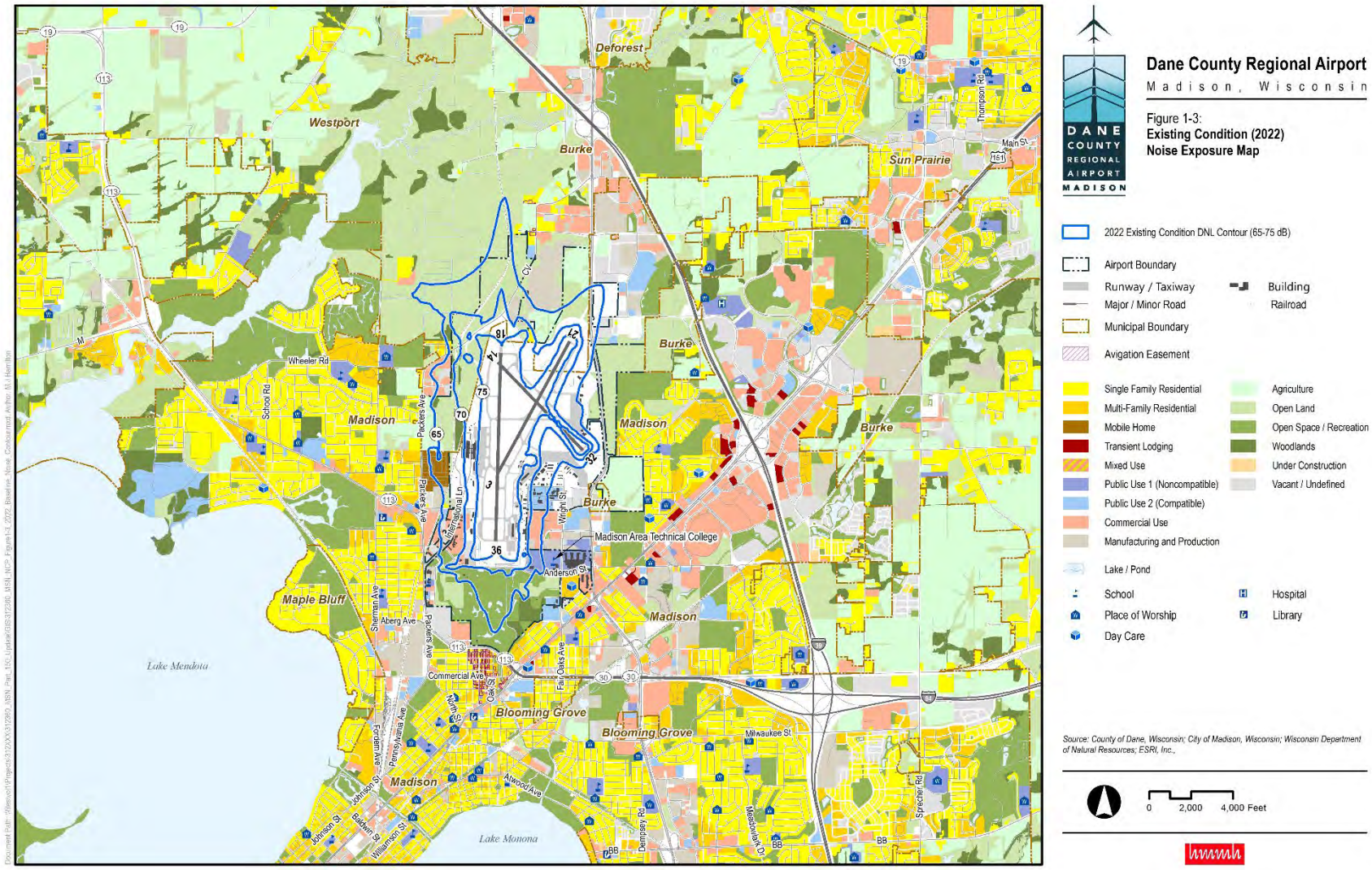

Figure 1-3. Existing Condition (2022) Noise Exposure Map

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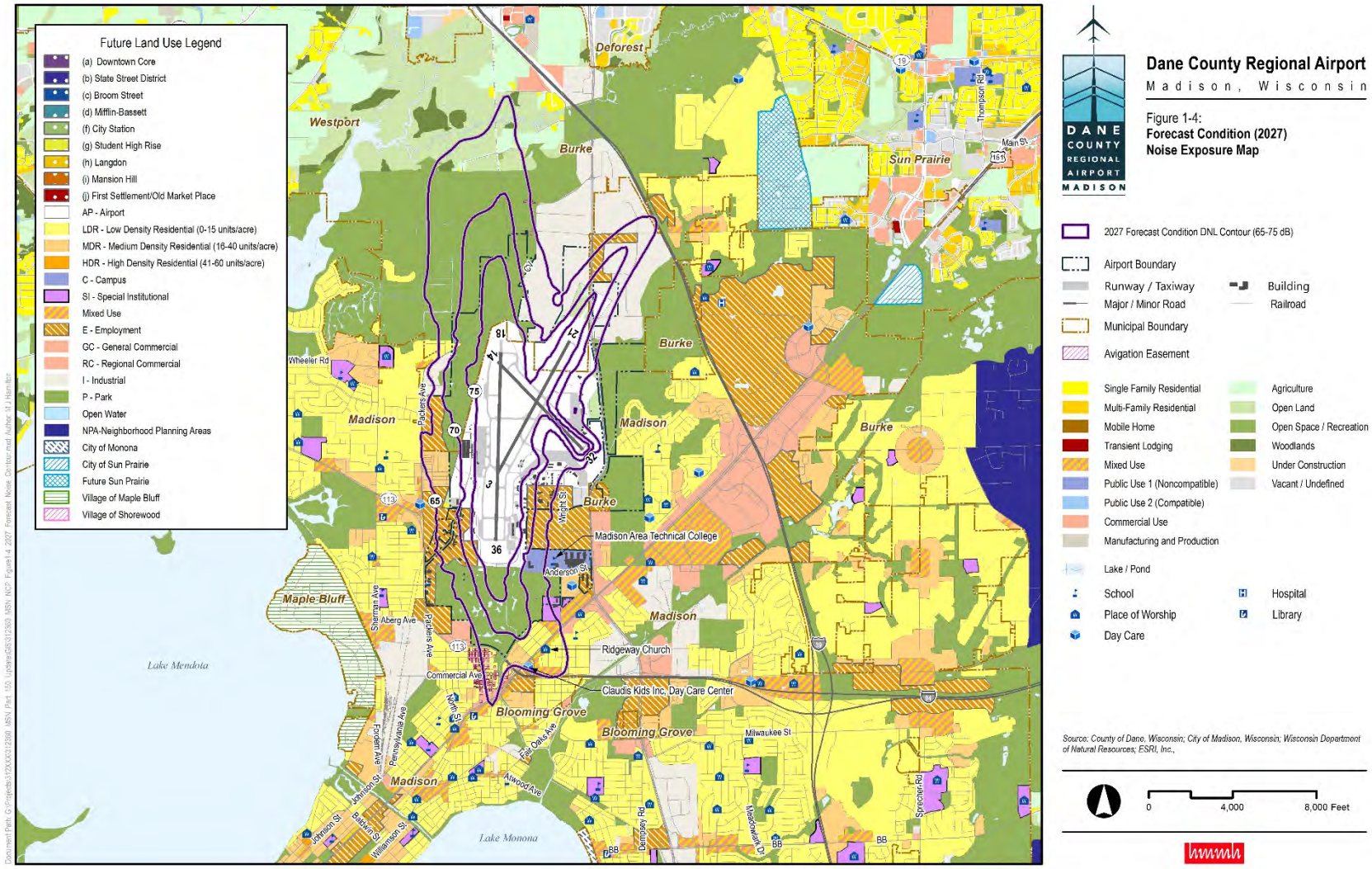

Figure 1-4. Forecast Condition (2027) Noise Exposure Map

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2 Noise Compatibility Program – Noise Abatement Measures

Noise abatement measures are those that control noise at the source. Such measures include aircraft flight procedures, airport layout, preferential runway use, and arrival and departure procedures. The intention of noise abatement measures in the NCP is to reduce the number of people and noise-sensitive sites exposed to aircraft noise of 65 DNL and higher.[14]

Section 2.1 identifies all existing noise abatement measures at MSN, including their implementation status. For this Part 150 Study, Dane County determined, for each measure recommended in the 1991 MSN NCP, whether to continue as written, continue with minor modifications, or eliminate.

Section 2.2 describes each of the nine County-recommended noise abatement measures in each of the Part 150-required categories to analyze for inclusion in the updated NCP, as shown in Table 2-1. The section includes summaries of noise benefit analyses where applicable.

Table 2-1. Summary of Dane County-Recommended Noise Abatement Measures
Source: MSN, 2023

Part 150 Category	Noise Abatement Measure	
	Number	Title
Flight Tracks/Paths	NA-1	Develop noise abatement flight paths and encourage the use of such flight paths to avoid aircraft overflying educational facilities to the south of the Airport
	NA-2	Encourage aircraft departing Runway 32 to pass through 2,500 feet Mean Sea Level (MSL) before turning left
	NA-3	Encourage eastbound and southbound aircraft exceeding 12,500 pounds departing Runway 3 to climb on runway heading through 2,500 feet Mean Sea Level (MSL) before turning right
	NA-4	Encourage all aircraft exceeding 12,500 pounds and departing Runway 21 to turn left 10 degrees as soon as safe and practicable
	NA-5	Establish visual approach and departure corridors for helicopters
Preferential Runway Use	NA-6	Modify the existing preferential runway use program to improve the compliance with aircraft arriving from and departing to the north
Arrival/Departure Procedures	NA-7	Encourage the use of Noise Abatement Departure Profile (NADP) procedures by operators of jet aircraft
Airport Layout Modifications	NA-8	Consider runway reconfiguration to address noncompatible land use to the south of the Airport
Use Restrictions	NA-9	Encourage the Wisconsin Air National Guard 115th Fighter Wing to continue limiting F-35A aircraft operations to the daytime (7 a.m. to 10 p.m.), except for emergency situations

[14] 14 CFR Part 150, Appendix A, Table 1.

Section 2.3 discusses the noise abatement measures considered that the County is not recommending in this NCP.

2.1 Existing Noise Abatement Measures

The Part 150 process requires a complete review of the existing NCP measures and, if implemented, the effectiveness of each measure in reducing the number of people exposed to 65 DNL and higher noise exposure from aircraft operations. Dane County, having participated in the FAA's voluntary Part 150 program since the early 1990s, has implemented all nine NCP measures previously approved by the FAA. As a result of implementation of all the NCP measures, one of the preferential runway use measures was superseded with a new preferential runway use measure that incorporated the new runway (Runway 3/21), which was added for noise abatement purposes. Table 2-2 lists the nine Dane County-recommended noise abatement measures in the 1991 NCP that were approved by the FAA in the 1993 Record of Approval, states the implementation status of each measure, and whether to continue, modify or eliminate the measure in the 2024 NCP. This information is presented in the 2022 NEM document Section 4, *Existing Noise Compatibility Program*, and the NEM document's Appendix B.

Table 2-2. Status of 1991 NCP Noise Abatement Measures
Source: MSN & HMMH, 2022

Number	Title	Implementation Status	Recommendation for 2024 NCP
NA-1	Continue the existing runway use program.	Superseded by NA-7	Eliminate
NA-2	Continue requiring aircraft departing on Runway 31 to pass through 2,500 feet MSL (1,600 feet above ground level) before turning left.	Implemented	Continue
NA-3	Establish visual approach and departure corridors for helicopters.	Implemented	Continue
NA-4	Encourage use of noise abatement departure procedures by operators of jet aircraft.	Implemented	Modify
NA-5	Encourage Air National Guard to construct a hush house for F-16 engine maintenance runups prior to converting its fleet.	Implemented	Eliminate
NA-6	Build new 6,500-foot Runway 3/21.	Implemented	Eliminate
NA-7	Adopt runway use system preferring departures on Runways 3, 31, and 36 and arrivals on Runways 13, 18, and 21.	Implemented	Modify
NA-8	Require east and southbound aircraft exceeding 12,500 pounds and departing on Runway 3 to climb on runway heading through 2,500 feet MSL before turning right.	Implemented	Continue
NA-9	Require all aircraft exceeding 12,500 pounds and departing Runway 21 to turn left 10 degrees as soon as safe and practicable.	Implemented	Continue

The remainder of this section provides additional details for each of the existing noise abatement measures and their implementation status based on analysis. To complete the analyses, the Study Team

acquired flight track and aircraft identification data for MSN from Envirosuite[15] for calendar year 2021. Runway 13/31 has been renumbered to 14/32[16] since the 1991 NCP.

2.1.1 NA-1: Continue the existing runway use program

The statement of measure **NA-1** in the 1991 MSN NCP is as follows:

Dane County has a runway use program preferring Runways 31 and 36 for takeoff and Runways 18 or 13 for landing by all aircraft over 12,500 pounds, weather and traffic permitting. This directs aircraft to and from the north, away from Madison. While traffic at Madison and congestion at destination airports is making this program more difficult to observe, it should remain in place.

Implementation Status: Not Applicable

With the implementation of NA-6: Build new 6,500-foot Runway 3/21, this measure has been superseded by the runway use measure in NA-7.

Recommendation: Eliminate due to opening of Noise Abatement Runway 3/21.

2.1.2 NA-2: Continue requiring aircraft departing on runway 31 to pass through 2,500 feet mean sea level (MSL) before turning left

The statement of measure **NA-2** in the 1991 MSN NCP is as follows:

This is intended to keep low flying aircraft from turning directly over the Cherokee subdivision west of the airport. This procedure is now in place and should be continued.

Implementation Status: Implemented

MSN ATCT Order 8400.9I[17], effective December 17, 2002, establishes procedures for Noise Abatement as safety allows. Order 8400.91 specifies, "Turbojet aircraft exceeding 12,500 pounds or more departing Runway 32 should climb on runway heading to 2,500 feet before turning southwest bound." The Tower Order establishes that this Noise Abatement procedure has been implemented.

To determine implementation status, aircraft departures from Runway 32 were analyzed using a gate[18] positioned in parallel to Runway 32 to determine the altitude of the flights upon turning left of the Runway extended centerline. Analysis showed that in 2021, approximately 54 percent of jet operations on Runway 32 complied with NA-2 (1,114 out of 2,048 total jet operations were at or above 2,500 feet when passing through the gate).

Recommendation: Continue measure in 2024 NCP.

[15] https://envirosuite.com/
[16] Runway numbers are based on the runway's orientation relative to magnetic north. For example, a runway with a magnetic heading of 135° to 144° will be numbered 14, and one with a magnetic heading of 145° to 154° will be numbered 15. Runway numbers are occasionally changed due to changes in the Earth's magnetic field.
[17] Order MSN ATCT 8400.9I, "Informal Runway Use Noise Abatement Program, Converging Flow Operations and Opposite Direction," is included as Appendix C.
[18] A gate is a two-dimensional analysis window used in HMMH-proprietary flight track analysis software to determine compliance with aircraft procedures.

2.1.3 NA-3: Establish visual approach and departure corridors for helicopters

The statement of measure **NA-3** in the 1991 MSN NCP is as follows:

Three noise-compatible corridors extending to the northwest and northeast over undeveloped areas and to the south and east over State Highway 30 and commercial areas have been defined. When weather and traffic conditions permit, helicopters should be routed over these corridors. This would remove low-flying helicopters from residential areas under visual flying conditions.

Implementation Status: Implemented

To determine implementation status, the Study Team identified checkpoints and defined three helicopter arrival and departure corridors at MSN. These corridors and checkpoints were replicated using gates to represent each checkpoint; if helicopters were using these checkpoints, a wide majority of helicopter operations would be contained within the three gates defined. There is no clear pattern to which the helicopter operations comply to NA-3. Notably, analysis shows that it appears operations seem to focus traffic to and from Verona Airport to the southwest of MSN.

Recommendation: Continue measure in 2024 NCP.

2.1.4 NA-4: Encourage use of noise abatement departure procedures by operators of jet aircraft

The statement of measure **NA-4** in the 1991 MSN NCP is as follows:

All airlines have established noise abatement departure profiles involving a thrust cutback after takeoff. A standard procedure is also available to operators of business jet aircraft – the NBAA standard departure procedure. In addition, some aircraft manufacturers describe noise abatement departure procedures in the operator's manuals. The airport management should encourage operators of jet aircraft to use the appropriate noise abatement departure profile for their type of aircraft.

Implementation Status: Implemented

Information from MSN staff and those familiar with ATCT procedures suggests strong compliance with NA-4 via relevant signage around the Airport, runways, and airport facilities to inform pilots of the noise abatement procedures. Additionally, this measure is a priority for both MSN staff and tower operators and is used by the tower whenever possible. The continued usage of noise abatement procedures is a frequent subject during airport meetings. Compliance is determined through self-reporting of aircraft operators.

Recommendation: Modify and incorporate as measure in 2024 NCP.

2.1.5 NA-5: Encourage Air National Guard to construct a hush house for F-16 engine maintenance runups prior to converting its fleet

The statement of measure **NA-5** in the 1991 MSN NCP is as follows:

The Air National Guard anticipates the replacement of the A-10 aircraft with the F-16 within the next several years. The A-10 is a very quiet aircraft, and noise from engine maintenance runups is not severe. Noise from F-16 runups, however, is much louder. The Guard plans to construct a noise suppression structure, commonly called a "hush house" for attenuating the noise from F-16 engine runups. Airport management should encourage the Guard to follow through with those plans.

Implementation Status: Implemented

The Air National Guard constructed a hush house since the completion of the 1991 NCP. Most maintenance runups for the F-16C are conducted in the hush house.

Recommendation: Eliminate because hush house was constructed and is no longer needed with the F-35A fleet.

2.1.6 NA-6: Build new 6,500-foot Runway 3/21

The statement of measure **NA-6** in the 1991 MSN NCP is as follows:

As operations increase, the airport will not be able to continue accepting arrivals from the north and sending departures to the north unless a new runway becomes available. The present contra-flow procedure (described in Measure 1 above) requires long separations between aircraft, which can increase delays. This will become an increasingly serious problem as traffic at Madison and congestion at destination airports increase. Construction of Runway 3-21 would allow the airport to continue operating with an improved version of its present contra-flow runway use program. The modified program is explained in Measure 7 below.

Implementation Status: Implemented

The first MSN Part 150 study began in 1990, and the NCP led to the construction of Runway 3/21 to reduce the effects of aircraft noise on surrounding communities. The 7,200-foot runway opened in 1998. Runway 3/21 currently serves as a secondary runway due to its many roles at MSN. The predominant use of this runway is currently for scramble departures of the F-16 aircraft, which reduces noise and improves land use compatibility to the south of the Airport.

Recommendation: Eliminate because Runway 3/21 was constructed and is being used as a Noise Abatement runway at MSN.

2.1.7 NA-7: Adopt runway use system preferring departures on Runways 3, 31, and 36, and arrivals on Runways 13, 18, and 21

The statement of measure **NA-7** in the 1991 MSN NCP is as follows:

After runway 3-21 is built, the existing runway use program should be changed to account for the use of the new runway. Departures would be encouraged on Runway 3 and arrivals on Runway 21. By continuing to favor departures to the north and arrivals from the north, the revised program would continue providing noise abatement to the heavily populated areas south of the airport.

Implementation Status: Implemented

The development of Tower Order 8400.9H establishes this noise abatement procedure has been implemented. The completed analysis shows that 51 percent of departures and 51 percent of arrivals comply with NA-7 runway use (note that this data does not consider aircraft weight). Compliant jet aircraft operations make up 50 percent of departures and 50 percent of arrivals (note that this data considers aircraft weight). Runway usage indicates adherence to NA-1 and NA-7 when winds allow.

Recommendation: Modify and incorporate as measure in 2024 NCP

2.1.8 NA-8: Require east and southbound aircraft exceeding 12,500 pounds and departing on Runway 3 to climb on runway heading through 2,500 feet MSL before turning right

The statement of measure **NA-8** in the 1991 MSN NCP is as follows:

This is intended to avoid departure turns at low altitude over-populated areas northeast of the new Runway 3-21. This procedure would require aircraft to climb to 1,600 feet above the ground before beginning right turns.

Implementation Status: Implemented

To evaluate implementation of NA-8, the Study Team researched the weight of aircraft types that regularly operate at MSN. Once weight was determined, aircraft types that were above 12,500 pounds were selected from the departures on Runway 3. Tracks which did not turn right were filtered out of the data set, after which all tracks entering the gate displayed were evaluated for their altitude upon crossing. Analysis found that in 2021, 207 of the 235 operations by aircraft above 12,500 pounds departing Runway 3 and turning right were above 2,500 feet MSL before they did so. This analysis indicates a compliance rate of approximately 88 percent, which is close to full compliance with NA-8.

Recommendation: Continue measure in 2024 NCP.

2.1.9 NA-9: Require all aircraft exceeding 12,500 pounds and departing Runway 21 to turn left 10 degrees as soon as safe and practicable

The statement of measure **NA-9** in the 1991 MSN NCP is as follows:

Straight-out departures and right turns from Runway 21 would cause overflights of residential areas southwest of the airport which have not previously been exposed to low aircraft overflights. While cumulative noise exposure would be quite low, this 10-degree left turn would put aircraft over the noise compatible corridor extending south-southwest from the airport toward the isthmus.

Implementation Status: Implemented

To evaluate implementation of NA-9, the Study Team researched the weight of aircraft types that regularly operate at MSN. Once weight was determined, aircraft types that were above 12,500 pounds and turned left were selected from the departures on Runway 21. Of the 2,366 total operations above 12,500 pounds departing Runway 21, only 1,334 aircraft turned 10 degrees within the first portion of their flight. This analysis indicates a compliance rate of approximately 56 percent.

Recommendation: Continue measure in 2024 NCP.

2.2 Recommended Noise Abatement Measures

This section describes noise abatement measures recommended by the County including the potential benefits and implementation requirements for each measure. Implementation considerations include the responsible parties, estimated cost, funding sources, schedule, and requirements, such as the potential for environmental review. While many parties were involved in arriving at these recommendations, the recommendations are solely the County's and not those of the TAC, consultants, or other stakeholders.

Each recommended noise abatement measure in this NCP Report is a notional design that was developed to determine potential noise benefits. Any FAA-approved noise abatement flight procedure may need to be developed in detail and implemented by the FAA to address safety, efficiency, and aircraft performance considerations. Therefore, precise implementation details, such as flight track locations and altitudes developed by the FAA, may differ from the notional noise abatement measure designs presented in this NCP Report. Detailed noise abatement measure designs may require environmental review under NEPA, which may yield different noise results than the results presented in this NCP. Contradictory results arising from subsequent environmental review efforts may be due to differences in approaches to noise abatement measure design or noise modeling methodology. Any NEM updates performed by the County in the future would reflect actual implementation of the NCP measures as of the date of those NEM updates.

The FAA-accepted forecast condition (2027) NEM contours (as provided in Section 1.7 and shown in Figure 1-4 provide the baseline for the noise evaluations of noise abatement measures NA-6, -7 and -8 below. Each measure compares the DNL contours, dwelling units and population counts to the forecast (2027) noise exposure contours. Detailed descriptions and analysis results for the County-recommended measures are provided below.

Analysis of potential NCP noise abatement measures and their potential benefits utilized both the FAA's and Department of Defense's noise modeling software, AEDT version 3e and NoiseMAP version 7.3,

respectively. The AEDT is used for modeling civilian aircraft, while NoiseMAP is used for military aircraft. Both models use airport-specific information (e.g., runway data and terrain); flight track information; and aircraft operation levels distributed by time of day, aircraft fleet mix, and aircraft altitude profiles to develop noise exposure contours.

During an annual average 24-hour period, referred to as "annual average day" (AAD), the models account for each aircraft flight along flight tracks departing from or arriving at an airport. The flight tracks are coupled with information in the model's database relating to noise levels at varying distances and flight performance data for each type of aircraft. The models also consider terrain and average weather conditions. In general, the model computes and sums noise levels at grid locations at ground level around the Airport. The cumulative values of noise exposure at each grid location are used to develop contours of equal noise exposure.

The following County-recommended measures are organized by the FAA-required categories for consideration: Flight Tracks/Paths (NA-1 through NA-5), Preferential Runway Use (NA-6), Arrival/Departure Procedures (NA-7), Airport Layout Modifications (NA-8) and Use Restrictions (NA-9).

2.2.1 NA-1: Develop noise abatement flight paths and encourage use of such flight paths to avoid aircraft overflying educational facilities to the south of the Airport

The County seeks to address community concerns related to aircraft flying directly over the education facilities (e.g., schools) near the Airport through implementation of this measure. Schools near the Airport were identified to determine whether flight paths could be modified to avoid flying directly over the nearby schools. The nearest schools situated off of runway ends are located south of the Airport; aircraft operations that overfly schools were identified as arrivals to Runways 3 and 36, and departures from Runways 21 and 18.

Two schools, Isthmus Montessori Academy and Sherman Middle/Shabazz-City High School, are located southwest of Runway 3/21 and under the final approach to Runway 3. For the safe arrival of aircraft, pilots must align with the runway centerline as soon as feasible. Although two noise abatement flight path arrivals have been notionally developed for Runway 3 for this measure, it is not possible to develop an arrival flight path to Runway 3 that avoids these two schools within 1.5 miles of the runway end as evidenced in Figure 2-1**.** However, the recommended preferential runway use measure (see Section 2.2.6, NA-6) intends to limit the use of Runway 3 for arrivals, which reduces the need for a specified arrival flight path to Runway 3 that avoids all schools under Runway 3 arrival paths.

There are several schools near the final approach to Runway 36. Arrivals to this runway are able to narrowly avoid overflying of Lowell Elementary School if they are aligned prior to passing over the northern shoreline of Lake Monona, also illustrated in Figure 2-1 (see flight tracks A36J025 and A36J050).

Departures can possibly make turns closer to the Airport than arrivals to avoid schools more effectively. Figure 2-2 illustrates departure tracks from Runway 21 and Runway 18 that avoid overflying of schools. Departures from Runway 21 can avoid the two schools by conducting a 90-degree left turn after takeoff (see flight track D21J024 on Figure 2-2) until the aircraft gets to the shoreline of Lake Mendota. This places the flight track over Warner Park and avoids the two schools near the Runway end. Runway 21 departures can also avoid overflying the schools by turning to a heading of 180 degrees after takeoff,

then turning east and following Highway 30 (see flight track D21J061). Runway 18 departures can avoid overflying schools most effectively by turning to a heading of either 90 (see flight track D18J031) or 270 (see flight track D18J054) degrees at Highway 30. Another Runway 18 departure flight path is able to avoid schools south of the Airport by using a slight offset turn upon takeoff, passing slightly west (see flight track D18J081) of Lowell Elementary School before crossing over Lake Monona.

Conclusion: *MSN Noise Abatement Measure NA-1* addresses community concerns over aircraft flying directly over educational facilities. Dane County is recommending the FAA design and implement slight changes to existing flight procedures to result in most aircraft not overflying educational facilities to the south of MSN. The County does not expect the implementation of this procedure to provide benefit within the 2027 65 DNL contour, but it is expected to benefit the children learning in these nearby educational facilities.

Table 2-3 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Noise Abatement Measure NA-1.

Table 2-3. Implementation Summary for MSN NCP Measure NA-1
Source: HMMH 2023

Implementation Item	Discussion
Benefits	The measure greatly reduces direct overflights of educational facilities to the south of MSN.
Rationale	The County is recommending this measure to address community concerns regarding aircraft overflying educational facilities.
Responsible Parties	The FAA would need to design and implement new flight paths; and aircraft operators would be responsible for flying the new flight paths.
Estimated Costs	The cost is unknown as the FAA must determine the cost to design and implement these slightly modified flight paths.
Funding Sources	FAA
Requirements	FAA to design and implement new flight procedures.
Estimated Schedule	Within two years of FAA approval of this measure

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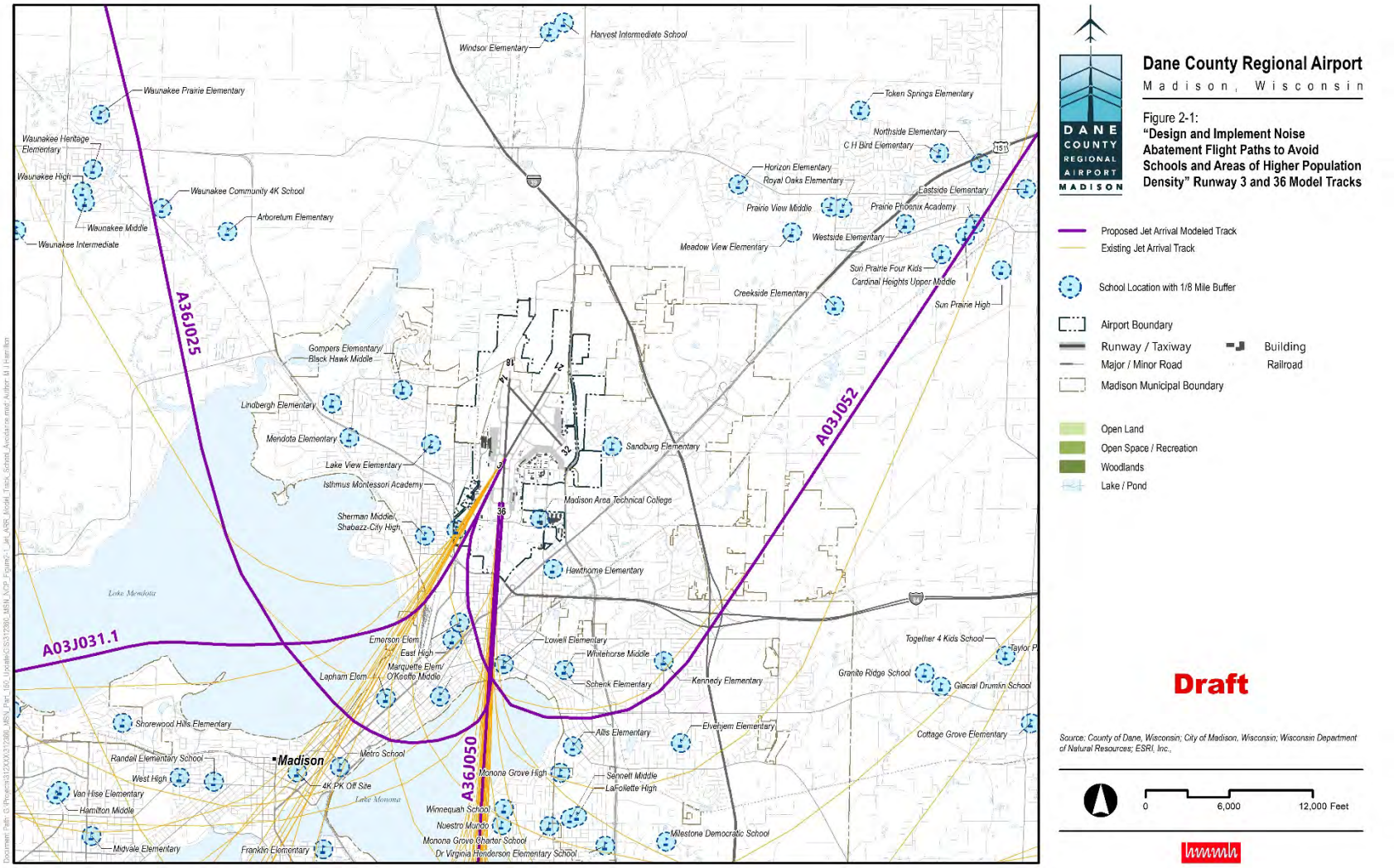

Figure 2-1. Noise Abatement Arrival Flight Paths to Avoid Schools – Runway 3 and 36

Source: 2023 MSN Part 150 Noise Compatibility Study

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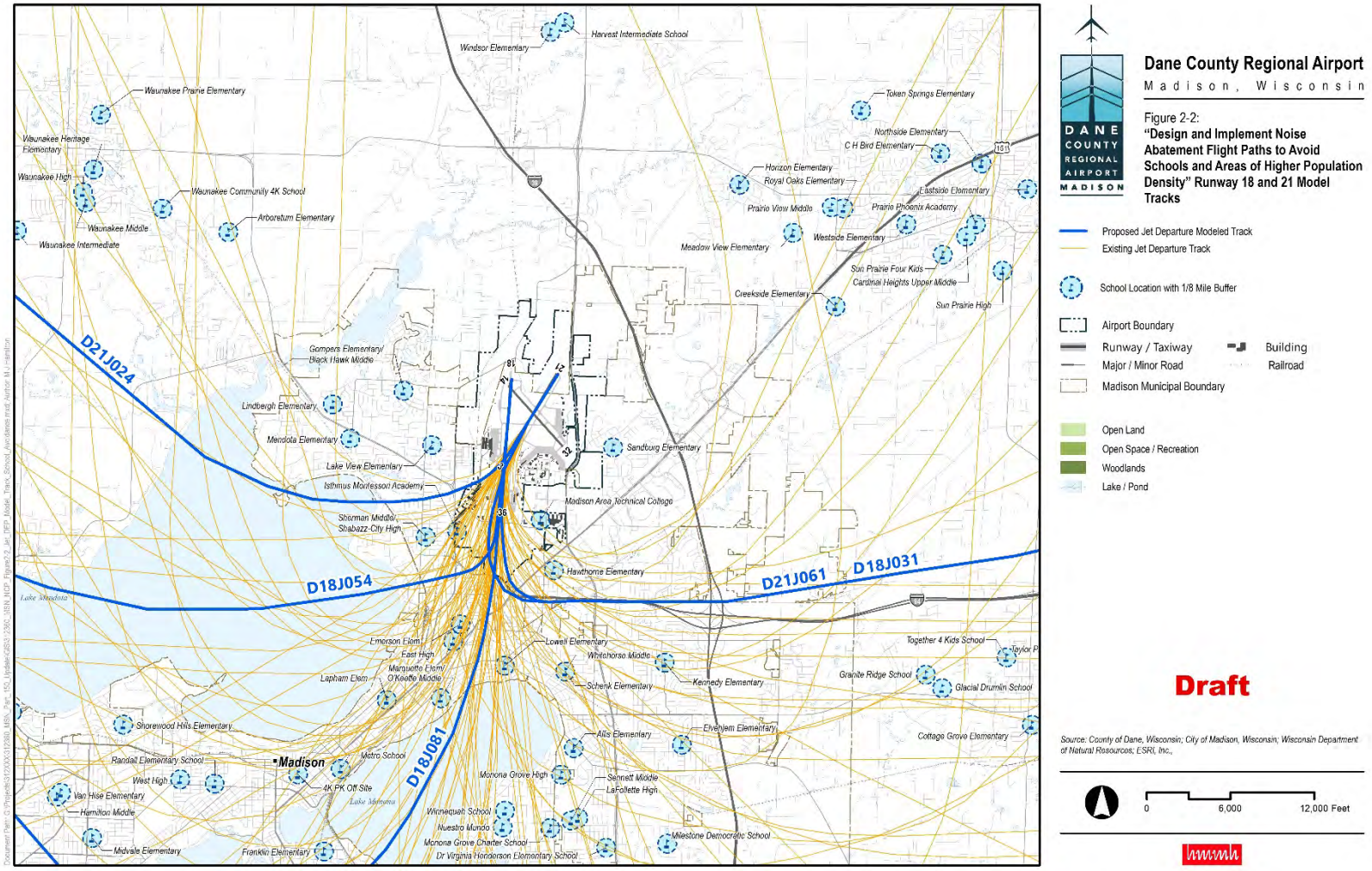

Figure 2-2. Noise Abatement Departure Flight Paths to Avoid Schools – Runway 18 and 21

Source: 2023 MSN Part 150 Noise Compatibility Study

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2.2.2 NA-2: Encourage aircraft departing Runway 32 to pass through 2,500 feet Mean Sea Level (MSL) before turning left

This existing measure was intended to keep low flying aircraft from turning directly over the Cherokee subdivision west of the Airport, which is situated outside of the 2027 65 DNL contour. This procedure is currently in place and should be continued to ensure noise is not shifted to this community.

The County recommends continuing this existing noise abatement departure procedure with minor modifications to the title. MSN ATCT Order 8400.9I,[19] effective December 17, 2012, establishes procedures for Noise Abatement as safety allows. Order 8400.9I specifies, "Turbojet aircraft exceeding 12,500 pounds or more departing runway 32 should climb on runway heading to 2,500 feet before turning southwest bound." Runway 14/32 is identified as the crosswind runway given the wind coverage it provides, the size of the critical aircraft it is intended to serve and its proximity to the general aviation areas.

Conclusion: *MSN Noise Abatement Measure NA-2* continues a procedure to avoid low overflights of noise-sensitive areas. Not continuing this measure may introduce additional aircraft noise to this noise-sensitive community.

Table 2-4 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Noise Abatement Measure NA-2.

Table 2-4. Implementation Summary for MSN NCP Measure NA-2
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This existing measure has been a successful part of the MSN noise abatement program meant to keep low flying aircraft from turning directly over the Cherokee subdivision west of the Airport.
Rationale	The County is recommending the continuation of MSN Noise Abatement Measure NA-2 because it continues to be an effective noise abatement procedure by reducing aircraft overflying noise-sensitive land uses.
Responsible Parties	Aircraft operators
Estimated Costs	No federal funding will be requested for implementation.
Funding Sources	Not applicable
Requirements	No requirements to implement
Estimated Schedule	Not applicable as this measure is currently implemented.

[19] MSN ATCT Order 8400.9I, "Informal Runway Use Noise Abatement Program, Converging Flow Operations and Opposite Direction," effective December 17, 2012, is included as Appendix F.

2.2.3 NA-3: Encourage eastbound and southbound aircraft exceeding 12,500 pounds departing Runway 3 to climb on runway heading through 2,500 feet Mean Sea Level (MSL) before turning right

This existing noise abatement departure procedure encourages aircraft to climb to 1,600 feet above the ground before beginning right turns. This measure was intended to avoid departure turns at low altitude overpopulated areas northeast of Runway 3. This procedure is currently in place and should be continued to ensure noise is not shifted to residential areas.

The County recommends continuing this existing noise abatement departure procedure with minor modifications to the title. MSN ATCT Order 8400.9I,[20] effective December 17, 2012, establishes procedures for Noise Abatement as safety allows. Order 8400.9I specifies, "Traffic permitting, turbojet aircraft exceeding 12,500 pounds or more departing runway 3, should climb on runway heading to 2,500 feet before turning east or southbound."

Conclusion: *MSN Noise Abatement Measure NA-3* continues encouraging east and southbound aircraft exceeding 12,500 pounds and departing on Runway 3 to climb on runway heading through 2,500 feet MSL before turning right. This measure continues a procedure to avoid low overflights of noise-sensitive areas, which are outside of the 2027 65 DNL contour. Not continuing this measure may introduce additional aircraft noise to these noise-sensitive communities.

Table 2-5 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Noise Abatement Measure NA-3.

Table 2-5. Implementation Summary for MSN NCP Measure NA-3
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This existing measure has been a successful part of the MSN noise abatement program meant to keep low flying aircraft from turning directly over noise-sensitive communities.
Rationale	The County is recommending the continuation of MSN Noise Abatement Measure NA-3 because it continues to be an effective noise abatement procedure by reducing aircraft overflying of noise-sensitive land uses.
Responsible Parties	Aircraft operators
Estimated Costs	No federal funding will be requested for implementation.
Funding Sources	Not applicable
Requirements	No requirements to implement
Estimated Schedule	Not applicable as this measure is currently implemented.

[20] MSN ATCT Order 8400.9I, "Informal Runway Use Noise Abatement Program, Converging Flow Operations and Opposite Direction," effective December 17, 2012, is included as Appendix F.

2.2.4 NA-4: Encourage all aircraft exceeding 12,500 pounds and departing Runway 21 to turn left 10 degrees as soon as safe and practicable

This existing measure recognizes that straight-out departures and right turns from Runway 21 would cause overflying of residential areas southwest of the Airport which have not previously been exposed to low flying aircraft. While cumulative noise exposure in this area is below 65 DNL, continued use of the 10-degree left turn would concentrate aircraft over the noise compatible corridor extending south-southwest from the Airport toward the isthmus. This procedure is now in place and should be continued to ensure noise is not shifted to residential areas.

The County recommends continuing with the existing noise abatement departure procedure with minor modifications to the title. MSN ATCT Order 8400.9I,[21] effective December 17, 2002, establishes procedures for Noise Abatement as safety allows. Order 8400.9I specifies, "Turbojet aircraft 12,500 pounds or more departing runway 21 should be turned to a 200º heading as soon as practicable."

Conclusion: *MSN Noise Abatement Measure NA-4* continues encouraging all aircraft exceeding 12,500 pounds and departing Runway 21 to turn slightly left immediately after departure to avoid noise-sensitive communities. This measure continues a procedure that avoids low overflying of noise-sensitive areas, which are outside of the 2027 65 DNL contour. Not continuing this measure may introduce additional aircraft noise to these noise-sensitive communities.

Table 2-6 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Noise Abatement Measure NA-4.

Table 2-6. Implementation Summary for MSN NCP Measure NA-4
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This existing measure has been a successful part of the MSN noise abatement program meant to keep low flying aircraft from turning directly over noise-sensitive communities.
Rationale	The County is recommending the continuation of MSN Noise Abatement Measure NA-4 because it continues to be an effective noise abatement procedure by reducing aircraft overflying noise-sensitive land uses.
Responsible Parties	Aircraft operators
Estimated Costs	No federal funding will be requested for implementation.
Funding Sources	Not applicable
Requirements	No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

[21] MSN ATCT Order 8400.9I, "Informal Runway Use Noise Abatement Program, Converging Flow Operations and Opposite Direction," effective December 17, 2012, is included as Appendix F.

2.2.5 NA-5: Encourage use of the established visual approach and departure corridors for helicopters

This existing measure established three noise-compatible helicopter visual approach and departure corridors that extend to the northwest and northeast over undeveloped areas and to the south and east over State Highway 30 and commercial areas. When weather and traffic conditions permit, helicopters should be routed over these corridors. This procedure is now in place and should be continued to ensure low-flying helicopters avoid residential areas under visual flying conditions.

The County recommends continuing with the existing noise abatement measure for helicopters which defines three noise-compatible visual approach and departure corridors as described above.

Conclusion: *MSN Noise Abatement Measure NA-5* continues a measure that is already in place to avoid low-flying helicopters over noise-sensitive areas. Not continuing this measure may introduce additional aircraft noise in residential areas.

Table 2-7 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Noise Abatement Measure NA-5.

Table 2-7. Implementation Summary for MSN NCP Measure NA-5
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This existing measure has been a successful part of the MSN noise abatement program meant to avoid low-flying helicopters over noise-sensitive areas.
Rationale	The County is recommending the continuation of MSN Noise Abatement Measure NA-5 because it continues to be an effective noise abatement procedure by reducing helicopter noise in noise-sensitive areas.
Responsible Parties	Helicopter operators, including the WIARNG when able.
Estimated Costs	No federal funding will be requested for implementation.
Funding Sources	Not applicable
Requirements	No requirements to implement.
Estimated Schedule	Not applicable as this measure is currently implemented.

2.2.6 NA-6: Modify the existing preferential runway use program to improve the compliance with aircraft arriving from and departing to the north.

The County recognizes that favoring departures to the north and arrivals from the north provides noise abatement benefits to the heavily populated areas south of the Airport. The modified preferential runway use program at MSN includes:

- Continuing the preferential runway use (Section 2.2.6.1), which is:
  - Departures from Runways 3, 32, and 36
  - Arrivals to Runways 14, 18, and 21
- Encouraging the 115th Fighter Wing to continue using Runway 3 for scramble operations (Section 2.2.6.2),
- Encouraging the 115th Fighter Wing to request Runways 3 or 36 during south flow operations (Section 2.2.6.3)

2.2.6.1 Encourage routing of aircraft operations to the north of the airport including departures on Runway 3, 32, and 36 and arrivals on Runways 14, 18, and 21

This existing measure recognizes that aircraft arriving and departing to the north is most effective for noise abatement due to the higher concentration of compatible land use situated to the north of the Airport. This measure directs aircraft to and from the north, away from the City of Madison. For noise abatement, it is most beneficial for all aircraft over 12,500 pounds, weather and traffic permitting, to depart Runways 3, 32, and 36, and arrive on Runway 14, 18, and 21. This procedure is now in place and should be continued to ensure noise is not shifted to residential areas.

The County recommends continuing this existing preferential runway use measure. MSN ATCT Order 8400.9I,[22] effective December 17, 2012, establishes procedures for Noise Abatement as safety allows. Order 8400.9I specifies, "The most effective noise abatement method is to take-off runway 36, 32 and 3, land runway 18, 14 and 21."

2.2.6.2 Encourage WIANG 115th FW to continue departing Runway 3 for all scramble operations

This measure intends to take advantage of the compatible land use off the end of Runway 3. The forecast 2027 NEM represents noise modeling assumptions in which 90 percent of scramble departures are projected to use Runway 3 and the remaining 10 percent would be split between Runways 18 and 36. Encouraging even greater use of Runway 3 for F-35A scramble departures is anticipated to further reduce the amount of noncompatible land use to the south of the airfield as shown in the forecast 2027 NEM.

The County recommends that the WIANG continue use of Runway 3, which was originally constructed as a noise abatement runway, for scramble departures to facilitate the expected noise abatement.

[22] MSN ATCT Order 8400.9I, "Informal Runway Use Noise Abatement Program, Converging Flow Operations and Opposite Direction," effective December 17, 2012, is included as Appendix F.

2.2.6.3 Encourage WIANG 115th FW to request Runway 3 or Runway 36 for departures during south flow

This recommended measure recognizes the significant amount of noncompatible land within the 65 DNL contour to the south and southeast of Runway 18. An analysis of the primary noise contributors indicates that the southeastward lobe of the contour primarily results from F-35A departures from Runway 18. Currently, 35 percent of the military jet operations and 4 percent of the military scramble operations depart on Runway 18 on an annual basis, including approximately 670 F-35A departures modeled in the forecast 2027 NEM scenario.

This measure recommends that the WIANG request the FAA ATCT allow the F-35A aircraft to depart north during south flow. Since Runway 3 is not long enough to accommodate normal F-35A departures, the result would likely be that they depart Runway 36 if the FAA grants their requests. If Runway 18 departures of the F-35A aircraft were shifted to Runway 36, it would reduce noncompatible land use to the south as shown in analysis of measure NA-8.

Figure 2-3 shows the noise contours associated with F-35A pilots successfully requesting to depart Runway 36 instead of Runway 18, 100 percent of the time for non-scramble departures. The 65 DNL contour would extend approximately 7,100 feet north and 2,070 feet south of the airfield property along the centerline of Runway 18/36. A lobe to the northeast would extend 5,000 feet north and 5,000 feet east from the airfield boundary, approaching I-39/90. Laterally, the contour would extend approximately 1,130 feet west of the airfield property to the edge of Packers Avenue. Figure 2-4 shows a comparison of the forecast 2027 NEM and this measure. The 65 DNL contour lobe to the southeast of the airfield in the forecast 2027 NEM would retract to be nearly contained within the airport boundary. Similarly, the 65 DNL lobe to the south of the airfield in the forecast 2027 NEM would retract by 700 feet. Both of these changes to the contour are due to removal of F-35A departures from Runway 18. As shown on Figure 2-4, adoption of the measure would result in expansion of the 65 DNL contour approximately 1,200 feet to the north of the airfield and widening by 1,200 feet. This change is due to increased F-35A departures on Runway 36.

While this measure would reduce noncompatible land southeast of the airfield, it would slightly increase noncompatible land use north of Runway 36 with more flights departing to the north, which is preferred for noise abatement purposes. The additional noncompatible land use to the north would not occur if the F-35A departures moved to Runway 3 rather than Runway 36. A comparison of the land use noise exposure between the forecast 2027 NEM and this measure contour is provided in Table 2-8. Population within the 65 DNL contour would decrease by 1,692 people in 856 housing units. While the Madison Area Technical College Protective Services School would remain within the 65 DNL contour, the Hawthorne Elementary School would be outside of the 65 DNL contour.

Table 2-8. Land Use Noise Exposure Comparison between Forecast 2027 NEM and Moving all (100%) Runway 18 F-35A Departures to Runway 36

Source: 2020 Census

Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2027	NA-6 – 100%	2027 NEM	NA-6 – 100%	2027 NEM	NA-6 – 100%	2027 NEM	NA-6 – 100%	2027 NEM	NA-6 – 100%
65-70 DNL	1,823	1,791	2,424	903	276	146	1,227	434	151	77
70-75 DNL	936	900	57	16	0	0	23	4	0	0
>75 DNL	971	911	0	0	0	0	0	0	0	0
	3,730	**3,602**	**2,481**	**919**	**276**	**146**	**1,250**	**438**	**151**	**77**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

Figure 2-3 shows the noise contours associated with F-35A aircraft requesting and successfully receiving clearance to depart Runway 36 in lieu of Runway 18 departures for non-scramble operations 50 percent of the time. The 65 DNL contour would extend approximately 6,750 feet north and 2,070 feet south of the airfield property along the centerline of Runway 18/36. A lobe to the northeast would extend 5,000 feet north and 5,000 feet east from the airfield boundary, following Highway 39. Laterally, the contour would extend approximately 1,130 feet west of the airfield property to the edge of Packers Ave. Figure 2-4 shows a comparison of the forecast 2027 NEM and this proposed measure's noise contours. The 65 DNL lobe to the southeast of the airfield in the forecast 2027 NEM would recede by approximately 1,500 feet to East Washington Avenue. Similarly, the 65 DNL lobe to the south of the airfield in the forecast 2027 NEM would retract by 700 feet. Both of these changes to the contour are due to removal of 50 percent of the F-35A departures from Runway 18. Adoption of the measure would result in expansion of the 65 DNL contour approximately 50 feet to the north of the airfield and widening by 600 feet. This change is due to increased F-35A departures on Runway 36.

While this measure would reduce noncompatible land southeast of the airfield, it would slightly increase noncompatible land use north of Runway 36 because more flights would depart to the north, which is preferred for noise abatement purposes. This measure would also result in a reduction in noncompatible land uses within the 65 DNL contours to the southeast of the Runway 36 end and possible inclusion of nonresidential noncompatible land uses newly within the 65 and 70 DNL contour northeast of Runway 36, as shown in Table 2-9. A comparison of the land use noise exposure between the forecast 2027 NEM and this measure is provided in Table 2-9. Population within the 65 DNL contour would decrease by 795 people in 428 housing units. While the Madison Area Technical College Protective Services School would remain within the 65 DNL contour, the Hawthorne Elementary School would be outside of the 65 DNL contour.

Table 2-9. Land Use Noise Exposure Comparison between Forecast 2027 NEM and Moving 50% of Runway 18 F-35A Departures to 36

Source: 2020 Census

Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2027 NEM	NA-6 - 50%	2027 NEM	NA-6 - 50%	2027 NEM	NA-6 - 50%	2027 NEM	NA-6 - 50%	2027 NEM	NA-6 - 50%
65-70 DNL	1,823	1,819	2,424	1,671	276	221	1,227	809	151	120
70-75 DNL	936	927	57	15	0	0	23	3	0	0
>75 DNL	971	907	0	0	0	0	0	0	0	0
	3,730	**3,653**	**2,481**	**1,686**	**276**	**221**	**1,250**	**812**	**151**	**120**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

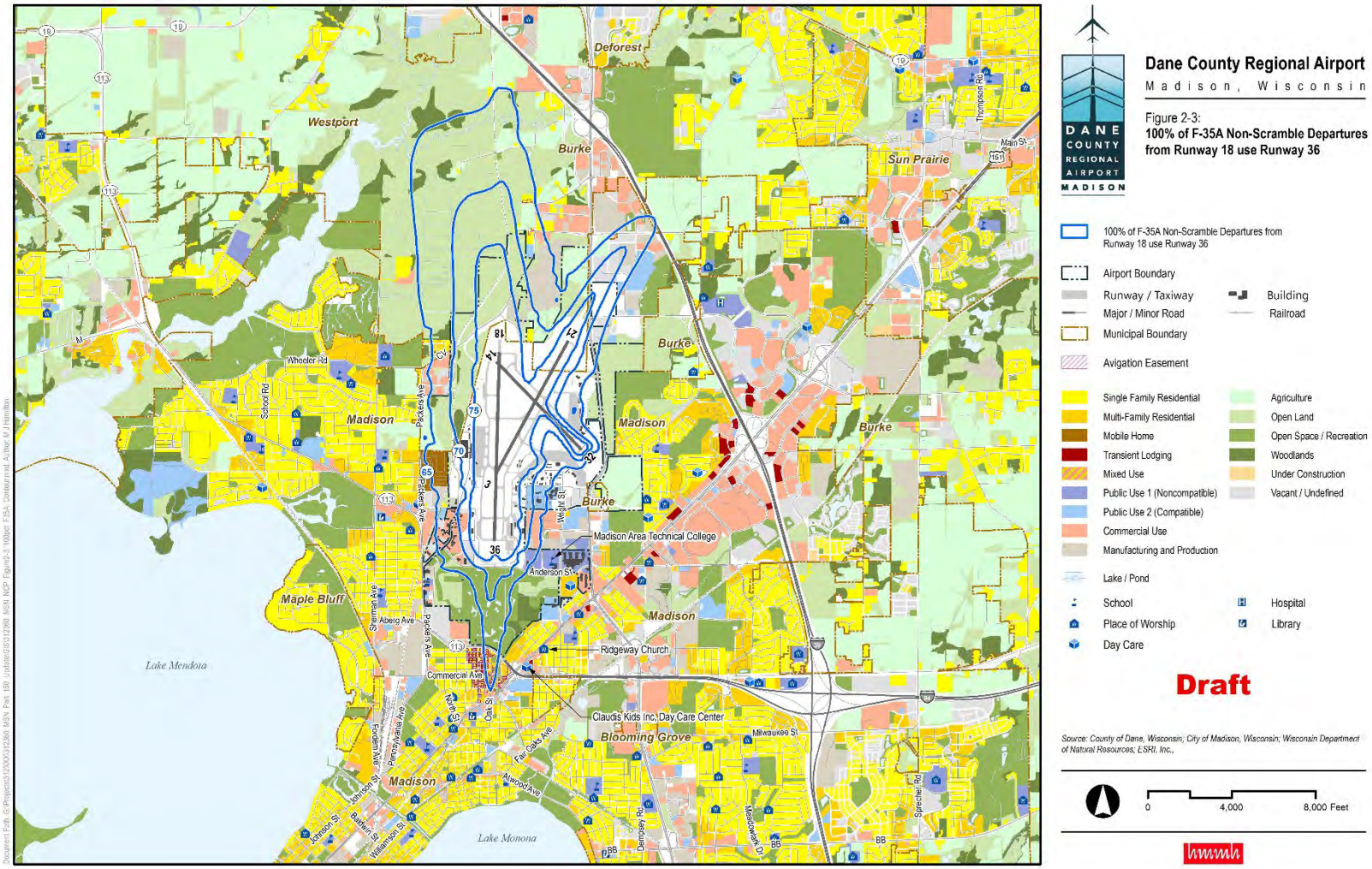

Figure 2-3. F-35A Runway Use Favoring Runway 36 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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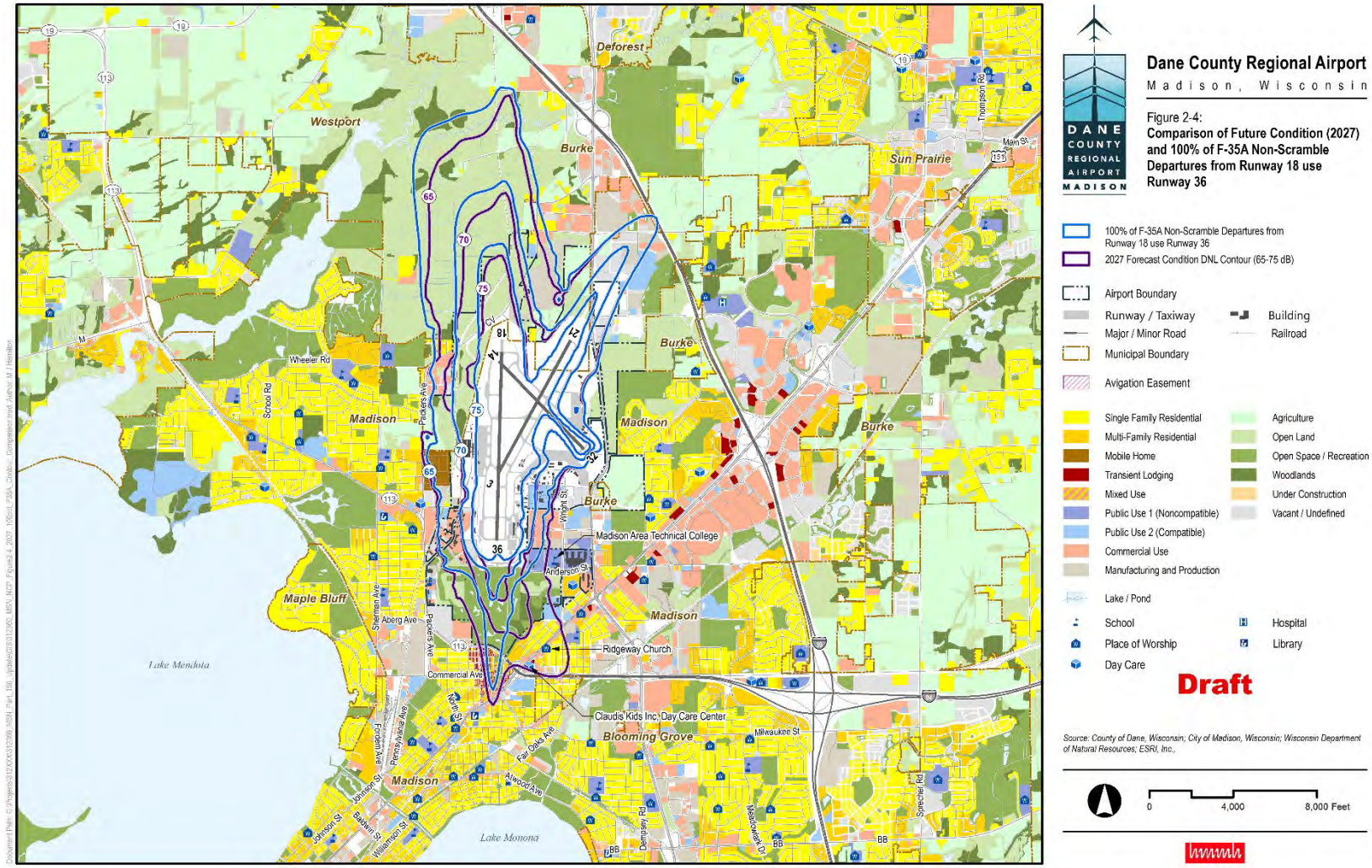

Figure 2-4. Comparison of Forecast 2027 NEM Contour and F-35A Runway Use Favoring Runway 36 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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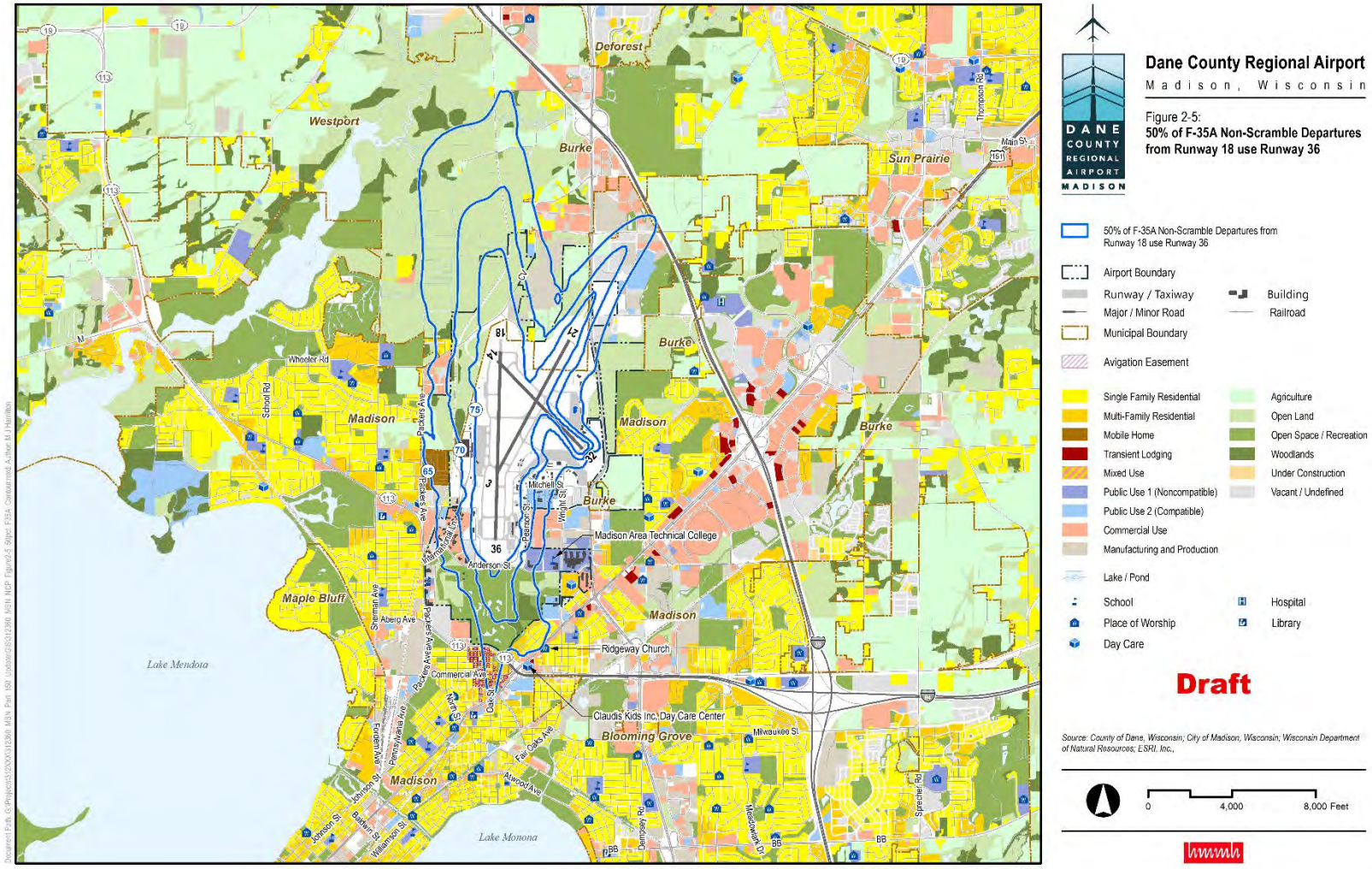

Figure 2-5. F-35A Runway Use Favoring Runway 3, 50 percent of the Time Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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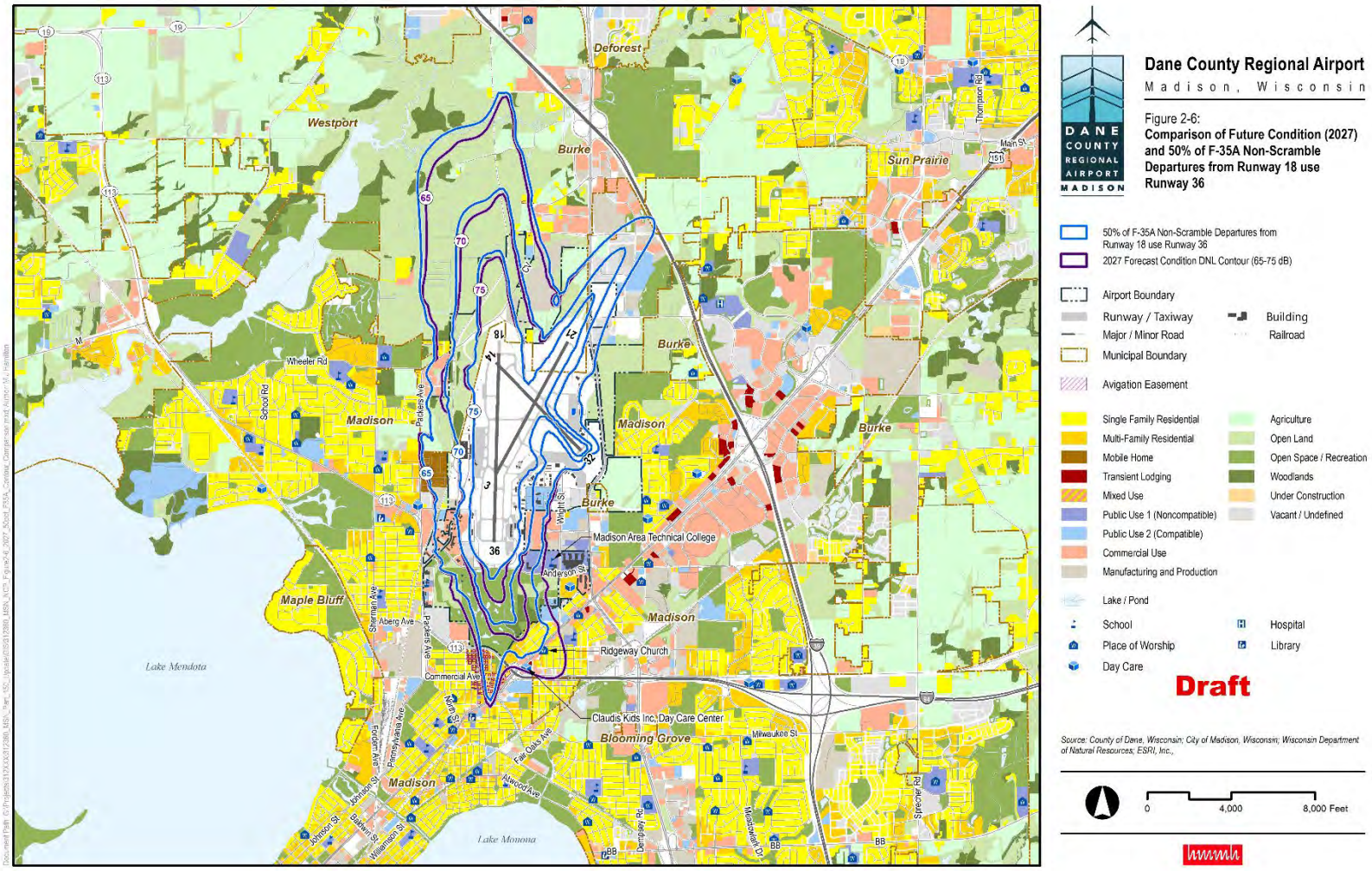

Figure 2-6. Comparison of Forecast 2027 NEM Contour and F-35A Runway Use Favoring Runway 3, 50 Percent of the Time Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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Conclusion: *MSN Noise Abatement Measure NA-6* modifies the preferential runway use program to result in more aircraft operations to the north of MSN intended to reduce noncompatible land uses to the south. This measure improves the existing preferential use of Runway 3, 32, and 36 for departures and use of Runways 14, 18, and 21 for arrivals. The measure encourages the WIANG 115th Fighter Wing to continue use of Runway 3 for scramble operations and to request Runway 3 or 36 for F-35A non-scramble departures during south flow operations at MSN as feasible to facilitate the expected noise abatement benefit.

Table 2-10 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Noise Abatement Measure NA-6.

Table 2-10. Implementation Summary for MSN NCP Measure NA-6
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This measure reduces noncompatible land uses to the south of MSN.
Rationale	The County is recommending the modification to the preferential runway use program at MSN to encourage increased aircraft operations to the north.
Responsible Parties	FAA ATCT and WIANG
Estimated Costs	No costs
Funding Sources	Not applicable
Requirements	ATCT continues to use MSN in a north configuration when winds and other conditions permit. WIANG 115th Fighter Wing continue to use Runway 3 for scramble operations and request ATCT to allow departures on Runway 36 during south flow operations.
Estimated Schedule	Upon FAA approval of the measure

2.2.7 NA-7: Encourage the use of Noise Abatement Departure Profile (NADP) procedures by operators of jet aircraft

The County encourages operators of jet aircraft to use NADPs when departing from MSN, including both civilian and military aircraft. NADPs provide noise reduction for noise sensitive areas located near the departure end of an airport runway. FAA Advisory Circular AC 91-53A provides and describes two NADPs for civil jet aircraft, known as the "Close-in" and "Distant" NADP. There are no such prescribed profiles for military jet aircraft. Through the NCP development process, the County has worked closely with WIANG 115th Fighter Wing to develop NADPs for the F-35A aircraft.

The County recommends continuing the existing measure encouraging the use of NADP for civilian aircraft (Section 2.2.7.1) and modifying the existing NCP measure to also encourage the WIANG 115th Fighter Wing to use the preferred NADP (Section 2.2.7.2) for all non-scramble operations.

2.2.7.1 Use of NADP for civilian jet aircraft

The County encourages operators of commercial jet aircraft to use the appropriate noise abatement departure profile for the aircraft type they are operating. When operators of civilian jet aircraft use NADPs, the aircraft generates less noise to communities near the departure end of airport runways. Airlines establish standard noise abatement departure profiles for jet aircraft that they operate, involving a thrust cutback after takeoff. Operators of business jet aircraft can utilize the National Business Aviation Association standard noise abatement departure profiles. Additionally, some aircraft manufacturers describe noise abatement departure procedures in their operator's manuals.

The use of NADPs is difficult to impossible to monitor because it is unknown whether the aircraft are departing lighter or heavier, departing using a reduced thrust takeoff, or departing with an NADP. It is also challenging to show the benefit of using NADPs at MSN because the dominant contributing aircraft type to the 2027 65 DNL contour is the F-35A aircraft.

The County recommends continuing the existing measure encouraging the use of NADP for civilian aircraft.

2.2.7.2 Use of NADP for F-35A aircraft

The County and the WIANG recognize that the F-35A departures are a significant contributor to the noncompatible land uses resulting from aircraft operations to the south and southeast of Runway 18. The study team worked with the WIANG to develop alternate F-35A departure profiles (the speed, power, and rate of climb of the F-35A over the course of its departure track) using simulator and performance data. The profiles used in the NEM were based on the 2020 USAF F-35 EIS[23], which was based on the most accurate F-35A data available at the time. However, now that more bases have the F-35A, and the WIANG has been trained to fly the plane, HMMH worked with WIANG to design NADPs using realistic operational data. The WIANG suggested alternative departure profiles with varied speeds, powers, and climb rates that they could safely fly. HMMH analyzed the effects of those profiles on the DNL contours and informed the WIANG, who revised the profiles further. In this way HMMH iterated

[23] US Department of Defense. United States Air Force. "United States Air Force F-35A Operational Beddown Air National Guard Environmental Impact Statement", on file with US Environmental Protection Agency as EIS No. 20200051. Published February 28, 2020. Available at https://cdxapps.epa.gov/cdx-enepa-II/public/action/eis/details?eisId=290711.

through multiple NADPs until we found several profiles that would mitigate noise while being operationally valid for the 115th Fighter Wing.

The following departure profiles were analyzed to determine a preferred noise abatement departure profile for the F-35A aircraft non-scramble departures:

1. Use of afterburner while on and above the runway
2. Use of afterburner while on and above the runway and a speed hold of 300 knots
3. Use of afterburner while on and above the runway and a speed hold of 350 knots
4. Use of Mil power and a speed hold of 300 knots

Based on analysis and coordination with the WIANG, scenario 4 in the list above is the preferred NADP as it reduces noncompatible land use both in acreage and population within the 65 DNL noise contour as described below. This measure encourages WIANG to use an NADP for F-35A aircraft that includes use of Mil power with a speed hold of 300 knots. The preferred NADP flight profile of the F-35A requires WIANG flight testing and full implementation. The remainder of this section provides the alternative analysis results and conclusions used to recommend that the F-35A NADP use Mil power and a speed hold of 300 knots when departing MSN.

F-35A NADP Alternative 1 Analysis: Use of Afterburner while on and above the Runway

An analysis of the F-35A departure profiles modeled for the forecast 2027 NEM at MSN indicates that Mil power (full power, but no afterburner) departures are louder outside the airport boundary than afterburner departures. Afterburner is only used while the aircraft is on or above the runway to help it gain altitude faster. Once the aircraft leaves the airport boundary, both departure profiles use Mil power, but the afterburner profile is farther from the ground, leading to reduced noise levels in the community. Currently 95 percent of Runway 18 F-35A departure operations use Mil profiles. This measure would use the afterburner departure for all Runway 18 departures.

Figure 2-7 shows the resulting contours of this alternative. Figure 2-8 shows a comparison of the forecast 2027 NEM and this scenario. The lobe to the southeast of the airfield would recede towards the airport boundary by approximately 1,900 feet, to the edge of Ridgeway Avenue. This reduction would be due to departing aircraft being farther away from the ground in this scenario compared to the forecast 2027 NEM scenario. The 65 DNL contour would widen horizontally by 600 feet to the east and the west around the runways. This would be due to the increased afterburner use while the F-35A aircraft are on or above the runway.

A comparison of the land use noise exposure between Alternative 1 and the forecast 2027 NEM is provided in Table 2-11. The area of the 65 DNL contour would decrease by 75 acres for this scenario compared to the forecast 2027 NEM scenario. Total population within the 65 DNL contour would decrease by 770 people, and total housing units within the 65 DNL contour would decrease by 409. While the Madison Area Technical College Protective Services School remains within the 65 DNL contour, the Hawthorne Elementary School would be outside of the 65 DNL contour using this alternative NADP.

It should be noted that a decrease occurs to the southeastern lobe of the contour but there is an increase directly west along Runway 18. There is a decrease of 322 acres, 524 housing units, and a population of 983 to the southeast, with an increase of 280 acres, 97 housing units, and a population increase of 170 to the west of Runway 18.

Table 2-11. Land Use Noise Exposure Comparison between Forecast 2027 NEM Contour and F-35A NADP Alternative 1 Contour

Source: 2020 Census

DNL Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2027 NEM	2027 Alt 1	2027 NEM	2027 Alt 1	2027 NEM	2027 Alt 1	2027 NEM	2027 Alt 1	2027 NEM	2027 Alt 1
65-70	1,823	1,774	2,424	1,697	276	240	1,227	838	151	131
70-75	936	929	57	14	0	0	23	3	0	0
>75	971	952	0	0	0	0	0	0	0	0
Total	**3,730**	**3,655**	**2,481**	**1,711**	**276**	**240**	**1,250**	**841**	**151**	**131**
Delta		**-75**		**-770**		**-36**		**-409**		**-20**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

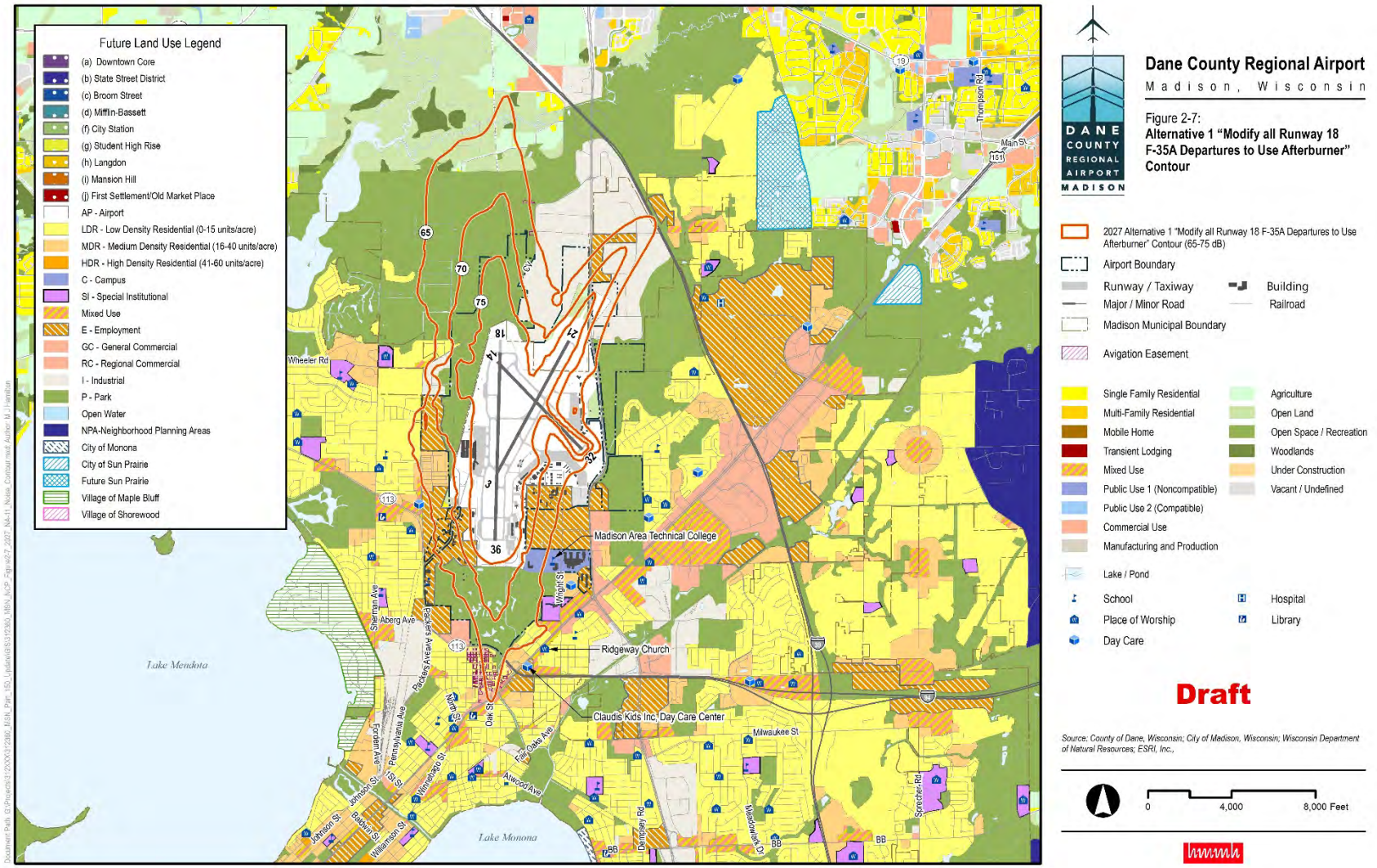

Figure 2-7. F-35A NADP Alternative 1 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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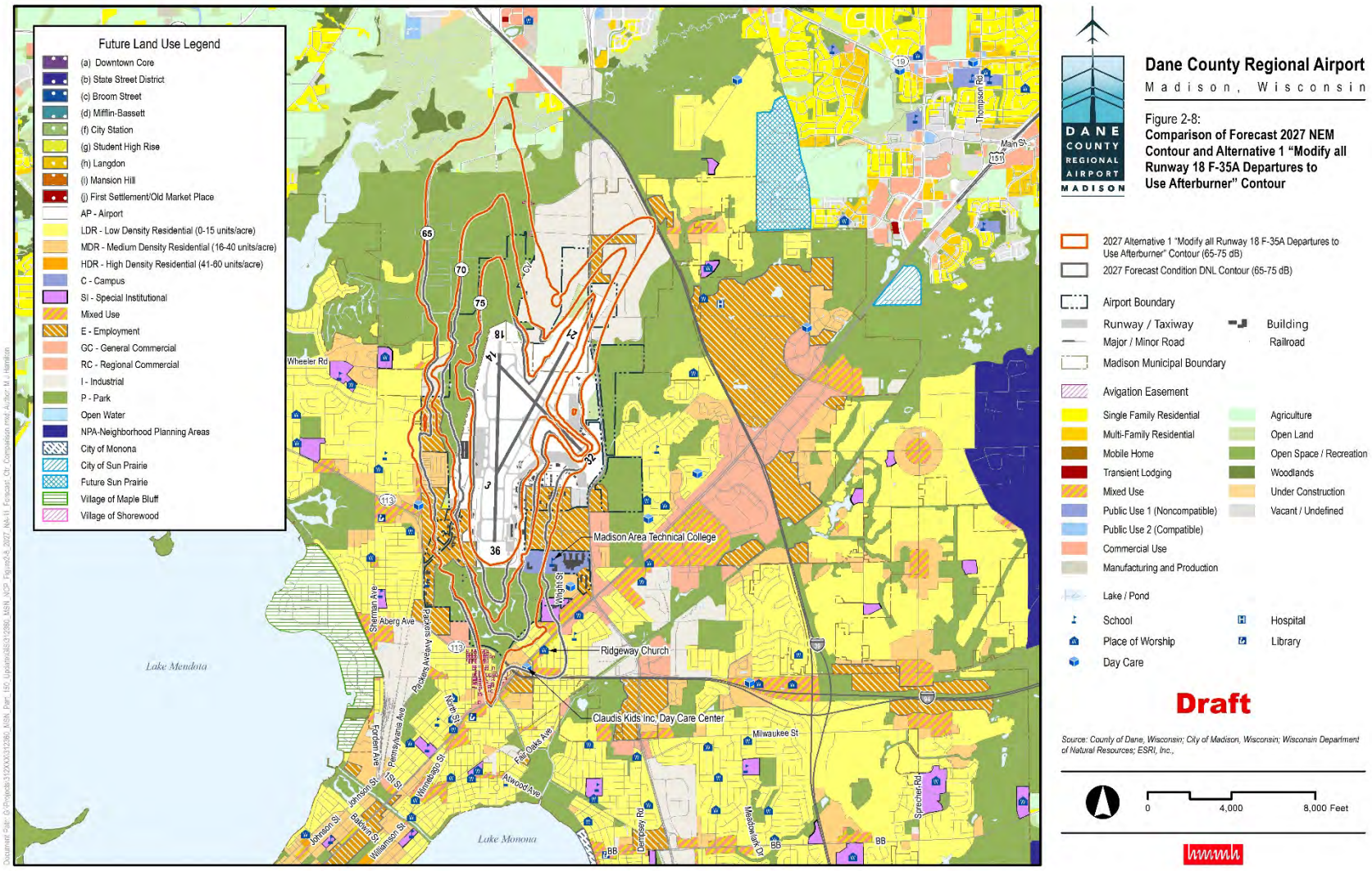

Figure 2-8. Comparison of Forecast 2027 NEM Contour and F-35A NADP Alternative 1 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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F-35A NADP Alternative 2 Analysis: Use of Afterburner while on and above the Runway with a Speed Hold of 300 Knots

Similar to Alternative 1, this scenario models all non-scramble departures using afterburner until the end of the runway and then climbing with a speed hold at 300 knots and Mil power. Under this "AB-300" profile, F-35A pilots use afterburner while on the runway to gain speed and then climb to cruising altitude at 300 knots. The steep climb angle of this profile increases the distance between the aircraft and the ground.

Figure 2-9 shows the resulting contours of this alternative. Figure 2-10 shows a comparison of the forecast 2027 NEM and this alternative. The lobe to the southeast of the airfield would recede towards the airport boundary by approximately 2,400 feet, to the edge of Quincy Avenue. The lobe to the northeast of the airfield would contract approximately 3,100 feet, to the corner of Merchant Street and Ronald Reagan Avenue. The lobe to the north along the centerline of Runway 18/36 would contract by approximately 1,000 feet to just south of Token Creek and reduce in width by nearly 2,800 feet. These contour reductions would be due to aircraft performing the new AB-300 departure being at higher altitudes compared to aircraft performing either departure modeled in the 2027 forecast scenario. The increased afterburner usage would cause the contour to the west and east of the airfield to expand laterally by approximately 900 feet in each direction.

A comparison of the land use noise exposure between the Alternative 2 and the forecast 2027 NEM is provided in Table 2-12. The area of the 65 DNL contour would decrease by 277 acres from the 2027 NEM forecast scenario to this scenario. Total population within the 65 DNL contour would decrease by 530 people, and there would be 241 fewer housing units within the 65 DNL contour. While the Madison Area Technical College Protective Services School remains within the 65 DNL contour, the Hawthorne Elementary School would be outside of the 65 DNL contour using this alternative NADP.

It should be noted that a decrease occurs to the southeastern lobe of the contour but there is an increase directly west along Runway 18. There is a decrease of 1,045 acres, 619 housing units, and a population of 1,178 to the southeast, with an increase of 958 acres, 584 housing units, and a population increase of 1,118 to the west of Runway 18.

Table 2-12. Land Use Noise Exposure Comparison between Forecast 2027 NEM and F-35A NADP Alternative 2 Contour

Source: 2020 Census

DNL Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2027 NEM	2027 Alt 2	2027 NEM	2027 Alt 2	2027 NEM	2027 Alt 2	2027 NEM	2027 Alt 2	2027 NEM	2027 Alt 2
65-70	1,823	1,565	2,424	1,457	276	235	1,227	793	151	128
70-75	936	894	57	490	0	0	23	215	0	0
>75	971	994	0	4	0	0	0	1	0	0
Total	**3,730**	**3,453**	**2,481**	**1,951**	**276**	**235**	**1,250**	**1,009**	**151**	**128**
Delta		**-277**		**-530**		**-41**		**-241**		**-23**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

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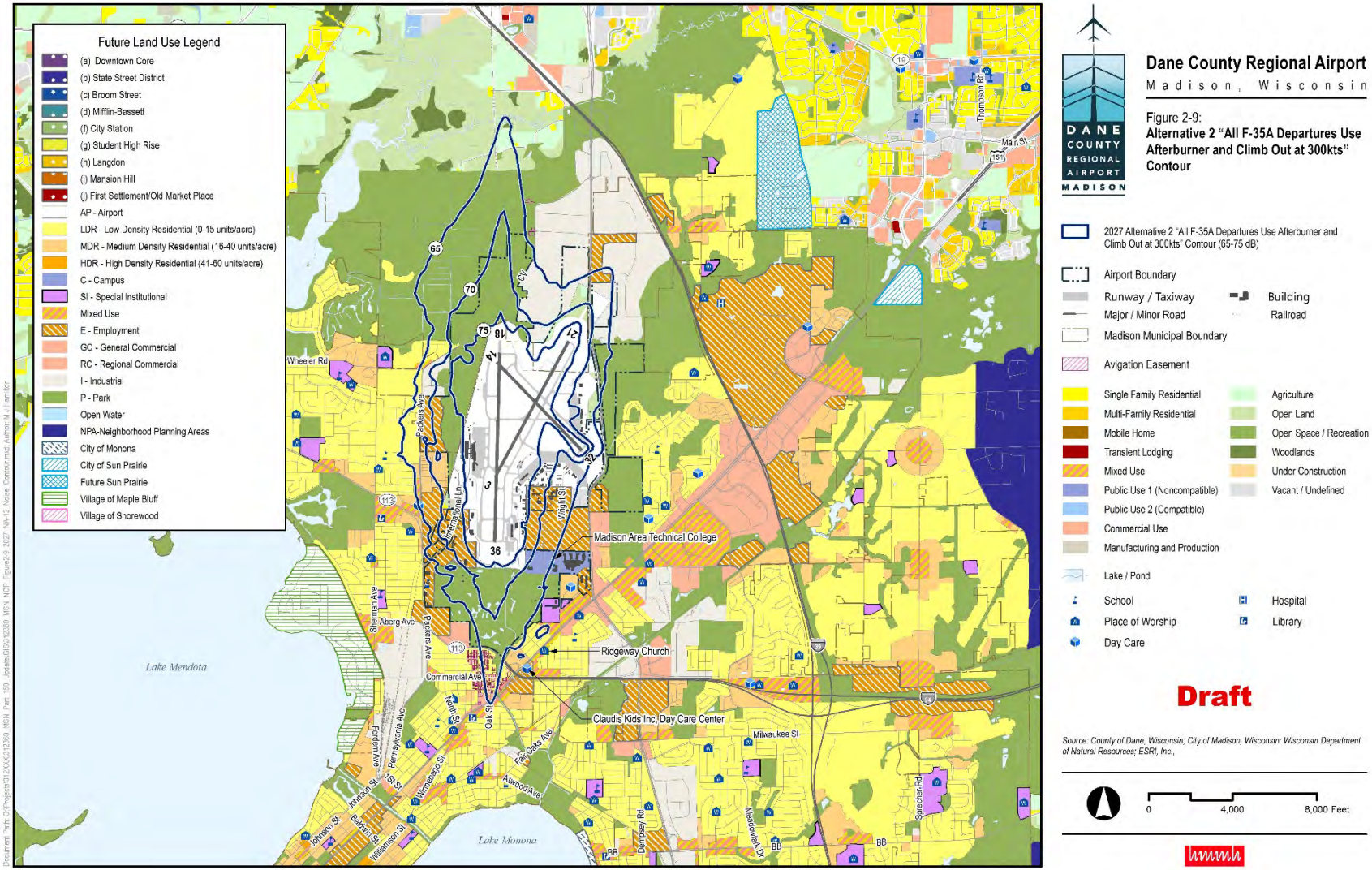

Figure 2-9. F-35A NADP Alternative 2 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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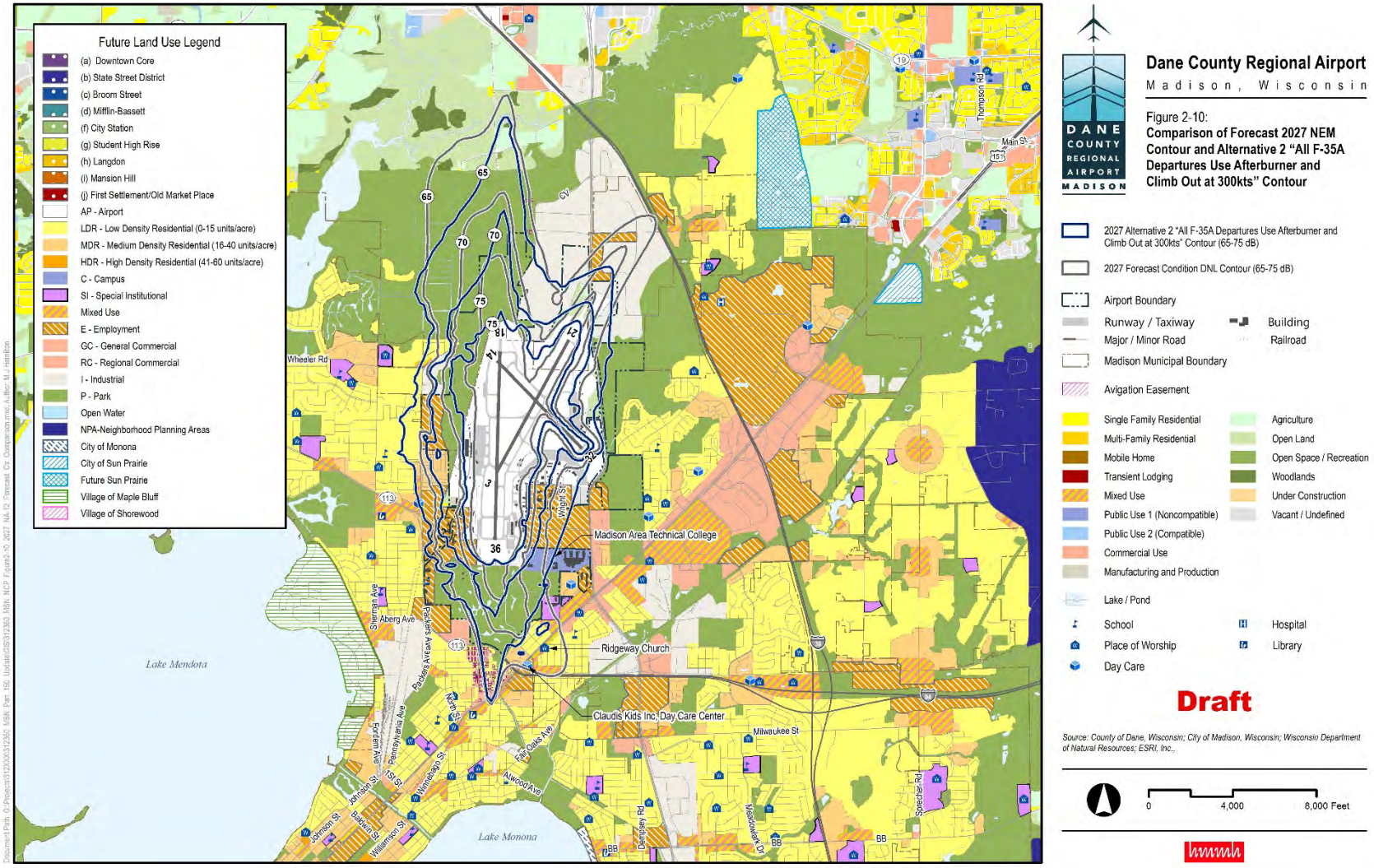

Figure 2-10. Comparison of Forecast 2027 NEM Contour and F-35A NADP Alternative 2 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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F-35A NADP Alternative 3 Analysis: Use of Afterburner while on and above the Runway with a Speed Hold of 350 Knots

Similar to Alternative 2, this scenario models all non-scramble departures using afterburner until the end of the runway and then climbing with a speed hold at 350 knots and Mil power. Under this "AB-350" profile, F-35A pilots use afterburner while on the runway to gain speed and then climb to cruising altitude at 350 kts. The steep climb angle of this profile increases the distance between the aircraft and the ground.

Figure 2-11 shows the resulting contours of this measure. Figure 2-12 shows a comparison of the forecast 2027 NEM and this scenario. The lobe to the southeast of the airfield would recede towards the airport boundary by approximately 1,800 feet to the edge of Ridgeway Avenue. The lobe to the northeast of the airfield would contract approximately 2,400 feet to the edge of I-39/90. The lobe to the north along the centerline of Runway 18/36 would contract by approximately 400 feet to just south of Daentl Road and reduce in width by nearly 1,700 feet. These contour reductions would be due to aircraft performing the new AB-350 departure being higher above the ground compared to aircraft performing either of the departures modeled in the 2027 forecast scenario. The increased afterburner usage would cause the contour to the west and east of the airfield to expand laterally by approximately 900 feet in each direction.

A comparison of the land use noise exposure between Alternative 3 and the forecast 2027 NEM is provided in Table 2-13**.** The area of the 65 DNL contour would decrease by 149 acres from the forecast 2027 NEM scenario to this scenario. Total population within the 65 DNL contour would decrease by 306 people, and there would be 147 fewer housing units within the 65 DNL contour. While the Madison Area Technical College Protective Services School remains within the 65 DNL contour, the Hawthorne Elementary School would be outside of the 65 DNL contour using this alternative NADP. It should be noted that a decrease occurs to the southeastern lobe of the contour but there is an increase directly west along Runway 18. There is a decrease of 806 acres, 436 housing units and a population of 802 to the southeast, with an increase of 804 acres, 393 housing units and a population increase of 747 to the west of Runway 18.

Table 2-13. Land Use Noise Exposure Comparison between Forecast 2027 NEM and F-35A NADP Alternative 3 Contour

Source: 2020 Census

DNL Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2027 NEM	2027 Alt 3	2027 NEM	2027 Alt 3	2027 NEM	2027 Alt 3	2027 NEM	2027 Alt 3	2027 NEM	2027 Alt 3
65-70	1,823	1,695	2,424	1,867	276	240	1,227	976	151	131
70-75	936	915	57	306	0	0	23	126	0	0
>75	971	971	0	2	0	0	0	1	0	0
Total	**3,730**	**3,581**	**2,481**	**2,175**	**276**	**240**	**1,250**	**1103**	**151**	**131**
Delta		**-149**		**-306**		**-36**		**-147**		**-20**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

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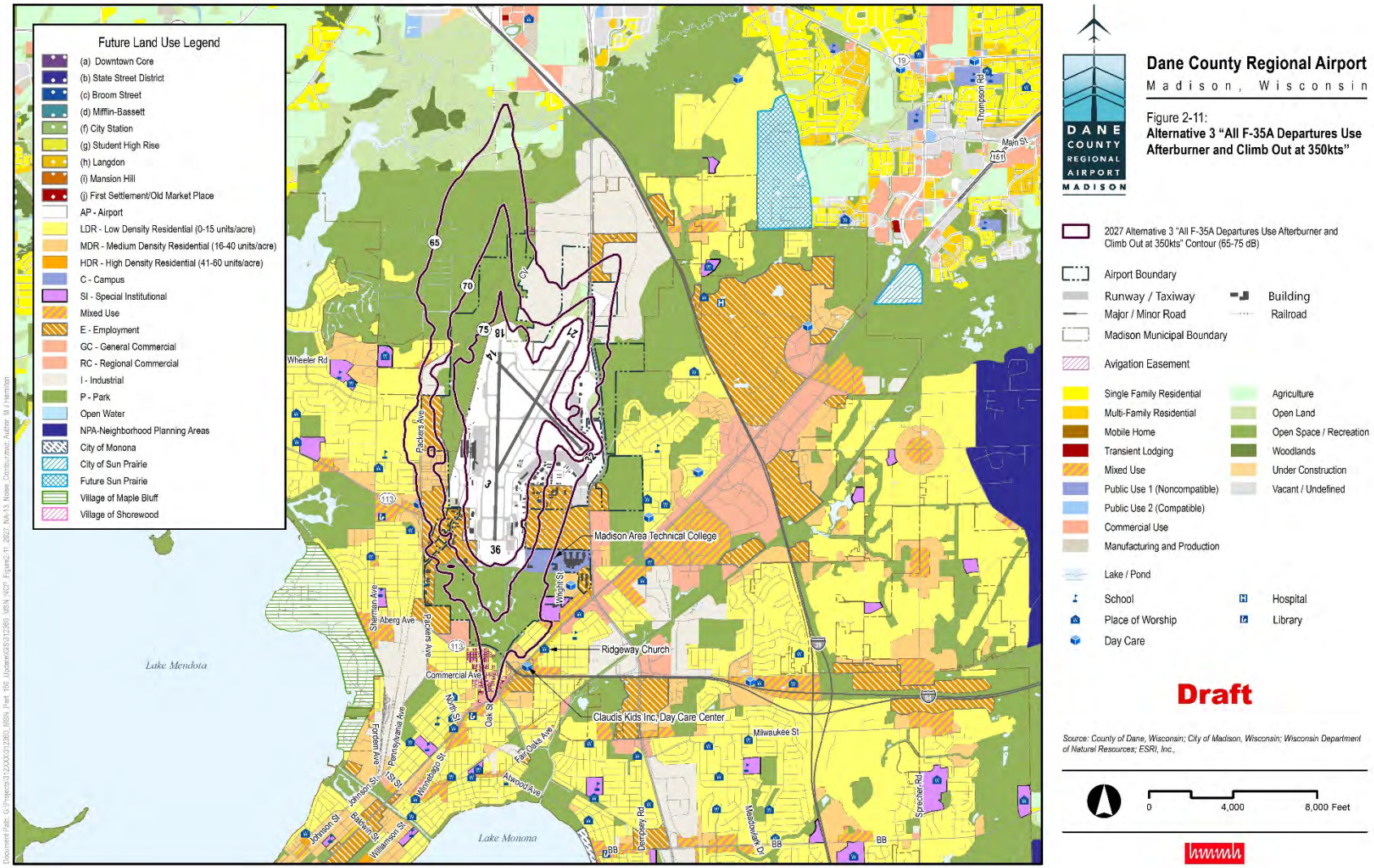

Figure 2-11. F-35A NADP Alternative 3 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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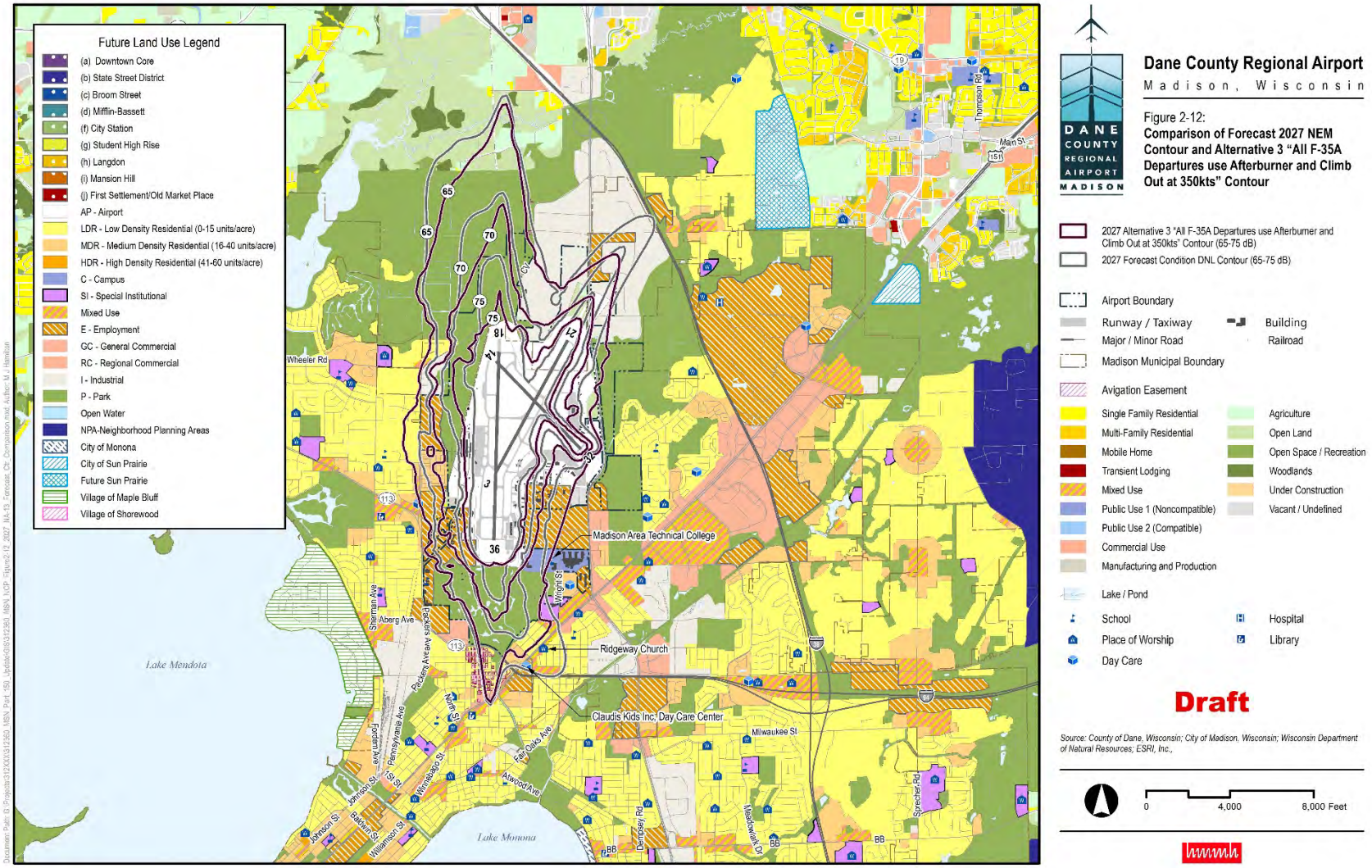

Figure 2-12. Comparison of Forecast 2027 NEM Contour and F-35A NADP Alternative 3 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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F-35A NADP Alternative 4 Analysis: Use of Mil Power with a Speed Hold of 300 Knots

This scenario models all non-scramble departures using a mil-power speed hold departure – no use of afterburner. Scramble departures would use the AB-350 profile due to its superior rate-of-climb.

Figure 2-13 shows the resulting contours of this alternative. Figure 2-14 shows a comparison of the forecast 2027 NEM and this alternative. The lobe to the southeast of the airfield would recede towards the airfield boundary by approximately 2,200 feet. The contour extending northeast from the centerline of Runway 3 would shrink by approximately 2,500 feet. The lobe north of the airfield would shorten by 1,900 feet and narrow by 2,300 feet. The changes in the north and southeast contour lobes would be due to the speed hold departure using less thrust than the forecast 2027 NEM modeled departures, and the contour decrease off Runway 3 would be due to aircraft flying the new AB-350 departure being higher above the ground than aircraft using the forecast 2027 NEM modeled departures.

A comparison of the land use noise exposure between the Alternative 4 and the forecast 2027 NEM is provided in Table 2-14. The area of the 65 DNL contour would decrease by 711 acres from the forecast 2027 NEM. Total population within the 65 DNL contour would decrease by 1,079 people, and there would be 578 fewer housing units within the 65 DNL contour. While the Madison Area Technical College Protective Services School remains within the 65 DNL contour, the Hawthorne Elementary School would be outside of the 65 DNL contour using this alternative NADP.

Table 2-14. Land Use Noise Exposure Comparison between Forecast 2027 NEM and F-35A NADP Alternative 4 Contour

Source: 2020 Census

DNL Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2027 NEM	2027 Alt 4	2027 NEM	2027 Alt 4	2027 NEM	2027 Alt 4	2027 NEM	2027 Alt 4	2027 NEM	2027 Alt 4
65-70	1,823	1,335	2,424	1,388	276	205	1,227	669	151	112
70-75	936	765	57	14	0	0	23	3	0	0
>75	971	919	0	0	0	0	0	0	0	0
Total	**3,730**	**3,019**	**2,481**	**1,402**	**276**	**205**	**1,250**	**672**	**151**	**112**
Delta		**-711**		**-1,079**		**-71**		**-578**		**-39**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

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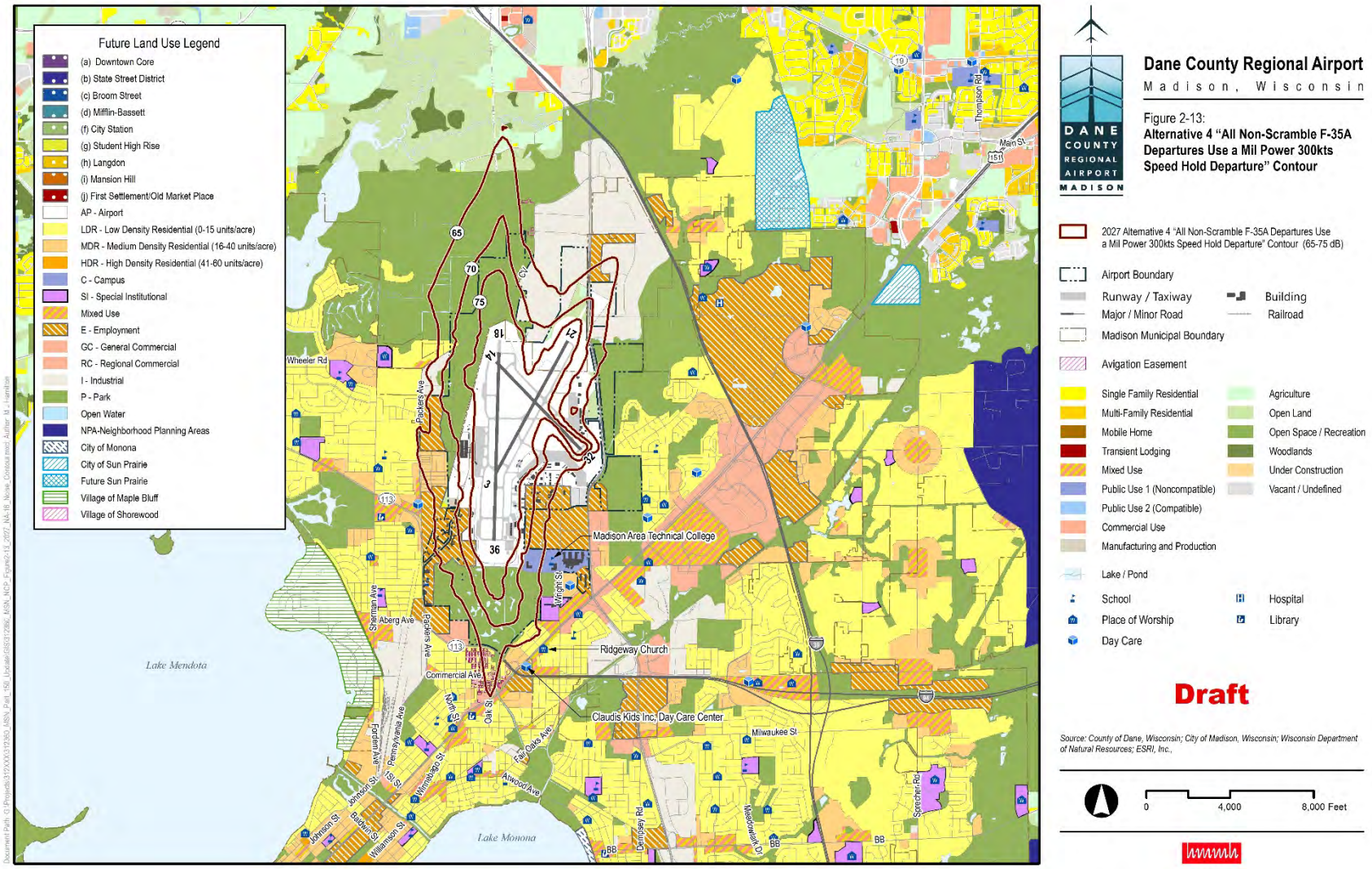

Figure 2-13. F-35A NADP Alternative 4 Contour
Source: 2023 MSN Part 150 Noise Compatibility Study

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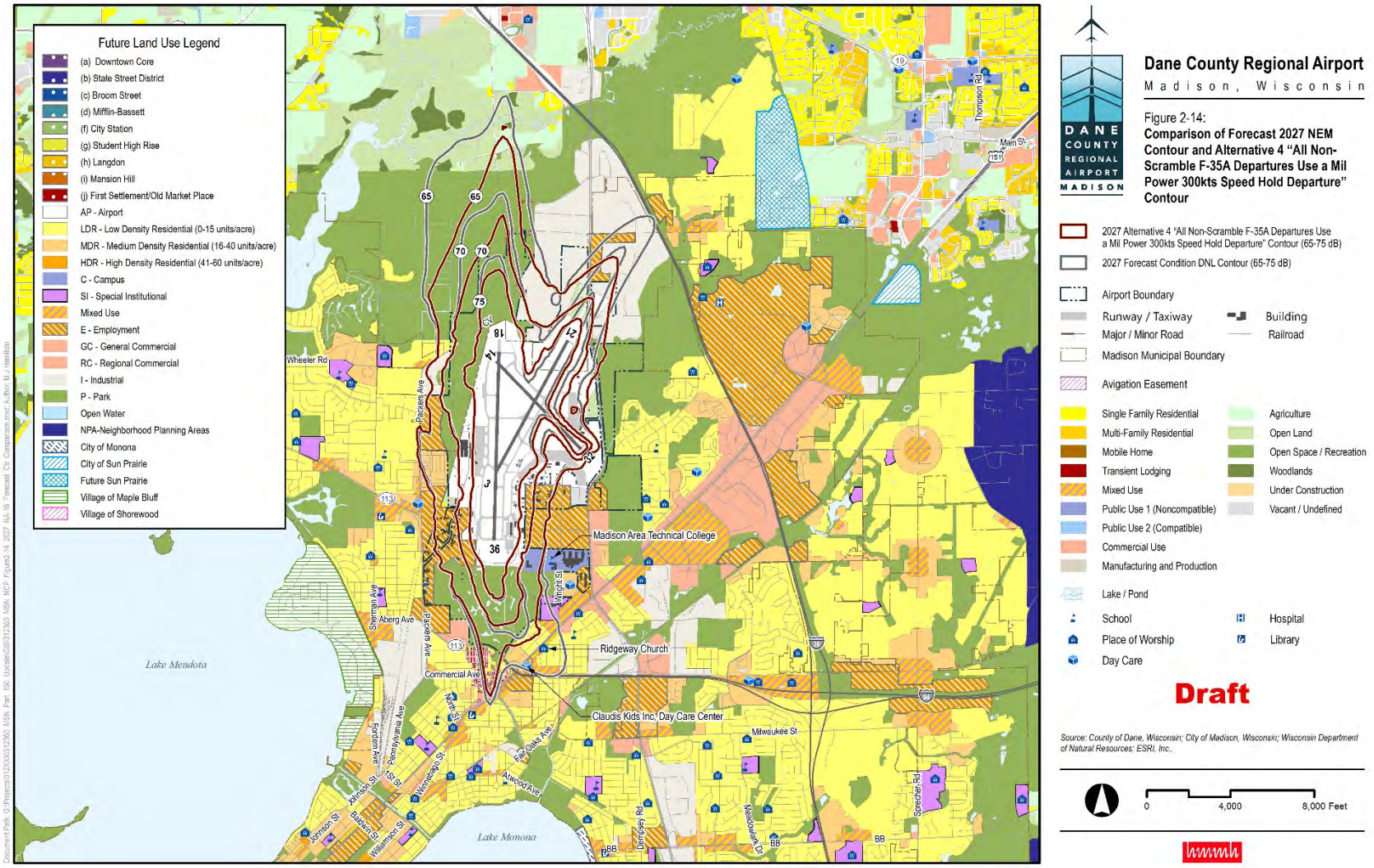

Figure 2-14. Comparison of Forecast 2027 NEM Contour and F-35A NADP Alternative 4 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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Conclusion: *MSN Noise Abatement Measure NA-7* encourages the WIANG to utilize a F-35A NADP with use of Mil power and a speed hold of 300 knots. Based on analysis and coordination with the WIANG, this measure reduces both acreage and population within the 65 DNL contour. The NADP of the F-35A requires acceptance and approval from the WIANG. The County also recommends continuing encouraging civil jet aircraft operators use NADPs when departing MSN.

Table 2-15 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Noise Abatement Measure NA-7.

Table 2-15. Implementation Summary for MSN NCP Measure NA-7
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This measure reduces noncompatible land uses including 1,079 people in 578 housing units.
Rationale	The County is recommending adding the F-35A NADP (Mil power and 300-knot speed control) to the existing measure to reduce aircraft noise and improve land use compatibility at MSN.
Responsible Parties	WIANG and civil jet operators
Estimated Costs	No costs
Funding Sources	Not applicable
Requirements	WIANG to test and implement NADP for non-scramble F-35A departures and the Airport to continue to encourage all jet operators to use NADPs when departing MSN.
Estimated Schedule	Upon FAA approval of this measure

2.2.8 NA-8: Consider runway reconfiguration to address noncompatible land use to the south of the Airport

The purpose of runway reconfiguration for noise abatement is to reduce noise at the source (the aircraft) by moving arrivals and departures over compatible land use. As part of this proposed runway reconfiguration measure, the County recommends extending Runway 3/21 to allow for additional WIANG aircraft operations on this noise abatement runway and to further reduce noncompatible land uses to the south of the Airport (Section 2.2.8.1). Additionally, the County recommends planning for a reconfiguration of Runway 18/36 (Section 2.2.8.2).

2.2.8.1 Consider extending the length of the "Noise Abatement" Runway (Runway 3/21) to better accommodate all F-35A aircraft departures

The 1991 NCP recommended the construction of Runway 3/21 as a noise abatement measure to reduce the number of people and noise-sensitive land uses exposed to 65 DNL from aircraft operations. Runway 3 is predominantly used for WIANG F-35A aircraft scramble departures (expedited departures to intercept incoming threats) which reduces noise exposure and improves land use compatibility to the south of the Airport.

As part of this Part 150 Study, it was suggested to increase use of the noise abatement Runway 3/21 to further improve land use compatibility to the south of MSN by putting more takeoffs to the north (north or northeast) on Runway 3 and landings to the south (south or southwest) on Runway 21. With the WIANG aircraft operations being the dominant noise source in determining the size and location of the 65 DNL contour (the area in which noncompatible land uses exist per FAA regulations and guidelines), the WIANG indicated they would need Runway 3/21 extended to 8,000 feet to provide for unlimited F-35A departures on Runway 3 and to include arresting gear to provide for unlimited F-35A arrivals on Runway 21.

Before determining potential means and feasibility to increase the length of Runway 3/21 to 8,000 feet, the benefits of increased F-35A operations on Runway 3/21 were assessed in NoiseMAP by moving all F-35A aircraft departing Runway 18 to Runway 3. As shown in Figure 2-15, the 65 DNL contour would extend 6,750 feet north and 2,070 feet south of the airfield property along the centerline of Runway 18/36. The contour to the south would then be dominated by commercial service flight operations rather than F-35A aircraft. A contour lobe to the northeast would extend 5,000 feet north and 5,000 feet east from the airfield boundary, following I-39/90. Laterally, the contour would extend approximately 1,130 feet west of the airfield property to the edge of Packers Avenue. Figure 2-16 shows a comparison of the forecast 2027 NEM and the resulting contour from moving all F-35A departures from Runway 18 to Runway 3. The 65 DNL lobe to the southeast of the airfield in the forecast 2027 NEM would completely retract to be contained within the airport boundary. Similarly, the 65 DNL lobe to the south of the airfield in the forecast 2027 NEM would retract by 700 feet. Both of these changes to the contour are due to removal of F-35A departures from Runway 18. Moving F-35A departures from Runway 18 to Runway 3 would result in expansion of the 65 DNL contour approximately 4,000 feet to the northeast of the airfield and widening by 600 feet.

As expected from increased use of the noise abatement runway, moving F-35A departures from Runway 18 to Runway 3 would reduce noncompatible land southeast of the airfield while slightly increase noncompatible land use north of Runway 3. This measure would also result in a reduction in noncompatible land uses within the 65 DNL contours to the southeast of the Runway 36 end and possible inclusion of nonresidential noncompatible land uses newly within the 65 and 70 DNL contours

northeast of Runway 3. A comparison of the land use noise exposure between the future NEM and the resulting contour with moving F-35A departures from Runway 36 to Runway 3 is provided in Table 2-16. Population within the 65 DNL contour would decrease by 1,580 people in 829 housing units. While the Madison Area Technical College Protective Services School would remain within the 65 DNL contour, the Hawthorne Elementary School would be outside of the 65 DNL contour.

Table 2-16. Land Use Noise Exposure Comparison between Forecast 2027 NEM Contour and F-35A Runway Use Favoring Runway 3 Contour

Source: 2020 Census

DNL Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2027 NEM	2027 Extend Runway 3	2027 NEM	2027 Extend Runway 3	2027 NEM	2027 Extend Runway 3	2027 NEM	2027 Extend Runway 3	2027 NEM	2027 Extend Runway 3
65-70	1,823	1,976	2,424	887	276	138	1,227	418	151	72
70-75	935	925	57	14	0	0	23	3	0	0
>75	971	982	0	0	0	0	0	0	0	0
Total	**3,730**	**3,884**	**2,481**	**901**	**276**	**138**	**1,250**	**421**	**151**	**72**
Delta		**154**		**-1,580**		**-138**		**-829**		**-79**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

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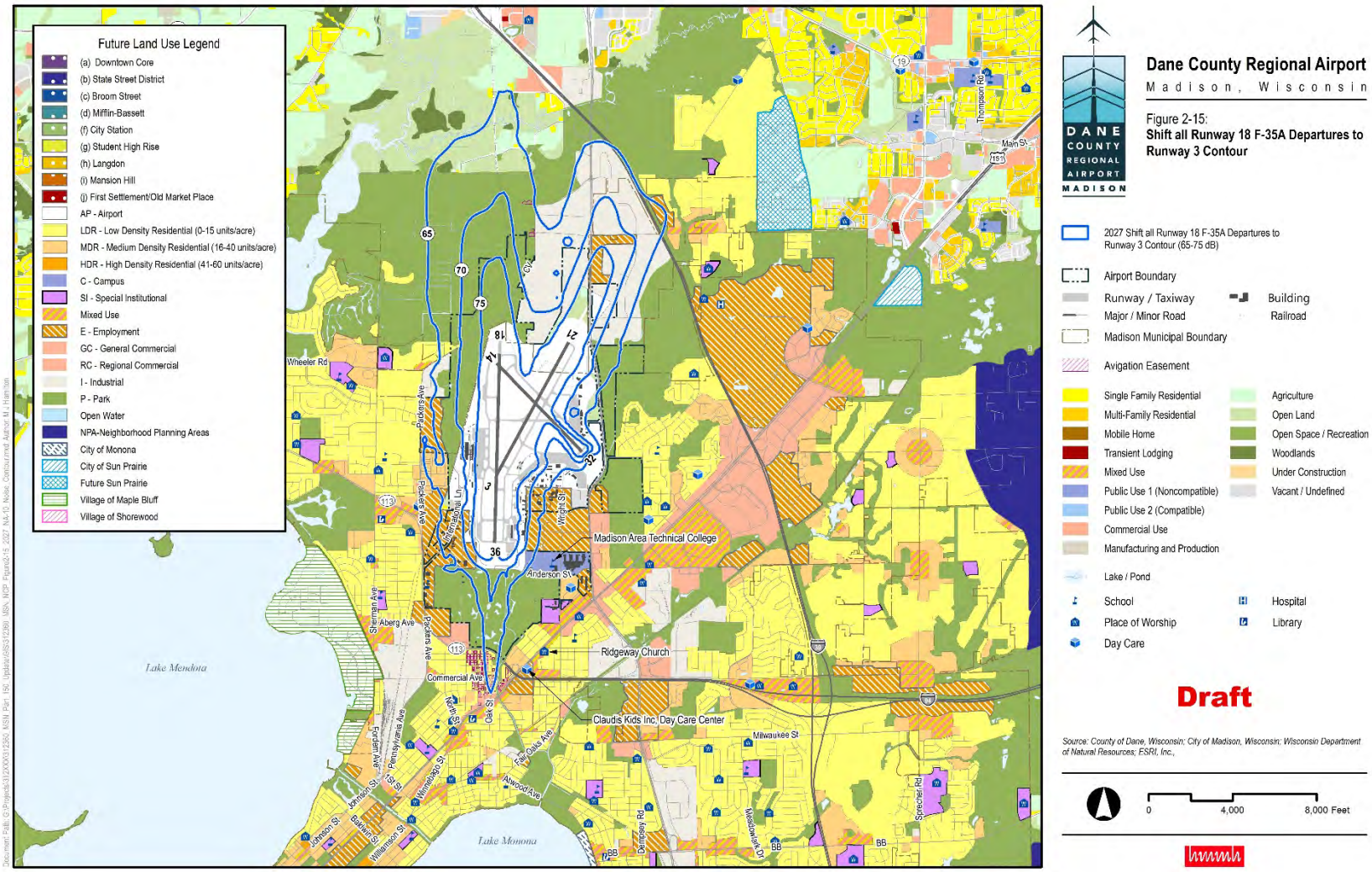

Figure 2-15. F-35A Runway Use Favoring Runway 3 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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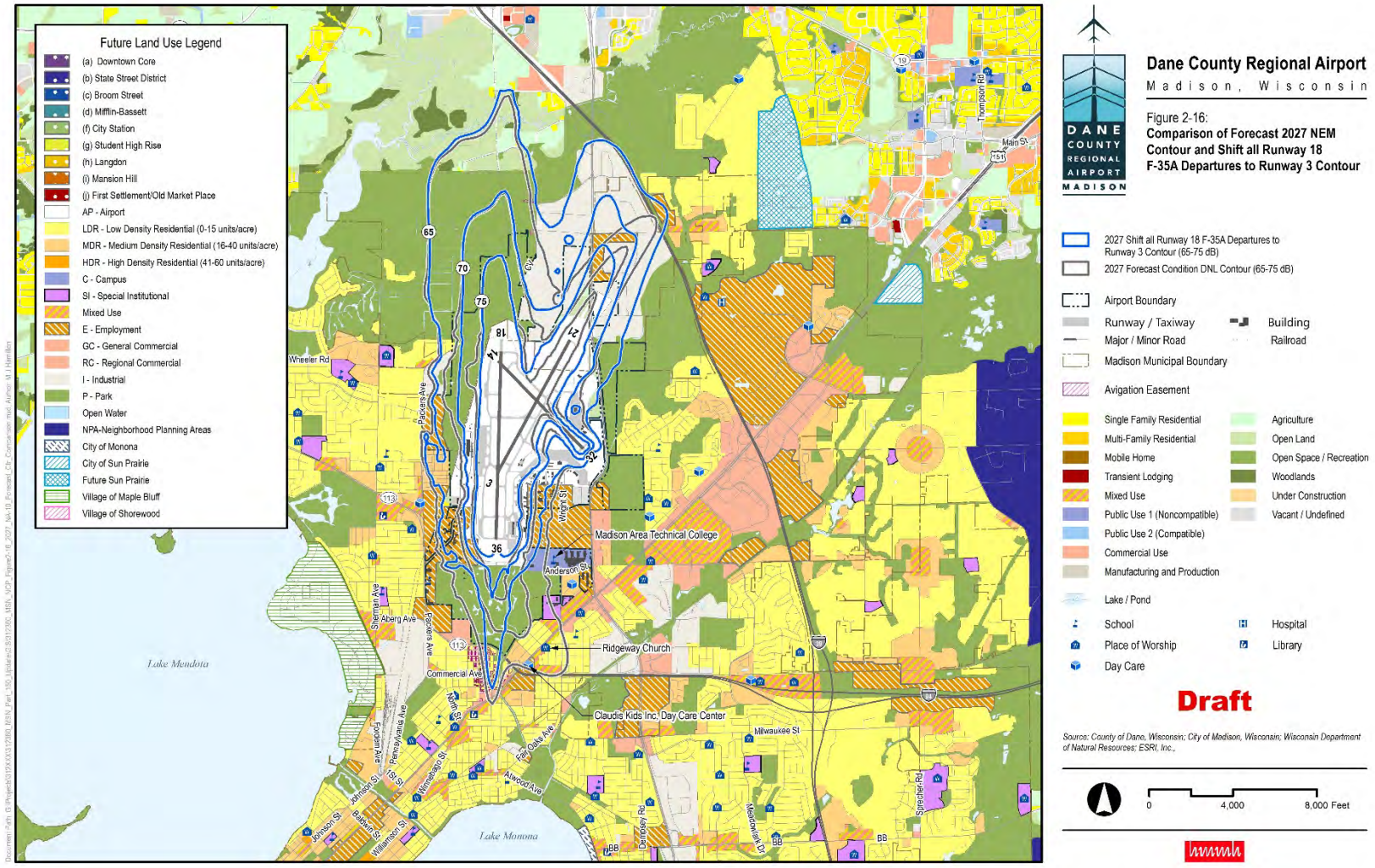

Figure 2-16. Comparison of Forecast 2027 NEM Contour and F-35A Runway Use Favoring Runway 3 Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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With the noise analysis showing improved land use compatibility with increased use of the noise abatement Runway 3/21, analyses were conducted to consider the feasibility of an extension to achieve 8,000 feet of takeoff length on Runway 3 and to maximize the landing length available on Runway 21 given the constraints available on and in the vicinity of the Airport. Figure 2-17 illustrates the existing conditions at the Airport and the associated existing, published declared distances for Runway 3/21. The declared distances include Take-off Run Available (TORA), Take-off Distance Available (TODA), Accelerate Stop Distance Available (ASDA), and Landing Distance Available (LDA) in accordance with FAA guidance in FAA Advisory Circular 5300-13B, *Airport Design* (FAA AC 13B). The primary existing condition constraints to an extension of Runway 3/21 include the proximity of Runway 3/21 to Runway 18/36 to the southwest and the proximity of the Runway 3/21 to US Highway 51 to the northeast. As illustrated in Figure 2-17, the TODA to the northeast on Runway 3 is currently 7,200 feet. Consequently, this analysis considers options to increase that takeoff length by 800 feet to a total length of 8,000 feet. Additional considerations include the Runway Safety Area (RSA), Runway Object Free Area (ROFA), and Runway Protection Zone (RPZ) clearance requirements associated with runway extensions.

Runway 3/21 extension analysis included the following four airfield alternatives to address the constraints and FAA guidelines for declared distances:

1. Relocate Taxiway B3
2. Extend Runway 3/21 650 feet to the south and 150 feet to the north
3. Extend Runway 3/21 800 feet to the north with Highway 51 tunnel
4. Extend Runway 3/21 800 feet to the north with relocating Highway 51

The County recommends Alternatives 3 or 4 as the preferred options that result in unlimited use of the noise abatement runway by F-35A aircraft.

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MSN Part 150 Study

Alternative Concept Goals: Achieve 8,000 feet of takeoff length on Runway 3 and maximize landing length on Runway 21 to encourage increase takeoffs on Runway 3 and landings on Runway 21 by Air National Guard and Air Carrier aircraft.

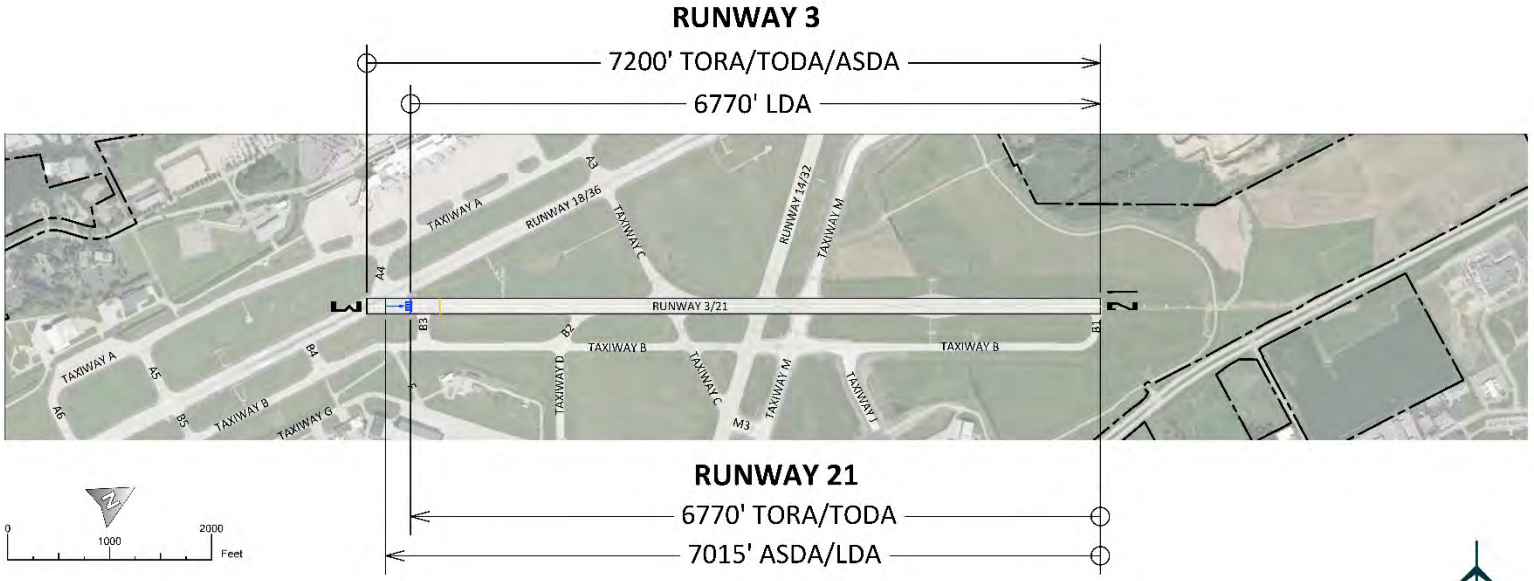

Figure 2-17. Existing Conditions

Figure 2-17. Existing Conditions for Runway 3/21

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Runway 3/21 Alternative 1 Analysis: Relocate Taxiway B3

Alternative 1 does not change the runway length on Runway 3/21 and instead includes a new or relocated connector taxiway northeast of the hold line for Runway 18/36. The purpose of the relocated connector is to allow WIANG aircraft to taxi onto Runway 3 and takeoff to the northeast without entering the RSA for Runway 18/36. Theoretically, this would allow simultaneous aircraft operations on Runway 18/36 during WIANG takeoffs on Runway 3, which may increase the use of Runway 3 for WIANG scramble departures. This alternative includes the least modifications to the current airfield configuration for Runway 3/21. Figure 2-18 below illustrates the new or relocated taxiway connector between Taxiway B and Runway 3/21.

The key benefits to this alternative would be that it allows for minimal modifications to the airfield geometry and allows aircraft to enter Runway 3 for takeoff without entering the RSA for Runway 18/36. However, it would not meet the 8,000-foot optimal takeoff length for Runway 3 that would allow substantial additional use by the WIANG and other operators. Estimated costs for this alternative are approximately $5.3M.

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MSN Part 150 Study

Alternative Concept Goals: Achieve 8,000 feet of takeoff length on Runway 3 and maximize landing length on Runway 21 to encourage increase takeoffs on Runway 3 and landings on Runway 21 by Air National Guard and Air Carrier aircraft.

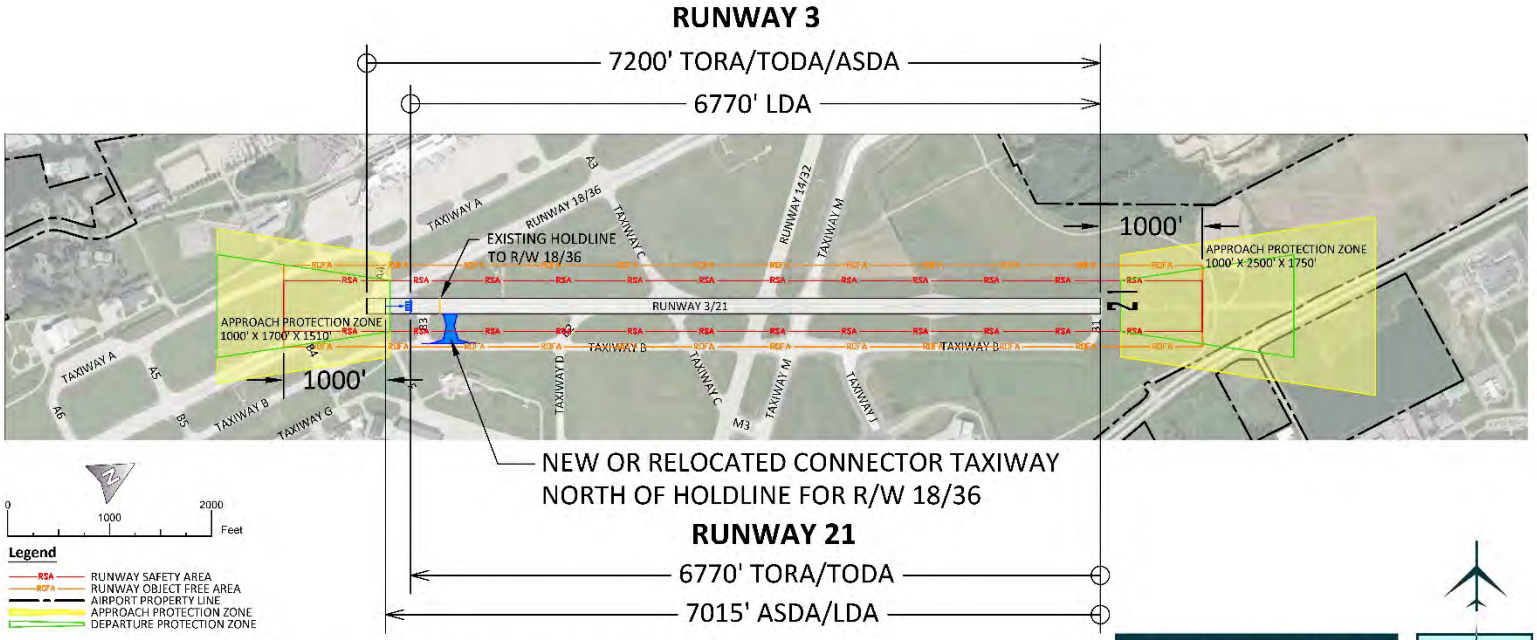

Figure 2-18. Alternative One - Relocate Taxiway B3

Figure 2-18. Alternative 1 – Relocate Taxiway B3

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Runway 3/21 Alternative 2 Analysis: Extend North and South – Runway 3

Alternative 2 includes a 650-foot extension to the south end of Runway 3, as well as a 150-foot extension to the north end of Runway 21. This alternative will allow 8,000 feet of takeoff length on Runway 3, which would potentially result in unlimited use of Runway 3 for WIANG departures and Runway 21 for WIANG arrivals. Figure 2-19 illustrates the extensions on both ends of Runway 3/21 with operations to the north, takeoff and landing operations/declared distances on Runway 3, and the impacts/modifications to the existing airfield configuration. Figure 2-20 illustrates the same extensions with aircraft operations to the south.

This alternative meets the 8,000 feet takeoff length for Runway 3 and the Runway 3 departure RPZ would be entirely contained within the Runway 21 approach RPZ, resulting in no additional land use conflicts. Due to the increased take-off distance, it would allow additional operations to the north, potentially reducing noise to the south. Challenges around this alternative include that the RSA/ROFA would continue to extend over Taxiway A near the Runway 3 threshold. This is an existing condition; however, the extension would increase the use of Runway 3/21, and therefore it would require additional coordination by ATCT for the increased aircraft taxi operations within the area. The RSA would also be extended 1,000 feet beyond the departure end of Runway 21 to the north which would require the relocation of the perimeter road and an additional taxiway connection would be needed for the Runway 21 threshold. Given the proximity of the runway to Taxiway A on the south end, this would require more than a 90-degree turn to threshold which can be challenging operationally. This alternative would require additional FAA and WBOA coordination and approval due to the intersecting runways and proposed additional use, which would require additional coordination by ATCT. Estimated costs for this alternative are approximately $15M.

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MSN Part 150 Study

Alternative Concept Goals: Achieve 8,000 feet of takeoff length on Runway 3 and maximize landing length on Runway 21 to encourage increase takeoffs on Runway 3 and landings on Runway 21 by Air National Guard and Air Carrier aircraft.

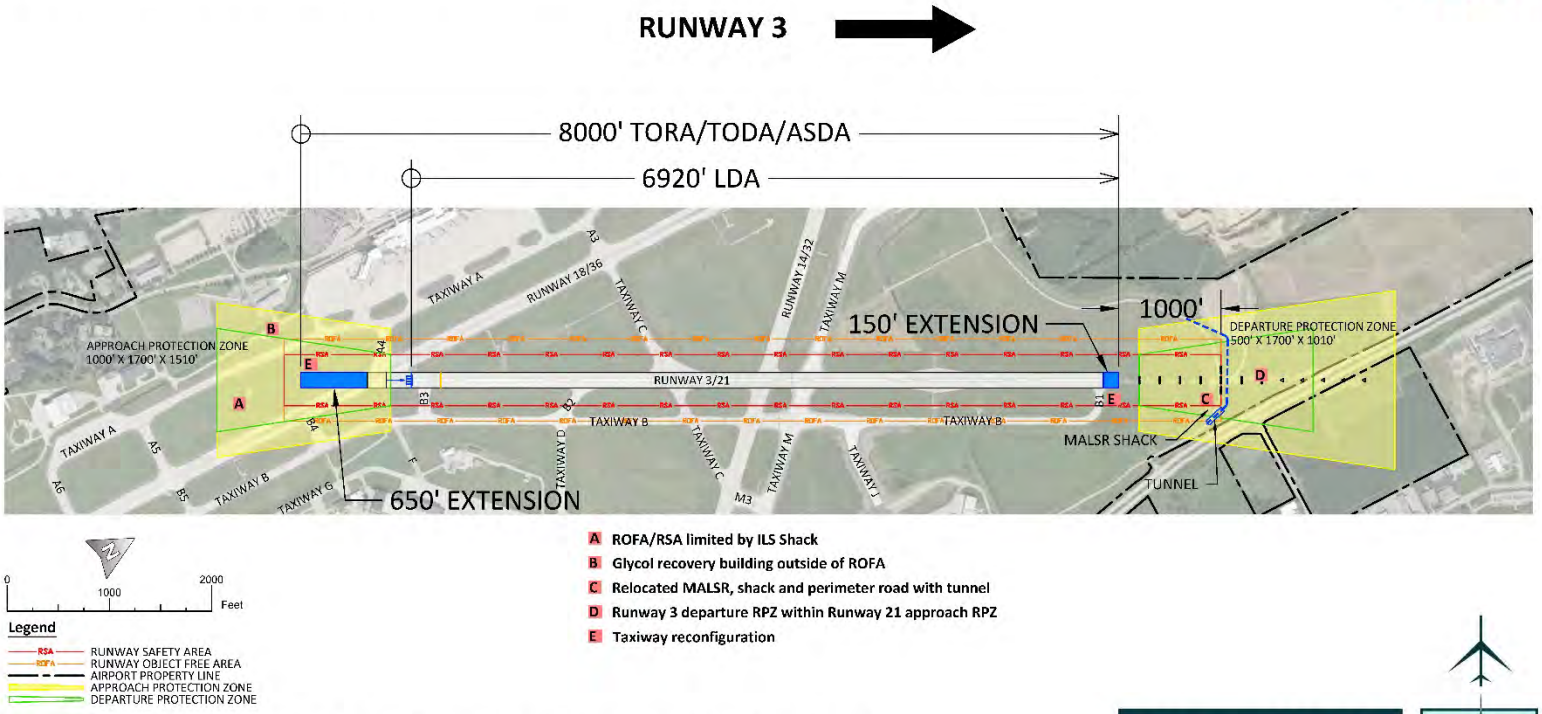

Figure 2-19. Alternative Two - Extend North and South - Runway 3

Figure 2-19. Alternative 2 – Extend Runway 3 North and South

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MSN Part 150 Study

Alternative Concept Goals: Achieve 8,000 feet of takeoff length on Runway 3 and maximize landing length on Runway 21 to encourage increase takeoffs on Runway 3 and landings on Runway 21 by Air National Guard and Air Carrier aircraft.

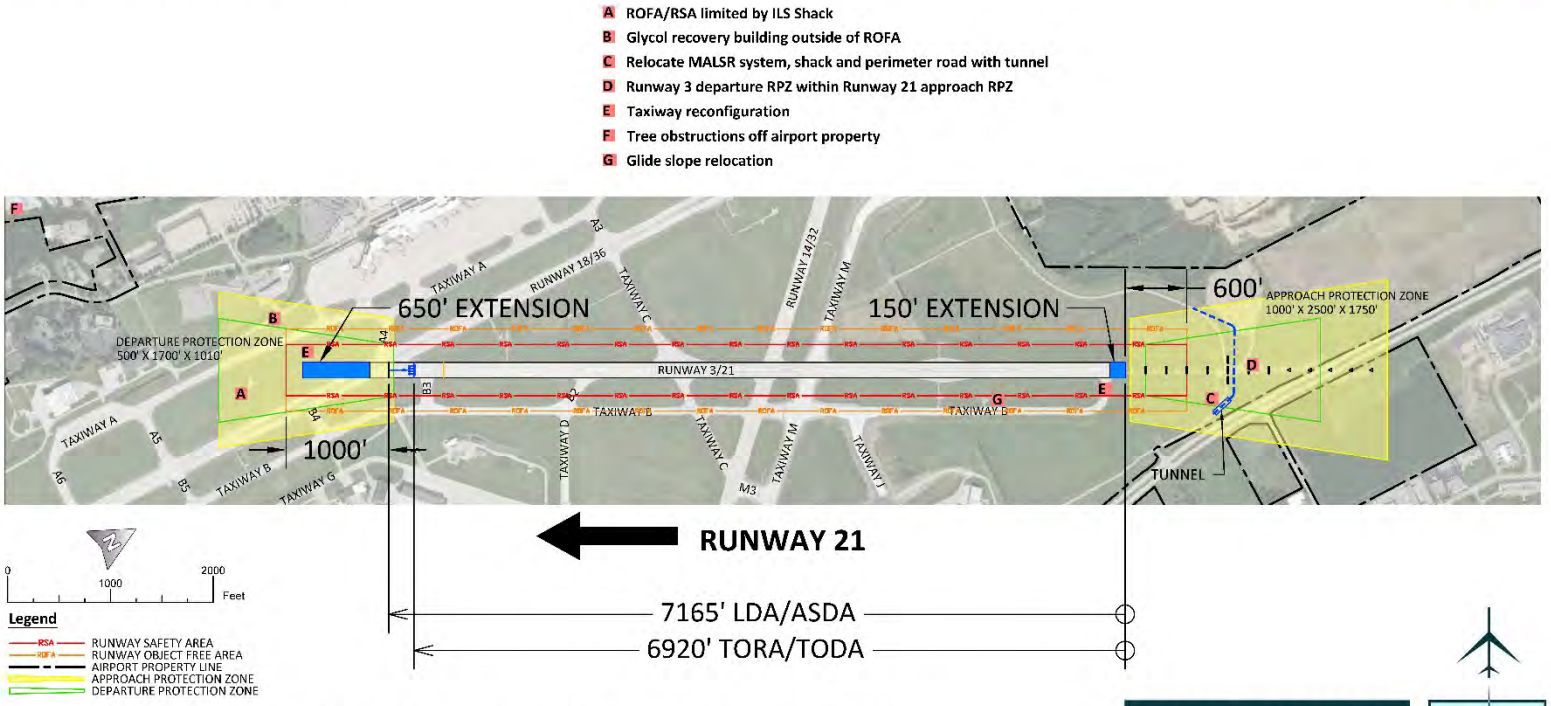

Figure 2-20. Alternative Two - Extend North and South - Runway 21

Figure 2-20. Alternative 2 – Extend Runway 21 North and South

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Runway 3/21 Alternative 3 Analysis: Extend North with Tunnel – Runway 3

Alternative 3 includes an 800-foot extension to the north end of Runway 21. Figure 2-21 and Figure 2-22 illustrate the extension on the north side of Runway 3/21 with operations moving north utilizing Runway 3 in Figure 2-21 and operations moving south utilizing Runway 21 in Figure 2-22. The alternative also illustrates the tunnel addition to the highway, and the impacts/modifications to existing airfield configurations. Another alternative to a tunnel or highway would be an engineered materials arresting system off the departure end of Runway 3. This option is not illustrated but would avoid impacts to US Highway 51 and would have similar costs to tunnel construction.

This alternative would provide 8,000 feet of takeoff length for Runway 3, which could allow for additional operations to the north. As in the previous alternative, this could shift noise north, away from noncompatible land uses to the south, providing a benefit from a noise perspective. The departure RPZ would also be contained within the Runway 21 approach RPZ, which is a benefit. The challenges with this alternative include the need to construct a tunnel for US Highway 51 to maintain a clear RSA/ROFA, and the intersection of US Highway 51 and Hanson Road would need to be relocated. Acquisition of a 2.1-acre parcel of land, with a total value of $39,934,800 as of 2023, may be required to maintain airport ownership of the entire RPZ. Due to the road proximity, the costs are much higher for this alternative with the estimated costs for this alternative are approximately $62.3M.

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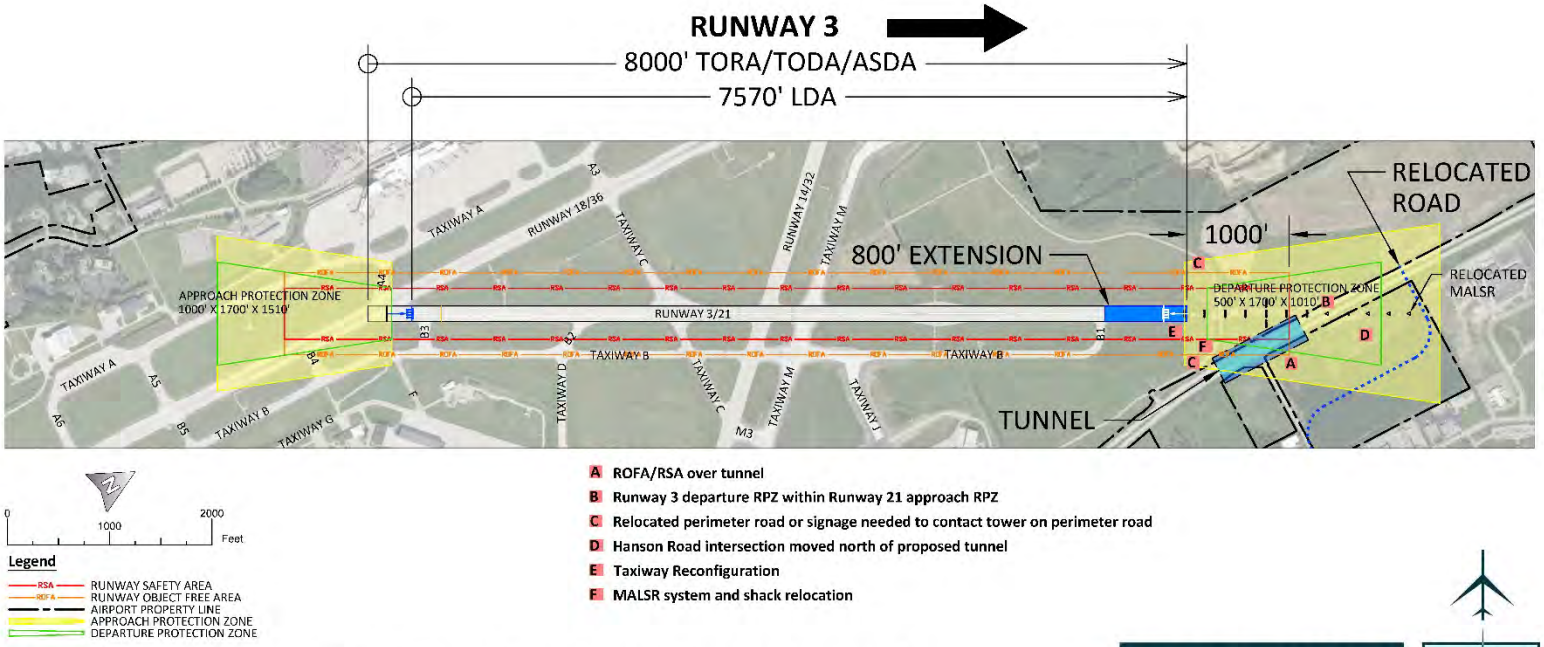
MSN Part 150 Study

Alternative Concept Goals: Achieve 8,000 feet of takeoff length on Runway 3 and maximize landing length on Runway 21 to encourage increase takeoffs on Runway 3 and landings on Runway 21 by Air National Guard and Air Carrier aircraft.



A ROFA/RSA over tunnel
B Runway 3 departure RPZ within Runway 21 approach RPZ
C Relocated perimeter road or signage needed to contact tower on perimeter road
D Hanson Road intersection moved north of proposed tunnel
E Taxiway Reconfiguration
F MALSR system and shack relocation

Figure 2-21. Alternative Three - Extend North with Tunnel - Runway 3

Figure 2-21. Alternative 3 – Extend Runway 3 North with Tunnel

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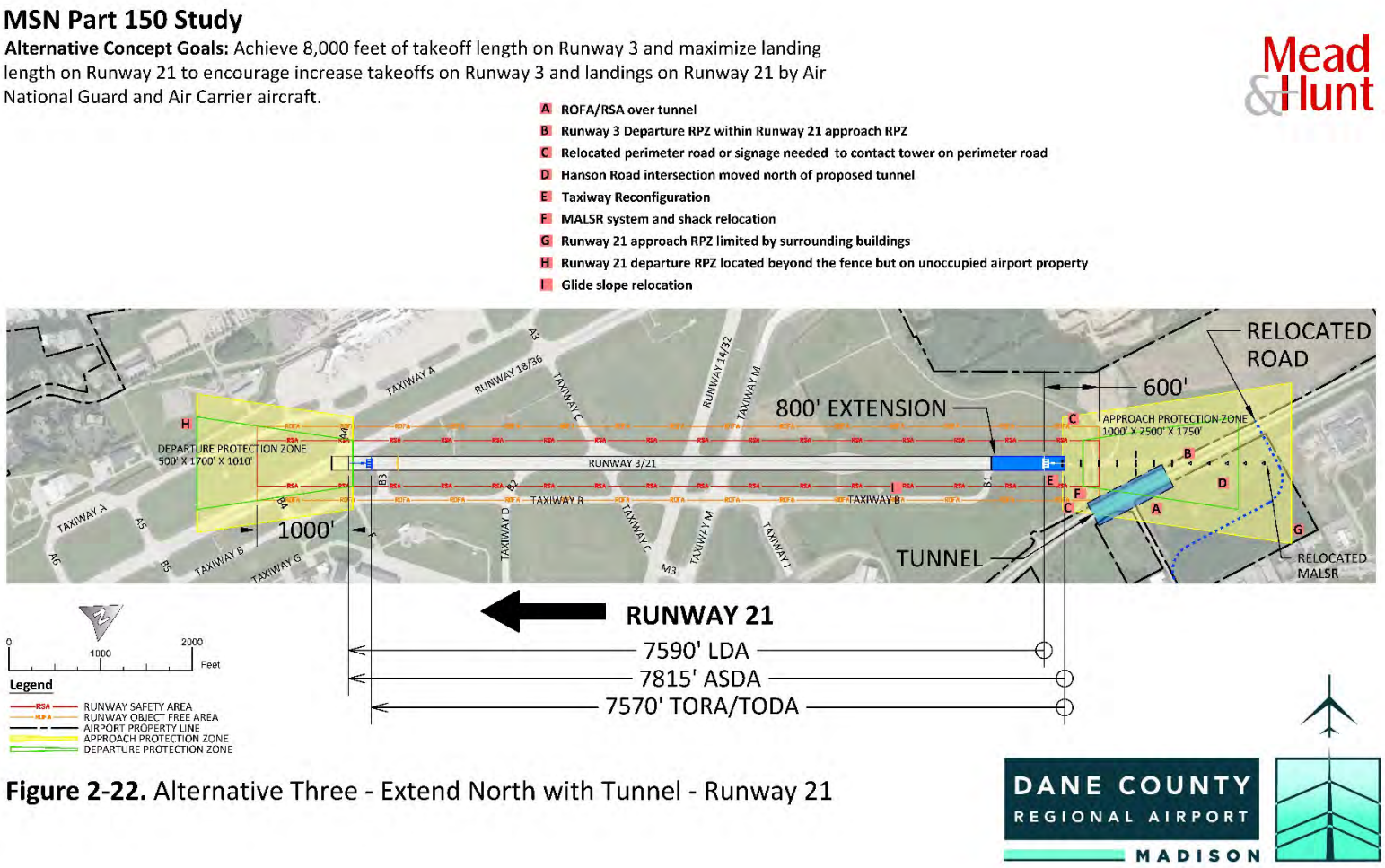

Figure 2-22. Alternative Three - Extend North with Tunnel - Runway 21

Figure 2-22. Alternative 3 – Extend Runway 21 North with Tunnel

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Runway 3/21 Alternative 4 Analysis: Extend North, Relocate Highway – Runway 3

Alternative 4 includes an 800-foot extension to the north end of Runway 21. Instead of tunneling the highway, Alternative 4 would relocate the highway to meet RSA and ROFA clearance requirements. Figure 2-23 and Figure 2-24 illustrate the extensions on the north side of Runway 3/21 with Figure 2-23 showing operations and associated declared distances to the north and Figure 2-24 showing operations and associated declared distances to the south.

This alternative provides 8,000 feet of takeoff length for Runway 3, which would allow for additional operations to the north, potentially shifting noise north, away from noncompatible land uses to the south. Additional benefits include that the Runway 3 departure RPZ would be contained within the Runway 21 approach RPZ and would reduce the relative amount of roadway that located within the RPZ. The highway would need to be rerouted outside of the ROFA and RSA, instead of tunneled. As with Alternative 3, additional property acquisition may be required for airport ownership of the RPZ. Costs associated with this alternative would be approximately $33.4M.

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MSN Part 150 Study

Alternative Concept Goals: Achieve 8,000 feet of takeoff length on Runway 3 and maximize landing length on Runway 21 to encourage increase takeoffs on Runway 3 and landings on Runway 21 by Air National Guard and Air Carrier aircraft.

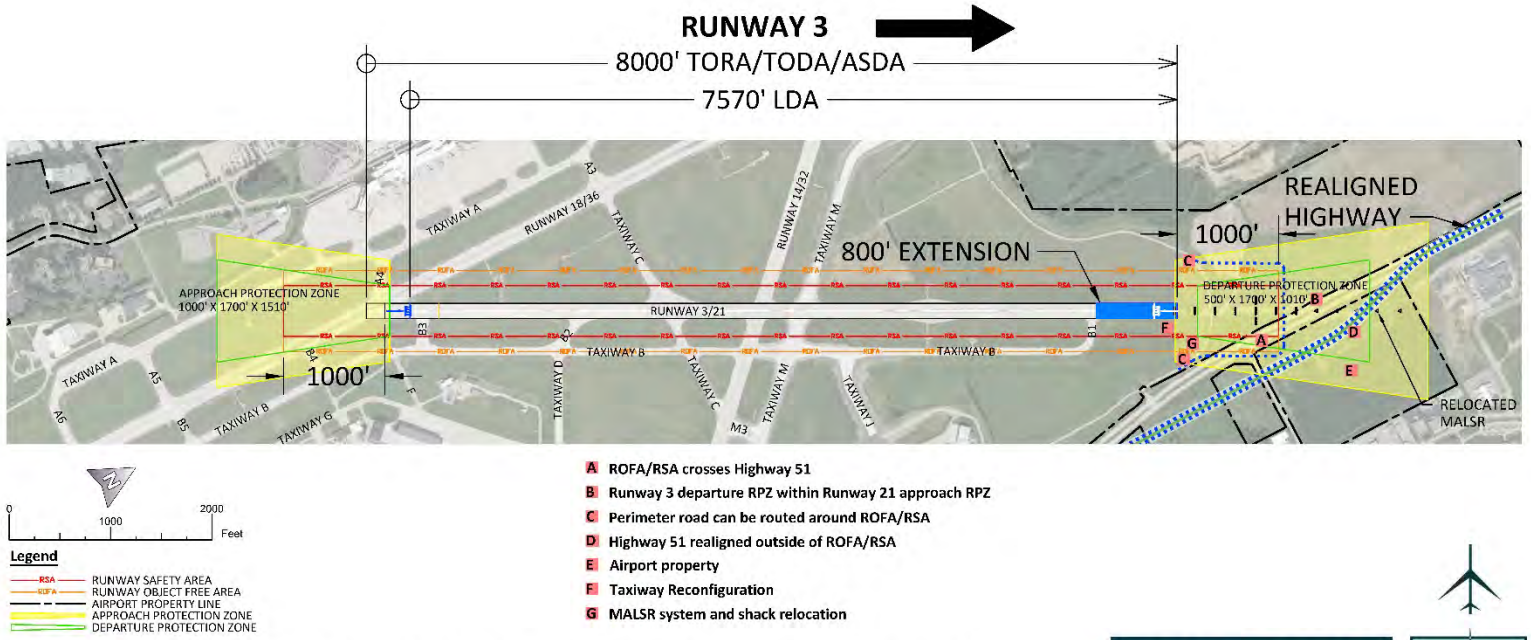

Figure 2-23. Alternative Four - Extend North, Relocate Highway - Runway 3

Figure 2-23. Alternative 4 – Extend Runway 3 North, Relocate Highway

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MSN Part 150 Study

Alternative Concept Goals: Achieve 8,000 feet of takeoff length on Runway 3 and maximize landing length on Runway 21 to encourage increase takeoffs on Runway 3 and landings on Runway 21 by Air National Guard and Air Carrier aircraft.

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- A ROFA/RSA located within Highway 51
- B Runway 3 departure RPZ within Runway 21 approach RPZ
- C Perimeter road can be routed around ROFA/RSA
- D Highway 51 realigned outside of ROFA/RSA
- E Airport property
- F Taxiway Reconfiguration
- G MALSR system and shack relocation
- H Runway 21 approach RPZ limited by surrounding buildings
- I Runway 21 departure RPZ located beyond the fence but on unoccupied airport property
- J Glide slope relocation

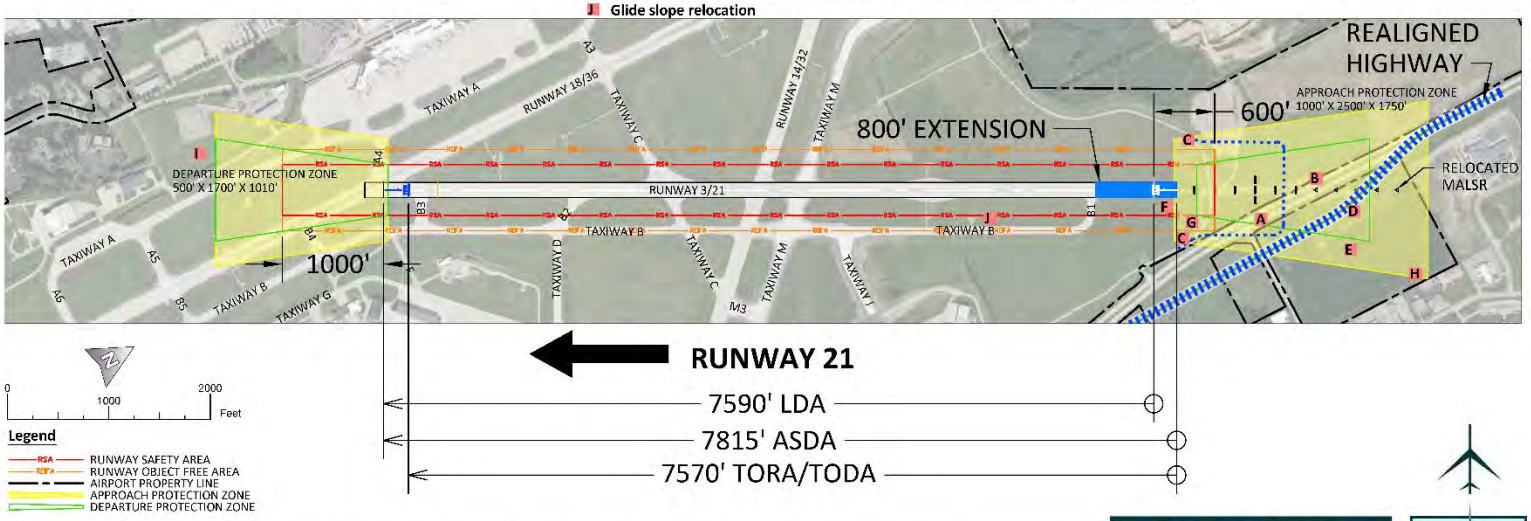

Figure 2-24. Alternative Four - Extend North, Relocate Highway - Runway 21

DANE COUNTY REGIONAL AIRPORT MADISON

Figure 2-24. Alternative 4 – Extend Runway 21 North, Relocate Highway

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2.2.8.2 Evaluate runway extension on Runway 18/36 to allow a shift of operations to the north away from noncompatible land uses

This portion of the measure would address the operational preference by the WIANG to use Runway 18/36 for their primary operations and conduct the additional airfield planning required to fully analyze the operational considerations associated within the complex airfield system with multiple declared distances. This would likely require a shift of over 1,000 feet to the north. Due to the existing declared distances in place, the recommendation would require scenario planning and coordination with the Tower, the State and FAA to further evaluate the airfield implications of this change and its operational parameters. This measure as evaluated in the Part 150 Study, assumes a 1,000-foot shift to the north, but as stated above, additional consideration, airfield planning, and coordination may be needed to dial in the assumptions. Notional modeling was completed to demonstrate the potential benefit to this proposed northern shift of Runway 18/36. Modeling results are presented in Figure 2-25 and are compared to the 2027 NEM contour in Figure 2-26.

Table 2-17. Land Use Noise Exposure Comparison between Forecast 2027 NEM Contour and Runway Extension on Runway 18/36 to Allow a Shift of Operations to the North Away from Noncompatible Land Use

Source: 2020 Census

DNL Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2027 NEM	2027 Alt	2027 NEM	2027 Alt	2027 NEM	2027 Alt	2027 NEM	2027 Alt	2027 NEM	2027 Alt
65-70	1,823	1,843	2,424	2,013	276	201	1,227	990	151	108
70-75	935	942	57	16	0	0	23	4	0	0
>75	971	925	0	0	0	0	0	0	0	0
Total	**3,730**	**3,710**	**2,481**	**2,029**	**276**	**201**	**1,250**	**994**	**151**	**108**
Delta		**-20**		**-452**		**-75**		**-256**		**-43**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

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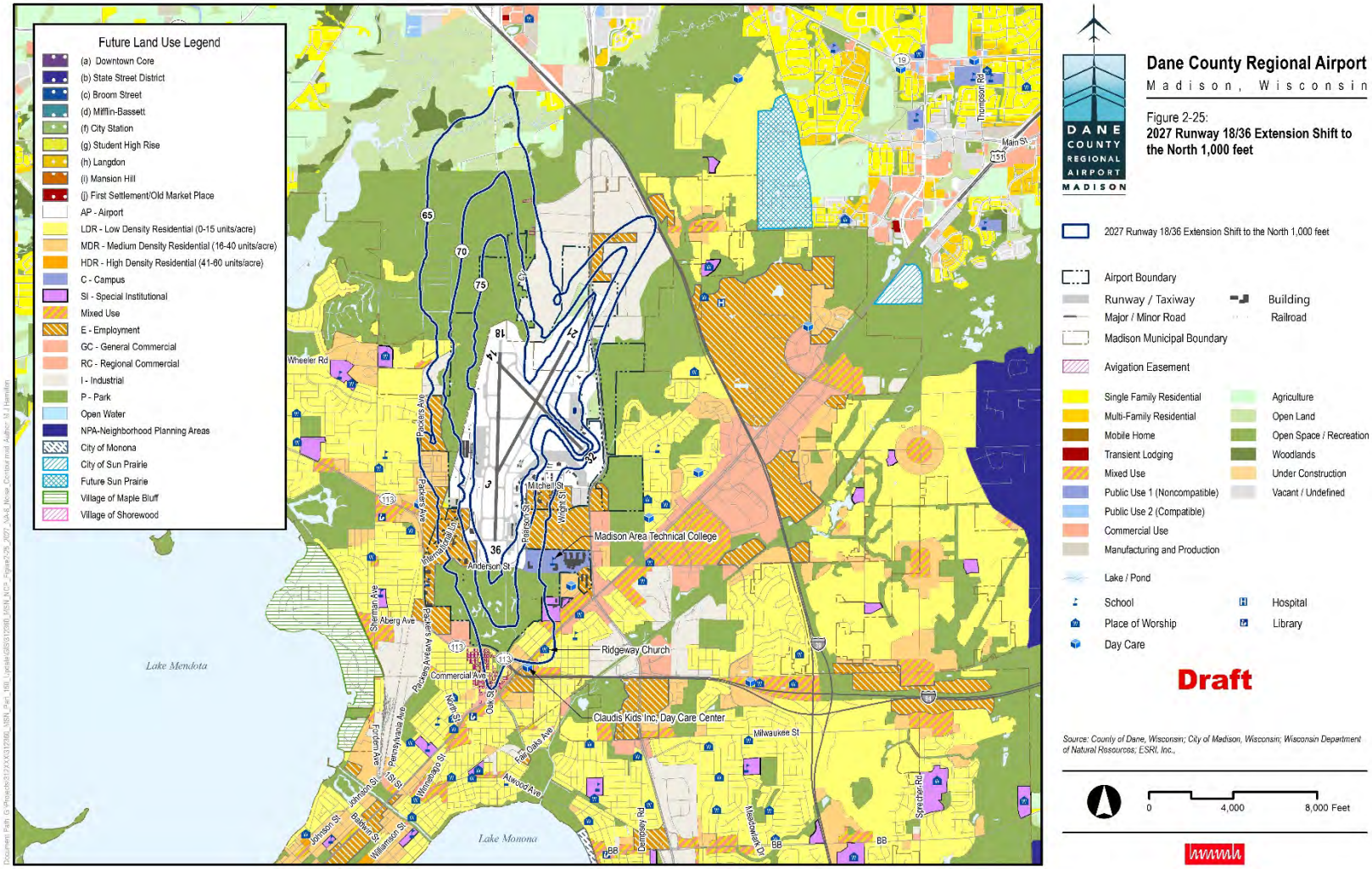

Figure 2-25. 2027 Runway Extension on Runway 18/36

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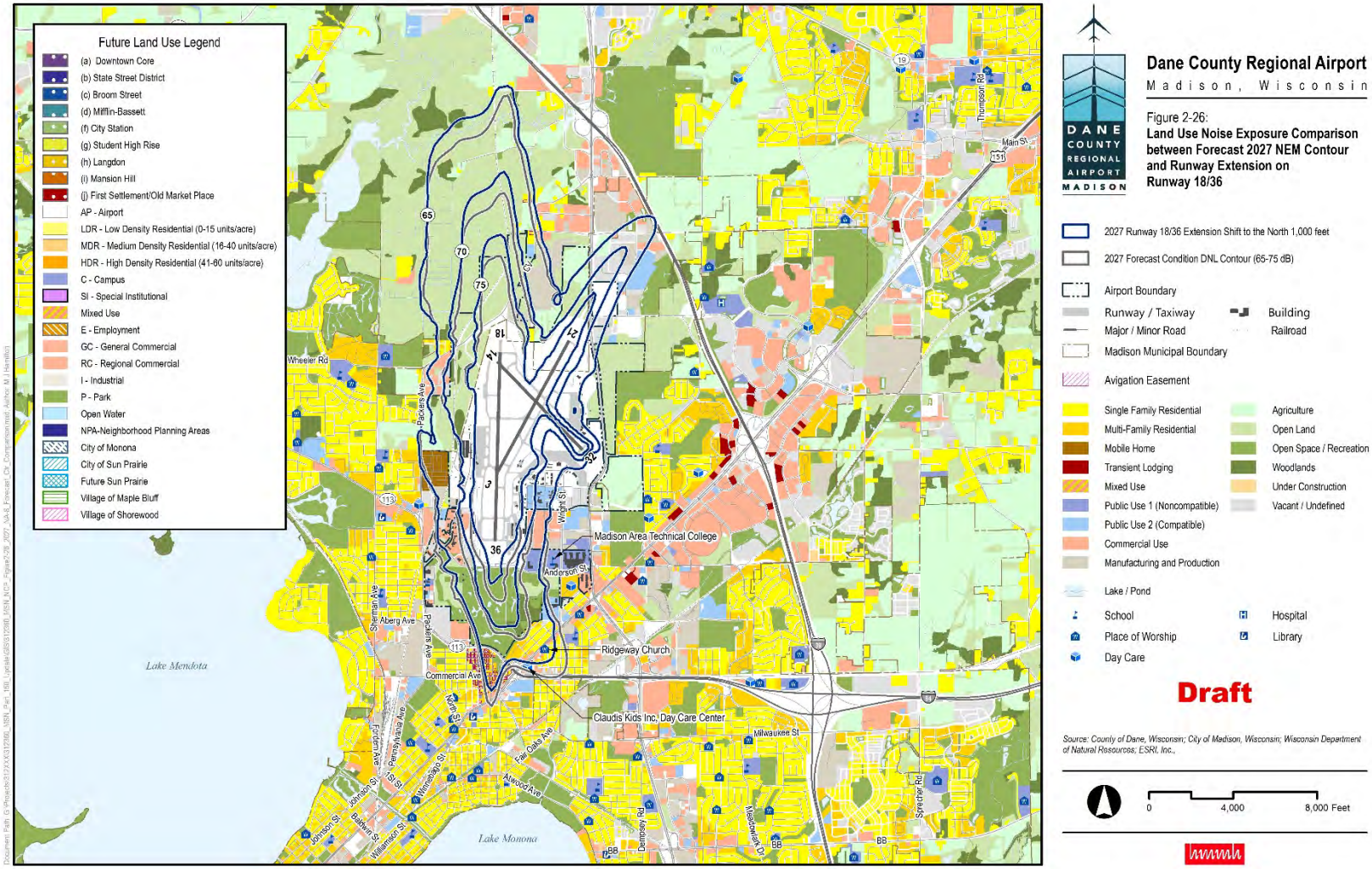

Figure 2-26. Land Use Noise Exposure Comparison between Forecast 2027 NEM Contour and Runway Extension on Runway 18/36

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Conclusion: *MSN Noise Abatement Measure NA-8: Alternatives 2, 3 and 4 for Runway 3/21* all provide the runway length needed to allow for additional operations by the WIANG, and potentially other operators. The benefits, potential challenges, and costs vary per alternative based on the approach to the runway extension. Because some of the alternatives, including a proposed northerly shift have potential operational or land use challenges, a runway extension alternative is recommended for implementation pending further coordination with FAA and WBOA.

Table 2-18 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Noise Abatement Measure NA-8.

Table 2-18. Implementation Summary for MSN NCP Measure NA-8
Source: HMMH 2023

Implementation Item	Discussion
Benefits	For the Runway 3/21 alternatives, this measure will shift the 65 DNL contour to the north, away from noncompatible land uses, providing a noise benefit to 1,580 people in 829 housing units. For the Runway 18/36 scenario, this measure will provide a noise benefit to 452 people in 256 housing units.
Rationale	According to the WIANG, extending Runway 3/21 to 8,000 feet will result in the potential unlimited use of the noise abatement runway for F-35A operations.
Responsible Parties	Airport, FAA, Wisconsin Bureau of Aeronautics
Estimated Costs	$15–62M
Funding Sources	FAA AIP
Requirements	FAA and Wisconsin Bureau of Aeronautics coordination, ALP Update, NEPA
Estimated Schedule	Five or more years of FAA approval of this measure

2.2.9 NA-9: Encourage the Wisconsin Air National Guard 115th Fighter Wing to continue limiting F-35A aircraft operations to the daytime (7:00 a.m. to 10:00 p.m.)

This measure intends to address community concerns related to F-35A aircraft noise during the nighttime hours. The DNL metric represents noise as it occurs over a 24-hour period, treating noise events occurring at night (10 p.m. to 7 a.m.) with a 10 dB weighting.[24] This 10 dB weighting is applied to account for greater sensitivity to nighttime noise and the fact that events at night are often perceived to be more intrusive than daytime. Of the approximately 4,200 annual F-35A operations forecast in the 2027 NEM, only 65 are forecast to occur at night, representing approximately 3 percent of forecast F-35A operations. Analysis shows that eliminating nighttime F-35A operations would decrease the DNL by less than 0.3 dB. Although this measure is not expected to lead to meaningful reduction in noncompatible land use, encouraging the WIANG 115th Fighter Wing to limit nighttime F-35A operations shows both County and WIANG commitment to being responsible neighbors by voluntarily limiting nighttime aircraft operations, to the extent possible.

The County recommends the WIANG continue to limit and limit even further as practicable nighttime operations of the F-35A aircraft at MSN.

Conclusion: *MSN Noise Abatement Measure NA-9* encourages the WIANG to continue to limit nighttime operations. Not continuing with this measure would increase noncompatible land uses and the potential for nighttime awakenings in nearby residential communities.

Table 2-19 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Noise Abatement Measure NA-8.

Table 2-19. Implementation Summary for MSN NCP Measure NA-8
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This measure reduces the potential for nighttime awakenings in nearby residential communities. This measure also avoids increasing the extent of the 65 DNL contour as each nighttime operation equates to 10 daytime operations in the calculation of the DNL metric.
Rationale	The County recommends the WIANG to avoid nighttime operations to limit awakenings caused by such operations and avoid an increase in noncompatible land.
Responsible Parties	WIANG
Estimated Costs	No costs
Funding Sources	Not applicable
Requirements	No requirements to implement
Estimated Schedule	Not applicable as this measure is currently implemented.

[24] For the regulatory definition of DNL see 14CFR Part 150 §150.7 Definitions. http://www.ecfr.gov/cgi-bin/text-idx?SID=f8e6df268e3dad2edb848f61b9a0fb51&mc=true&node=pt14.3.150&rgn=div5; Accessed on 12/07/2022.

2.3 Noise Abatement Measures Considered but Not Recommended

The County considered but does not recommend the following noise abatement measures as part of the MSN Noise Compatibility Program.

2.3.1 Existing NA-1: Continue the existing Runway Use Program

The County recommends removing this measure because this preferential runway use program was superseded by the updated preferential runway use program resulting from the construction of Runway 3/21 associated with 1991 NCP measure NA-6: Build new 6,500-foot Runway 3/21. Construction of Runway 3/21 was intended as a noise abatement runway.

2.3.2 Existing NA-5: Encourage Air National Guard to construct a hush house for F-16C engine maintenance runups prior to converting its fleet

The County recommends removing this measure because the Air National Guard constructed a hush house as recommended in the 1991 NCP. This measure is considered complete. Maintenance runups for the F-16C were conducted in the hush house. The 115th Fighter Wing has transitioned its fleet to F-35As, which do not require use of the hush house for maintenance.

2.3.3 Existing NA-6: Build new 6,500-Foot Runway 3/21

The County recommends removing this measure because the runway was constructed. The 7,200-foot runway opened in 1998. This measure is considered complete.

2.3.4 Runway 18 departures turn southwest over the Oscar Meyer Station Railyard

This noise abatement measure contains potential changes to flight paths (e.g., the ground path over which the aircraft flies) departing Runway 18. This measure recognizes the significant amount of noncompatible land uses within the 65 DNL contour to the south and southeast of Runway 18 and attempts to reduce noncompatible land use by routing F-35A non-scramble departures over the Oscar Meyer railyard to the southwest of the airfield. Although this measure reduces both acreage and population within the 65 DNL contour, it shifts noise from one residential neighborhood to another and therefore is not recommended. The County believes other recommended measures result in reducing noncompatible land uses to the south of the Airport without shifting noise to the community west of the Oscar Meyer Station Railyard.

Runway 18 Flight Path Alternative 1 Analysis: 50% of Runway 18 Departures Turn Southwest Over the Oscar Meyer Station Railyard.

Figure 2-27 shows the two new tracks designed for this measure. Note that these two tracks follow roughly the same path until significantly north of MSN. This measure would split Runway 18 departures such that half turn to the east after takeoff and half turn to the west after takeoff.

Figure 2-28 shows the resulting contours of this scenario. Figure 2-29 shows a comparison of the forecast 2027 NEM and this scenario. The lobe to the southeast of the airfield would contract approximately 1,500 feet to East Washington Avenue. A new contour lobe would form to the southwest of the airfield, extending 1,400 feet from the airfield boundary to the intersection of Packers Avenue and Aberg Avenue.

A comparison of the land use noise exposure between the two scenarios is provided in Table 2-20. The area of the 65 DNL contour would decrease by 53 acres from the forecast 2027 NEM scenario to this scenario. Total population within the 65 DNL contour would decrease by 813 people, and there would be 344 fewer housing units within the 65 DNL contour. While the Madison Area Technical College Protective Services School would still be within the 65 DNL contour, the Hawthorne Elementary School would be outside of the 65 DNL contour.

Table 2-20. Land Use Noise Exposure Comparison between Forecast 2027 NEM and Flight Path Alternative 1 (F-35A Aircraft Only) Contour

Source: 2020 Census

DNL Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2027 NEM	2027 Alt 150%	2027 NEM	2027 Alt 1: 50%	2027 NEM	2027 Alt 1: 50%	2027 NEM	2027 Alt 1: 50%	2027 NEM	2027 Alt 1: 50%
65-70	1,823	1,838	2,424	1,857	276	261	1,227	904	151	141
70-75	936	933	57	14	0	0	23	3	0	0
>75	971	906	0	0	0	0	0	0	0	0
Total	**3,730**	**3,677**	**2,481**	**1,871**	**276**	**261**	**1,250**	**907**	**151**	**141**
Delta		**-53**		**-610**		**-15**		**-343**		**-10**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

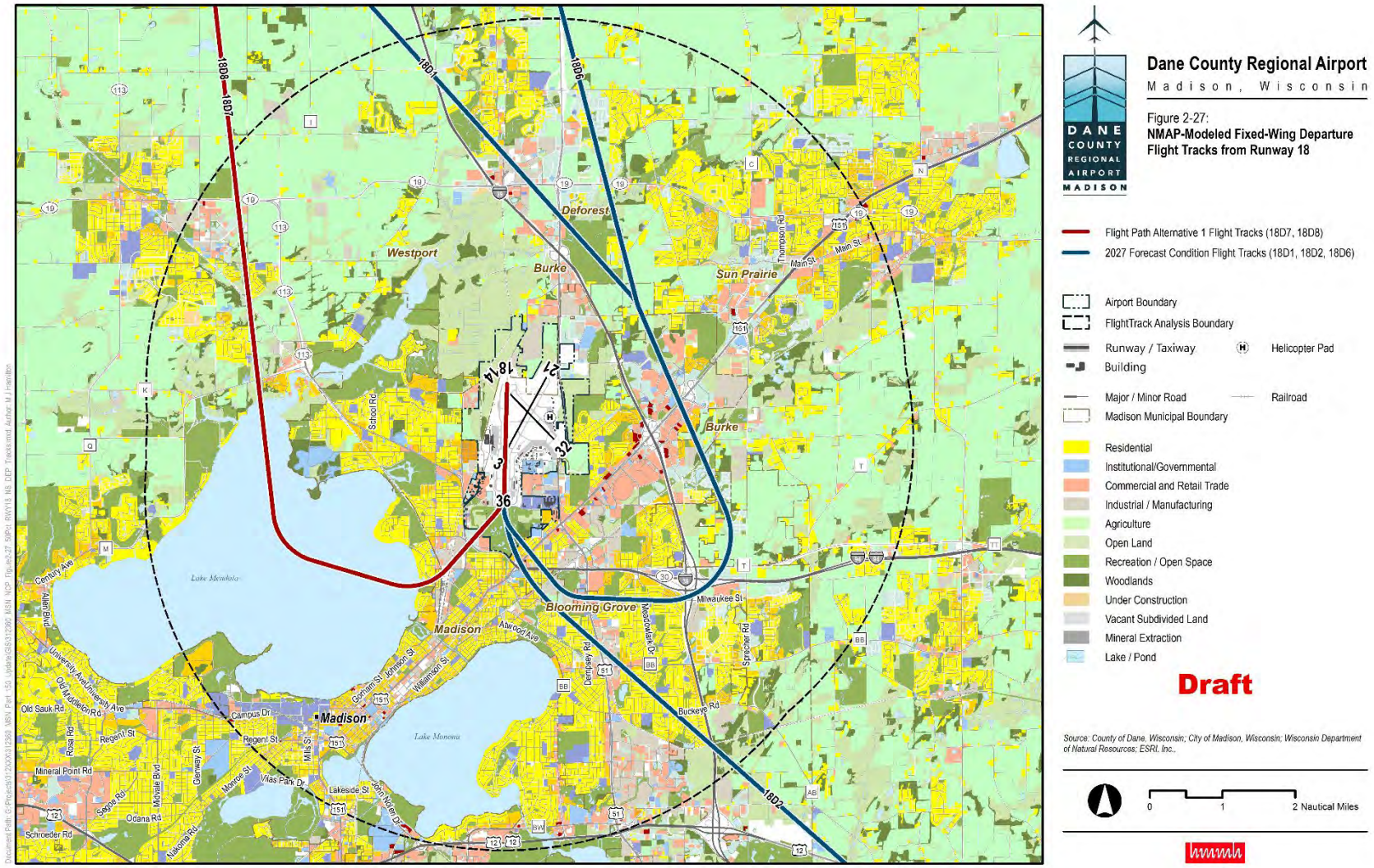

Figure 2-27. Flight Path Alternative 1 NMAP Tracks

Source: HMMH, 2023 MSN Part 150 Noise Compatibility Study

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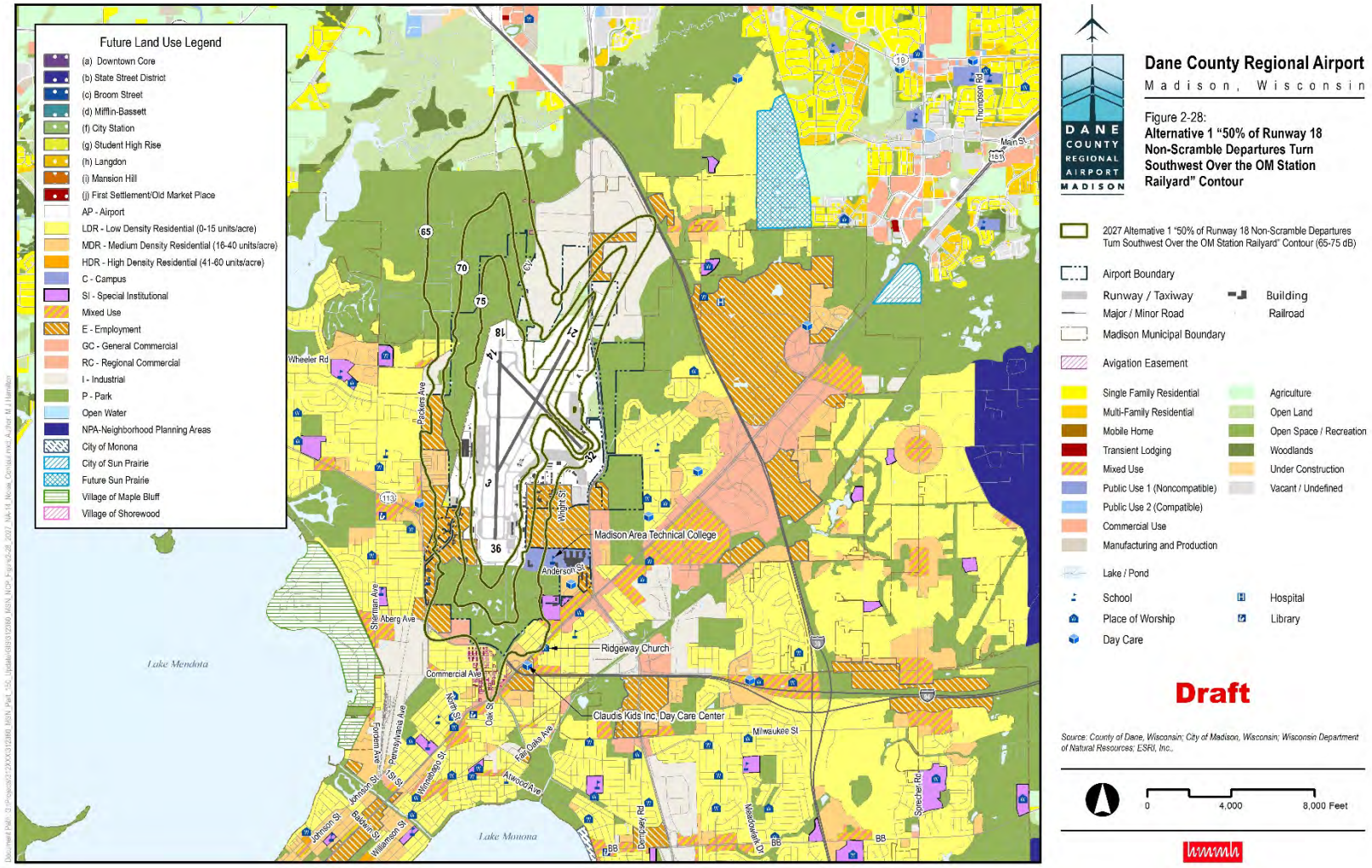

Figure 2-28. Flight Path Alternative 1 (F-35A Aircraft Only) Contour

Source: HMMH, 2023 MSN Part 150 Noise Compatibility Study

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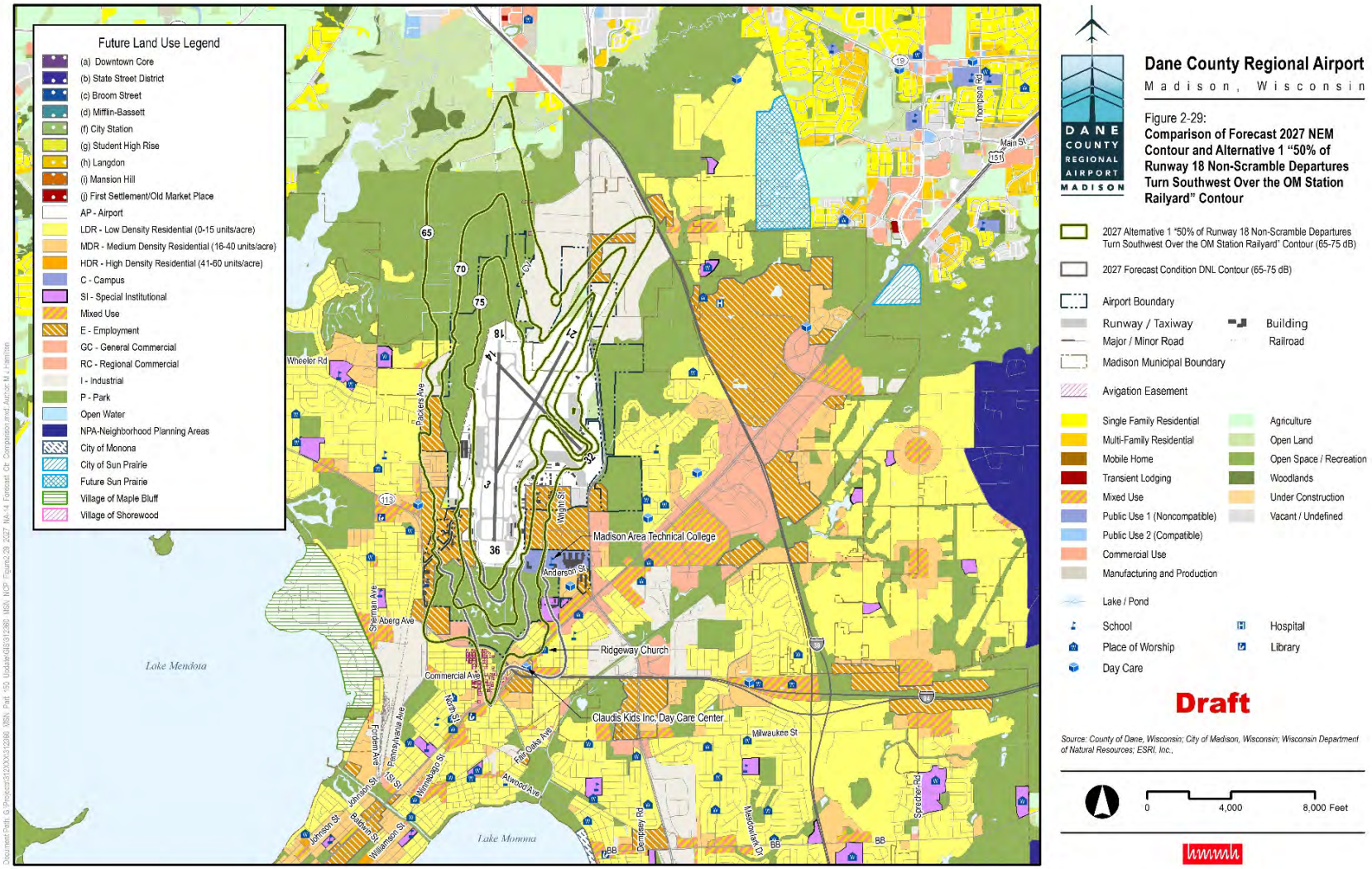

Figure 2-29. Comparison of Forecast 2027 NEM Contour and Flight Path Alternative 1 (F-35A Aircraft Only) Contour

Source: HMMH, 2023 MSN Part 150 Noise Compatibility Study

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Runway 18 Flight Path Alternative 2 Analysis: 100% of Runway 18 Departures Turn Southwest Over the Oscar Meyer Station Railyard.

Using the same flight tracks as used for the previous alternative, shown in Figure 2-13, this measure would route all F-35A Runway 18 departures to the west after takeoff.

Figure 2-30 shows the resulting contours of this scenario. Figure 2-31 shows a comparison of the forecast 2027 NEM and this scenario. The lobe to the southeast of the airfield would recede to within the airport boundary. A new contour lobe would form to the southwest of the airfield, extending nearly 3,000 feet from the airfield boundary to the southwestern edge of the Oscar Meyer Station Railyard.

A comparison of the land use noise exposure between the two scenarios is provided in Table 2-21. The area of the 65 DNL contour would decrease by 50 acres from the forecast 2027 NEM scenario to this scenario. Total population within the 65 DNL contour would decrease by 1,028 people, and there would be 538 fewer housing units within the 65 DNL contour. While the Madison Area Technical College Protective Services School would still be within the 65 DNL contour, the Hawthorne Elementary School would be outside of the 65 DNL contour. The expansion of the contour to the southwest would place the Isthmus Montessori School within the 65 DNL Contour in the Alternative 2 scenario.

Table 2-21. Land Use Noise Exposure Comparison between Forecast 2027 NEM and Flight Path Alternative 2 (F-35A Aircraft Only) Contour

Source: 2020 Census

DNL Contour Interval	Area (Acres)		Population Census 2020				Housing Units			
			Total		Compatible[1]		Total		Compatible[1]	
	2027 NEM	2027 Alt 2	2027 NEM	2027 Alt 2	2027 NEM	2027 Alt 2	2027 NEM	2027 Alt 2	2027 NEM	2027 Alt 2
65-70	1,823	1,836	2,424	1,446	276	262	1,227	712	151	142
70-75	936	939	57	14	0	0	23	3	0	0
>75	971	905	0	0	0	0	0	0	0	0
Total	**3,730**	**3,680**	**2,481**	**1,460**	**276**	**262**	**1,250**	**715**	**151**	**142**
Delta		**-50**		**-1,021**		**-14**		**-535**		**-9**

[1] Land use deemed compatible due to Dane County acquisition of avigation easements.

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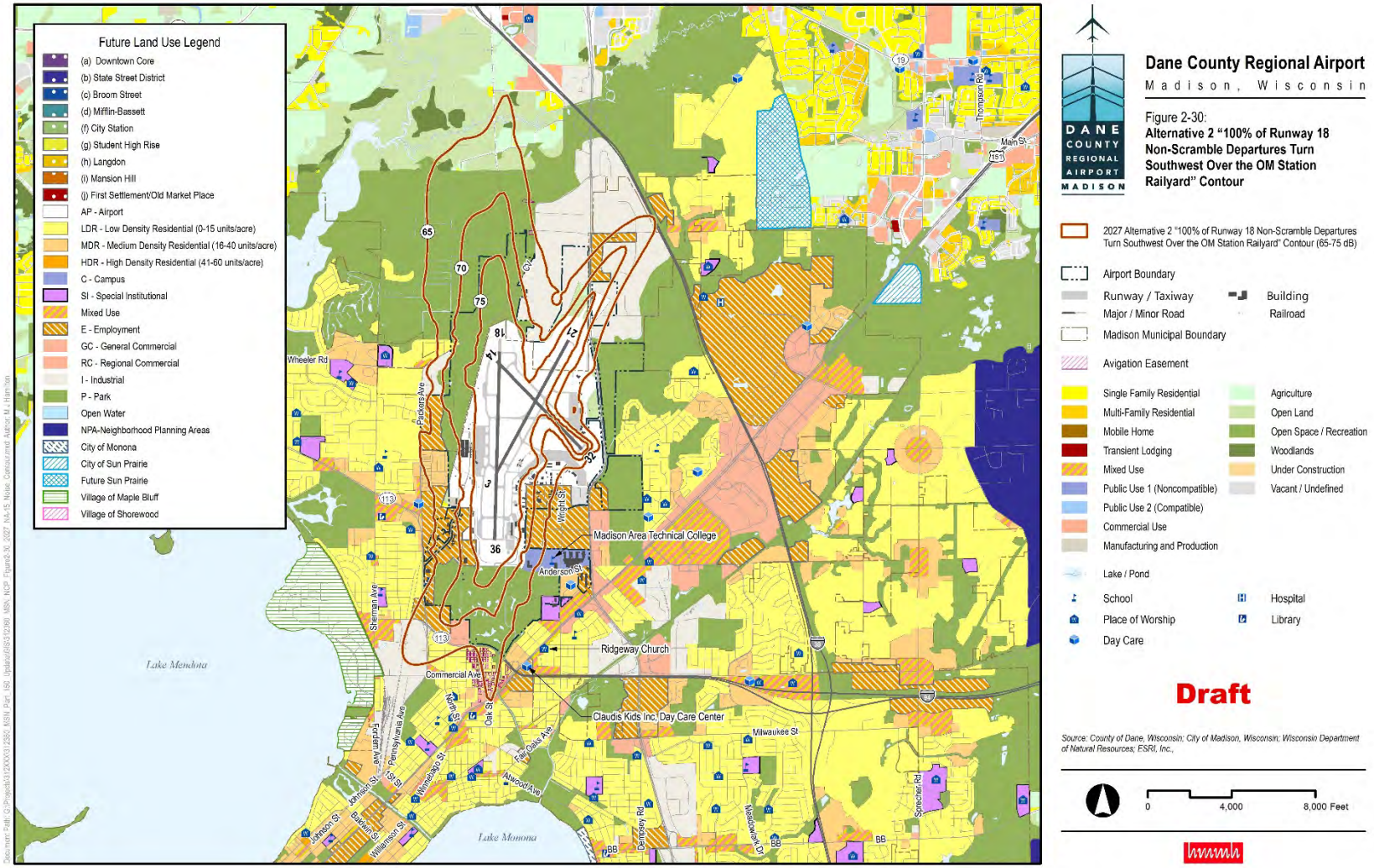

Figure 2-30. Flight Path Alternative 2 (F-35A Aircraft Only) Contour
Source: 2023 MSN Part 150 Noise Compatibility Study

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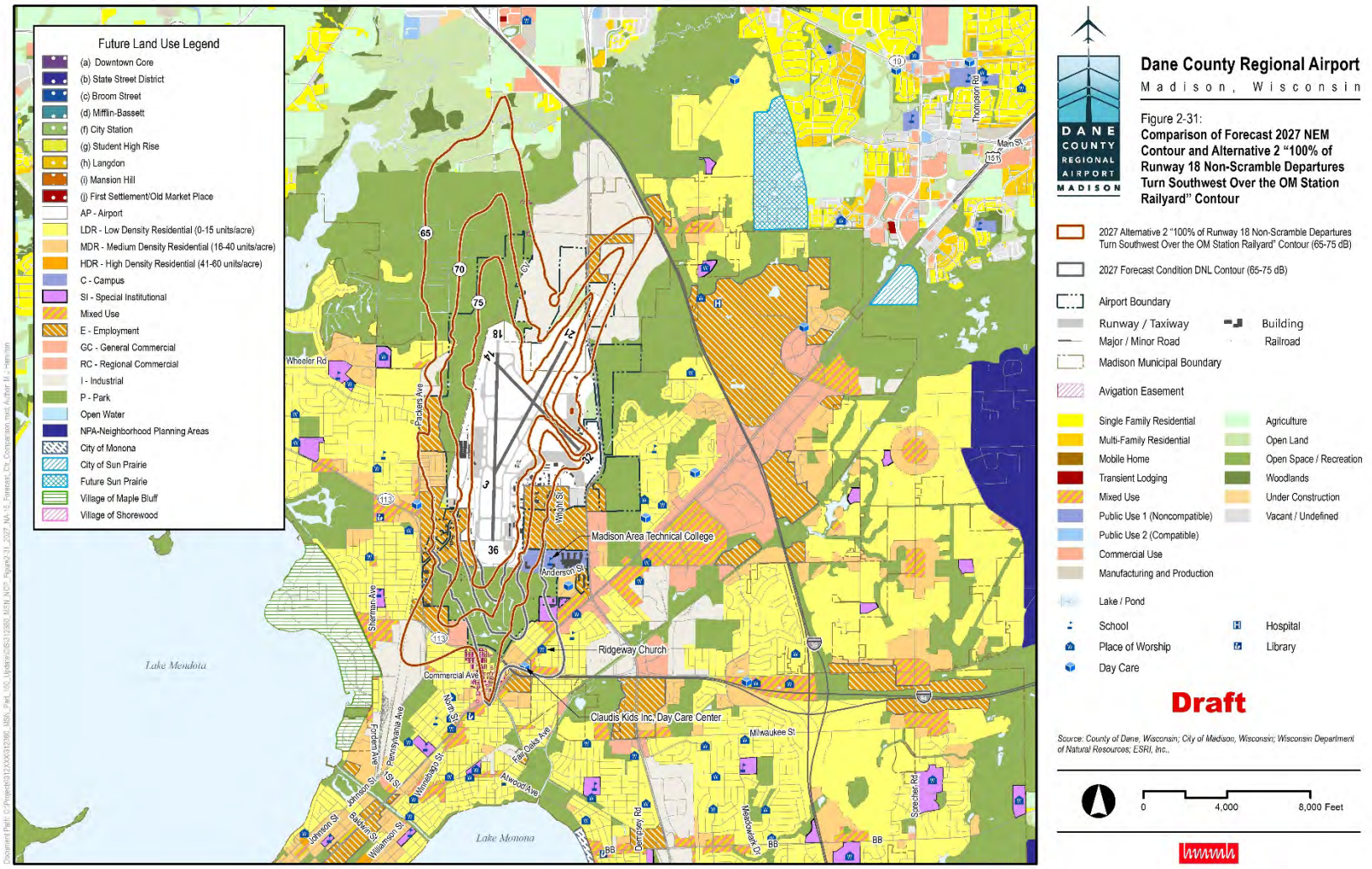

Figure 2-31. Comparison of Forecast 2027 NEM Contour and Flight Path Alternative 2 (F-35A Aircraft Only) Contour

Source: 2023 MSN Part 150 Noise Compatibility Study

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2.3.5 Voluntary minimization of F-35 training flights during times when children are traveling to and from school or outside for recess

This measure was considered to reduce the effects of aircraft noise on school age children traveling to and from school and during outside recess at school. According to the Madison Metropolitan School District, morning school bus pick-up begins at approximately 6:30 a.m. and afternoon drop-off ends at approximately 5:30 p.m., with both pick-up and drop-off sessions running approximately 3 hours.[25]

Physical education standards for the state of Wisconsin require a minimum of three 30-minute sessions per week in kindergarten through sixth grade.[26] Additionally, the Wisconsin Department of Education suggests recess of 20 minutes per day for these same age groups.[27] Assuming a limited number of physical education teachers per school, it can be estimated that there will be students outside most of the school day at elementary schools within the Madison Metropolitan School District.

This measure is not practical or compatible with the current WIANG mission. To meet this recommendation, F-35A training flights would need to be moved to the evening or nighttime hours, resulting in greater disruption to home and quiet hours. Further, this recommendation would reduce the time available for these flights, resulting in an increased frequency of flights within a smaller window of time.

Overall, this measure would not lead to reductions in overall measurable noise levels as the F-35A training syllabus would require the same number of average daily and annual flights, and because of the limited window for training flights, this measure may increase the DNL levels as more flights shift into the nighttime period of 10:00 p.m. to 7:00 a.m.

[25] Transportation - Madison Metropolitan School District. https://www.madison.k12.wi.us/transportation
[26] Wisconsin Standards for Physical Education.
https://dpi.wi.gov/sites/default/files/imce/standards/New%20pdfs/PhysicalEducationStandards2020.pdf
[27] https://dpi.wi.gov/sites/default/files/imce/sspw/pdf/peactiverecess.pdf

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3 Noise Compatibility Program – Land Use Measures

Land use management measures address aircraft noise in areas of high noise exposure that cannot be eliminated through the implementation of noise abatement measures as described in Section 2. Pursuant to the requirements of 14 CFR Part 150, this section evaluates corrective and preventive land use measures. Corrective land use measures, which are typically implemented by an airport operator, include land acquisition and sound insulation treatments of structures. In contrast, preventive measures prohibit the introduction of new noncompatible land uses and/or notifying potential buyers of properties affected by aircraft noise; such measures are typically implemented by the local planning and zoning municipalities.

The FAA has no regulatory authority to control land uses around airports and recognizes that state and local governments are responsible for land use planning, zoning, and regulation. However, as a condition of receipt of FAA funding for airport development projects, an airport operator must provide the FAA with written assurances that "appropriate action, including the adoption of zoning laws, have been or will be taken, to the extent reasonable, to restrict the use of land adjacent to or in the immediate vicinity of the Airport to activities and purposes compatible with normal airport operations including the landing and takeoff of aircraft." In response to this FAA requirement, this NCP Report discusses preventive land use management measures in Section 3.1 and Section 3.2.

Table 1 in Appendix A of 14 CFR Part 150 (presented in this NCP Report as Table 1-1) identifies categories of land use surrounding an airport that are acceptable within the 65, 70, and 75 DNL contours (compatible land uses). The table implies that virtually all land uses outside of the 65 DNL contour are compatible with aircraft noise.

In the context of noise mitigation, strategies that reduce existing noncompatible uses are known as corrective strategies, and those that limit the establishment of additional noncompatible uses are known as preventive strategies. Corrective noise mitigation strategies, such as the removal of noncompatible land uses (e.g., land acquisition) or the application of sound insulation, which focuses on reducing interior noise exposure. Preventive mitigation strategies are intended to discourage the development of new noncompatible land uses using techniques such as the application of zoning regulations and the modification of building codes.

Noncompatible land uses within the forecast 2027 NEM provided the basis for the cost and schedule estimates for implementation of each recommended land use measure. However, per FAA guidance, the NEM will be updated regularly to ensure the land use measures address current or forecast aircraft noise exposure. Eligibility to implement the land use measures will be dependent on the FAA-accepted NEM at the time of implementation.

Section 3.1 identifies all existing land use measures at MSN, including their implementation status. For this Part 150 Study, Dane County determined, for each measure recommended in the 1991 MSN NCP, whether to continue as written, modify, or eliminate.

Section 3.2 describes each of the three County-recommended land use measures in each of the Part 150-required categories to analyze for inclusion in the updated NCP, as shown in Table 3-1. The section includes summaries of noise benefit analyses where applicable.

Table 3-1. Summary of Dane County-Recommended Land Use Measures
Source: MSN 2023

Part 150 Category	Land Use Measure	
	Number	Title
Prevention, Land Use Controls, Avigation Easements & Real Estate Disclosures	LU-1	Maintain existing compatible land uses in the airport vicinity
Land Acquisition	LU-2	Continue voluntary land acquisition inside the 70 dB DNL
Land Acquisition	LU-3	Continue the planned voluntary land acquisition of the Cherokee Marsh and Token Creek Park

Section 3.3 discusses the land use measures that were considered but that the County is not recommending in this NCP.

3.1 Existing Land Use Measures

In the previous MSN NCP, completed in 1991, the County recommended 11 land use measures. For this Part 150 Study, the approved land use measures from the original 1991 MSN NCP were evaluated to determine which have been implemented. Table 3-2 lists the 11 Dane County-recommended land use measures in the 1991 NCP that were approved by the FAA in the 1993 Record of Approval and summarizes the implementation status of each measure. This section details each of the existing land use measures and their implementation status based on analysis. This information is presented in the 2022 NEM document Section 4, *Existing Noise Compatibility Program*, and the NEM document's Appendix B.

Table 3-2. Status of 1991 NCP Land Use (Noise Mitigation) Measures
Source: HMMH, JPG 2022

Number	Title	Implementation Status	Recommendation for 2024 NCP
LU-1	Maintain existing compatible zoning in the airport vicinity	Implemented	Modify
LU-2	Define "airport affected area" for purposes of implementing Wisconsin Act 136[28]	Implemented	Continue
LU-3	Adopt airport noise overlay zoning	Not implemented	Eliminate
LU-4	Amend subdivision regulations to require dedication of noise and avigation easements of plat notes on final plat	Implemented	Continue
LU-5	Consider amending County subdivision regulations to prevent subdivision of land zoned A-1 Agriculture	Not implemented	Eliminate
LU-6	Amend building codes to provide soundproofing standards for noise-sensitive development in airport noise overlay zones	Not implemented	Continue
LU-7	Amend local land use plans to reflect noise compatibility plan recommendations and establish airport compatibility criteria for project review	Not implemented	Modify
LU-8	Follow through with planned land acquisition in Cherokee Marsh and Token Creek Park areas	Not implemented	Continue
LU-9	Consider expanding land acquisition boundaries in Cherokee Marsh and Token Creek areas	Not implemented	Continue
LU-10	Establish sales assistance or purchase assurance program for homes impacted by noise above 70 Ldn[29]	Implemented	Modify
LU-11	Install sound insulation for schools impacted by noise above 65 Ldn	Not implemented	Eliminate

3.1.1 LU-1: Maintain existing compatible zoning in the Airport vicinity

The statement of measure **LU-1** in the 1991 MSN NCP is as follows:

Much land in the airport vicinity is zoned for commercial, industrial open space, and recreation use. All of these zoning categories are compatible with aircraft noise. Dane County and Madison should maintain compatible zoning in the "airport affected area," discussed below and shown on the attached map [shown in Figure 3-1]. *This would prevent the encroachment of residential development into these areas.*

Implementation Status: Implemented

Measure LU-1 recognizes the significant amount of compatibly zoned land in the vicinity of the Airport and recommends that zoning be maintained by Dane County and the City of Madison. This land, referred to as the "airport affected area," is defined by the 60 DNL contour and shown on Exhibit 5D of the 1991 NCP. This measure is in effect through Dane County Ordinance Chapter 78, which states that changes to

[28] The 1985 Wisconsin Act 136, originally numbered as Wis. Stat. 66.31
[29] Ldn is the same as DNL for the purposes of this report; Ldn was more commonly used when the 1991 NCP was developed, while DNL is used more often in the present day.

compatible land use within the "airport affected area" shall only be allowed when the change is to another compatible land use. The ordinance defines the "airport affected area" via the "Airport Affected Area Map," dated 1996 and on record at the county clerk's office.

The "airport affected area" is based on a composite of the 60 Ldn contour for 1995 baseline conditions and for noise abatement plan conditions. It also includes an approximation of the training pattern area for the proposed parallel runway (18L-36R).

Recommendation: Modify measure by including all the measures recommended to maintain existing compatible land uses.

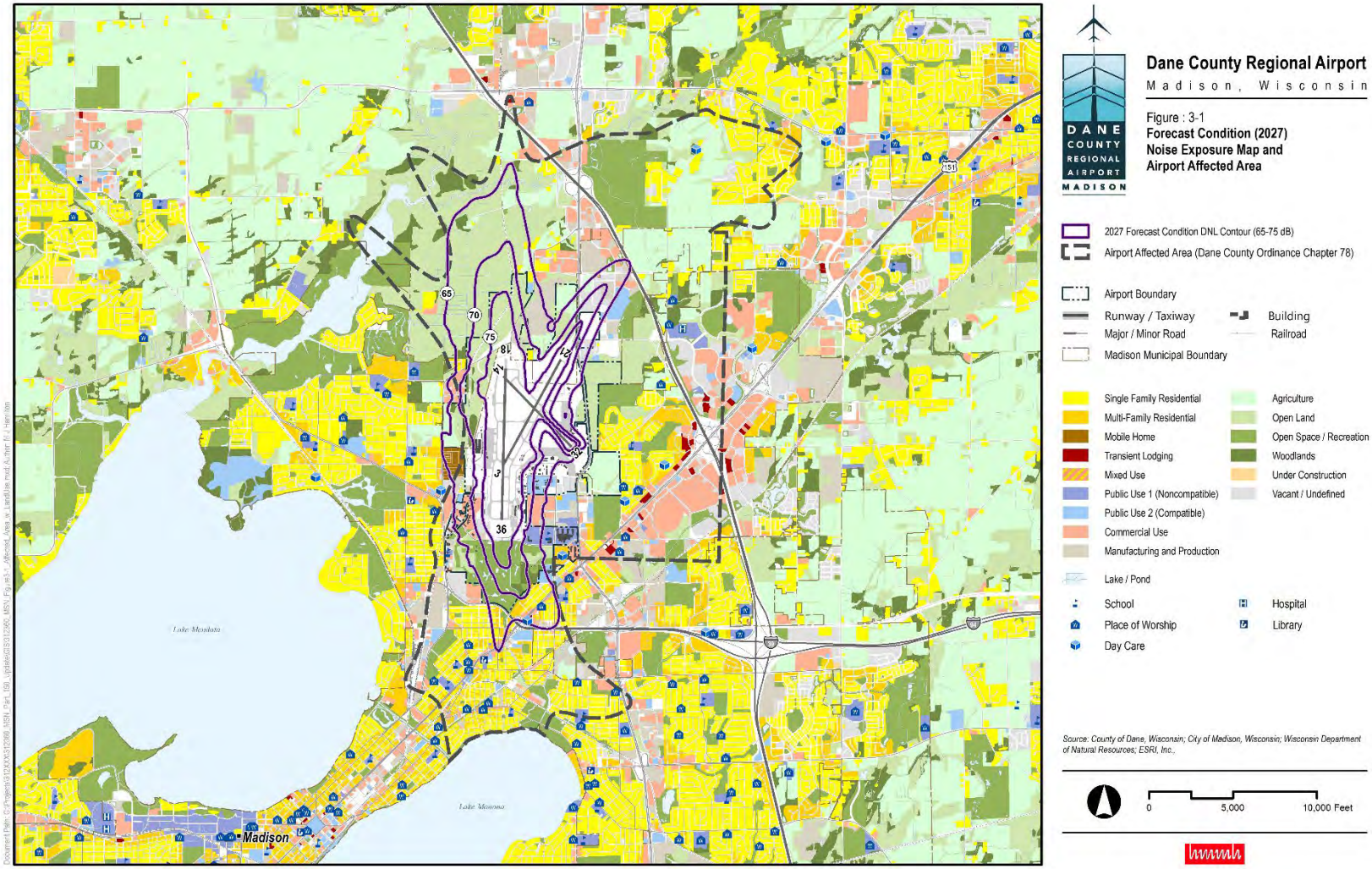

Figure 3-1. Forecast Condition (2027) With Airport Affected Area as of 1991

Source: 1991 MSN Part 150 Noise Compatibility Study

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3.1.2 LU-2: Define "Airport Affected Area" for purposes of implementing Wisconsin Act 136

The statement of measure **LU-2** in the 1991 MSN NCP is as follows:

Wisconsin Act 136, now known as Wisconsin Statute 66.31,[30] has three key provisions. First, each municipality with a development plan must show the location of any publicly owned airport and "airport affected areas." These are defined as areas within three miles of the airport, although smaller areas can be defined through intergovernmental agreements. Second, the municipality with zoning authority must notify the airport owner of proposed zoning changes within the "airport affected area." Third, if the airport owner objects to the proposed zoning change, a two-thirds vote of the municipal governing body is required to approve of the change.

For purposes of implementing and administering Wisconsin Statute 66.31 in the Madison area, it is recommended to define the "airport affected area" as shown in the attached map. The area is based on a composite of the 60 Ldn contour for 1995 baseline conditions and for noise abatement plan conditions. It also includes an approximation of the training pattern area for the proposed parallel runway (18L-36R).

Implementation Status: Implemented

Measure LU-2 provides for the definition of an "airport affected area" so that Wisconsin Statute 66.31 may be implemented. The statute requires municipalities to show the location of any publicly owned airports and subsequently affected areas. These are defined as areas within three miles of the Airport, unless otherwise agreed upon by the affected municipalities. The statute also requires a municipality with zoning authority to notify the Airport of any proposed changes within the "airport affected area." Finally, the statute requires that if the Airport objects to the proposed zoning change, a two-thirds vote of the municipal governing body must be reached for the change to be approved. Recognizing that the three-mile requirement in the statute would be a much larger area than what would be significantly affected by the Airport's operations, the NCP recommends the appropriate municipal bodies agree upon an "airport affected area." The measure was implemented through Dane County Ordinance Chapter 78, which defines a specific "airport affected area" in place of a three-mile boundary.

The Ordinance also notes the intention of the County to enter into agreements with affected municipalities so that they may adopt the "airport affected area." The County shall continue to define and maintain the "airport affected area" for purposes of satisfying the requirements of Wisconsin Statute 66.31.

Recommendation: Continue measure in 2024 NCP as part of the measure to maintain existing compatible land uses (LU-1).

[30] Wisconsin Statute 66.31 Agreement to establish an airport affect area
https://docs.legis.wisconsin.gov/1995/statutes/statutes/66/31

3.1.3 LU-3: Adopt Airport Noise Overlay Zoning

The statement of measure **LU-3** in the 1991 MSN NCP is as follows:

Airport noise overlay zoning establishes special standards within a noise-impacted area to help mitigate the problems caused by noise. These provisions supplement those of the underlying zoning classifications and would apply only to new institutions, except on existing lots of record. Where noise-sensitive uses are permitted on lots of record, soundproofing would be required. The overlay district boundaries should correspond to a composite of the 65 Ldn noise contours for 1995 based on both baseline conditions and noise abatement plan conditions.

Implementation Status: Not implemented

Measure LU-3 recommends Dane County and the City of Madison adopt an airport noise overlay zone. This zone would establish specific standards for new development, with the goal of mitigating noise from Airport operations. The NCP recommended the zone correspond to the 1995 forecast 65 DNL noise contour, with the acknowledgement that some adjustment may be necessary to compensate for local land use planning. New noise-sensitive land uses would be prohibited within the overlay zone, with certain exceptions such as existing lots of record. Like LU-2, the NCP recommended a requirement in which the Airport is notified of significant land use development proposals within the overlay zone. The measure has not been implemented, per currently available documentation. However, while there is no specific reference to a noise overlay zone in the Dane County Ordinance, Chapter 78 requires that any change in land use be from one compatible land use to another. This, in addition to the implementation of LU-1 and LU-2, essentially achieves the same effect as the overlay zone.

Recommendation: Eliminate as LU-1 as amended will achieve the intent of this measure.

3.1.4 LU-4: Amend subdivision regulations to require dedication of noise and avigation easements of plat notes on final plat

The statement of measure **LU-4** in the 1991 MSN NCP is as follows:

Dane County and Madison should amend their subdivision regulations to require the dedication of noise and avigation easements for new subdivisions within the airport noise overlay zone. While the noise overlay zoning regulations should restrict opportunities for land subdivision, this would provide back-up protection in case of unforeseen events. The noise and avigation easements would help to inform prospective property buyers that the land is subject to frequent aircraft overflight and aircraft noise. It would also protect the airport proprietor (Dane County), from lawsuits claiming damages for noise or other airport activities.

Implementation Status: Implemented

Measure LU-4 recommends Dane County and the City of Madison revise their subdivision regulations so that avigation easements are conveyed for any new subdivisions within a noise overlay zone. This measure would ensure property owners are aware of the frequency and levels of aircraft noise exposure. The measure states that if easements are not deemed acceptable by the City and County, a notice of potential high noise levels should be placed on the final plat of subdivisions within the overlay zone; this would serve as an alternative disclosure for property owners.

This measure is currently in effect via Dane County Ordinance, Chapter 75, which states that the below notation must be placed on the plat or certified survey map for any approved subdivision within the airport affected area:

"Lands covered by this [plat] [certified survey map] are located within an area subject to heightened noise levels emanating from the operation of aircraft and equipment from a nearby airport."

Recommendation: Continue measure in 2024 NCP as part of the measure to maintain existing compatible land uses (LU-1).

3.1.5 LU-5: Consider amending county subdivision regulations to prevent subdivision of land zoned A-1 agriculture

The statement of measure **LU-5** in the 1991 MSN NCP is as follows:

Dane County is considering amending subdivision regulations to prevent the subdivision of land zoned A-1, agriculture. This is a way to protect prime farmland and guide urban growth. To the extent this measure would apply to areas affected by noise and frequent aircraft overflights, it also would promote airport land use compatibility by discouraging residential development.

Implementation Status: Not implemented

Measure LU-5 recommends that Dane County consider amending its zoning regulations to prevent the subdivision of land zoned A-1, agriculture. The goal of this amendment would be to protect farmland, manage the growth of urban areas, and ensure land use compatibility where applicable. This measure was not implemented; there is no such regulation found in the Dane County ordinances.

Recommendation: Eliminate due to no such zoning in the area.

3.1.6 LU-6: Amend building codes to provide soundproofing standards for noise-sensitive development in airport noise overlay zones

The statement of measure **LU-6** in the 1991 MSN NCP is as follows:

The County and City should amend building codes to provide soundproofing standards for use within the airport noise overlay zone. This would implement the sound insulation requirements of the noise overlay zoning ordinance.

Implementation Status: Not implemented

Measure LU-6, assuming the establishment of an airport noise overlay zone, recommends Dane County and the City of Madison amend their building codes to include soundproofing standards for new developments within the overlay zone. The measure was not implemented since both municipalities are required to follow the statewide building code which does not allow for implementation of differing standards unless approved by the state of Wisconsin as detailed in Uniform Dwelling Code (UDC), SPS 320.06.

Recommendation: Modify to be implemented and continue measure in 2024 NCP as part of the measure to maintain existing compatible land uses (LU-1).

3.1.7 LU-7: Amend local land use plans to reflect noise compatibility plan recommendations and establish airport compatibility criteria for project review

The statement of measure **LU-7** in the 1991 MSN NCP is as follows:

Dane County, the City of Madison, and the Town of Burke should amend their land use plans to reflect the recommendations of the Noise Compatibility Plan. The adoption of project review criteria as part of the local land use plans, requiring the consideration of airport noise and land use compatibility, would help ensure that these important concerns are not neglected during future land use deliberations.

Implementation Status: Implemented

Measure LU-7 stated that Dane County, the City of Madison, and the Town of Burke amend their local land use plans to reflect recommendations of the NCP. Continued coordination amongst municipalities is necessary to maintain land use compatibility. As such, the measure recommended the following guidelines for future land use review:

A. Determine the sensitivity of the subject land use.
B. Advise the Airport of development proposals.
C. Locate noise-sensitive public facilities outside the 65 DNL contour and encourage building construction that brings interior noise levels to 45 dB DNL.
D. Discourage approval of urban area amendments that allow for noise-sensitive development.
E. Where development within the 60 DNL contour must be allowed, encourage developers to adjust their designs to shield noise-sensitive areas of the building.

This measure was implemented; ongoing support for the Airport's promotion of compatible land uses is noted in the Dane County Land Use Plan, which notes the participation of local municipalities.

Recommendation: Modify and continue measure in 2024 NCP as part of the measure to maintain existing compatible land uses (LU-1).

3.1.8 LU-8: Follow through with planned land acquisition in Cherokee Marsh and Token Creek Park areas

The statement of measure **LU-8** in the 1991 MSN NCP is as follows:

The Cherokee Marsh Revised Long-Range Open Space Plan (September 1981) proposes the acquisition of plan in the marsh and along Token Creek north of the airport. By following through with that program, the County will be helping to promote airport land use compatibility while also achieving the direct objective of the Open Space Plan. The attached map shows three areas proposed for acquisition which would be eligible for FAA funding assistance through the noise set-aside of the airport improvement program since they lie within the 65 Ldn contour.

Implementation Status: Not implemented

Measure LU-8 notes the planned acquisition of land to the north side of the Airport, as proposed in the 1981 Cherokee Marsh Revised Long-Range Open Space Plan. This acquisition would support the Noise Abatement Plan which calls for use of the north side of the Airport, with the goal of reducing the noise exposure of the developed areas to the south of the Airport. Exhibit 5F of the 1991 NCP highlights the proposed acquisition areas. Three of the proposed areas, totaling 178 acres, were eligible for FAA-funding at the time of NCP publication, as they were within the 65 DNL contour. More investigation is needed to determine the implementation status of this measure. While land acquisition is noted on the Airport website, detailed acquisition history should be confirmed with the Airport.

Recommendation: Modify and combine measures in 2024 NCP as the planned voluntary land acquisition of the Cherokee Marsh and Token Creek Park (LU-3).

3.1.9 LU-9: Consider expanding land acquisition boundaries in Cherokee Marsh and Token Creek areas

The statement of measure **LU-9** in the 1991 MSN NCP is as follows:

The attached map shows three parcels, B, C, and D, as proposed for parks and open space expansion. All are within the 65 Ldn contour, based on 1995 conditions with the Noise Abatement Plan. Thus, acquisition costs would be eligible for FAA funding assistance through the noise set-aside of the Airport Improvement Program. As an option to outright acquisition by the County, private development for park and recreation uses, such as golf courses, riding clubs, or private wildlife sanctuaries, would also be acceptable.

Implementation Status: Not implemented

Measure LU-9 is a continuation of LU-8 and recommends the expansion of the planned land acquisition to the north of the Airport. Three specific parcels are highlighted on Exhibit 5F of the 1991 NCP, and all were eligible for FAA-funding at the time of NCP publication. More investigation is needed to determine the implementation status of this measure. While land acquisition is noted on the Airport website, detailed acquisition history should be confirmed with the Airport.

Recommendation: Modify and combine measures in 2024 NCP as the planned voluntary land acquisition of the Cherokee Marsh and Token Creek Park (LU-3).

3.1.10 LU-10: Establish sales assistance or purchase assurance program for homes impacted by noise above 70 Ldn

The statement of measure **LU-10** in the 1991 MSN NCP is as follows:

Dane County should consider a sales assistance or purchase assurance program for single-family homes within the 70 Ldn contour, based on a combination of the 1995 baseline and noise abatement plan contours. South of the airport, the qualifying area is bounded by Aberg Avenue on the north, Washington Avenue on the east and south, and Pawling and North Lawn Avenue on the west. To the north, a few scattered homes on County Road CV and Hoepker Road are included. An estimated 216 homes are within the entire area, including 210 on the south side and 6 on the north side.

These programs would give homeowners who are severely disturbed by noise the assurance that they could leave the neighborhood without risking financial penalty. A purchase assurance program would make the County the buyer of last resort. If, after a given period of time on the market, the homeowner was unable to sell the home for fair market value, as determined through professional appraisals, the County would buy the home. The County would then retain a noise and avigation easement and sell the home, accepting a loss if necessary to put the home back on the tax rolls.

A sales assistance program would be similar, but the County would never take the title to the property. The County would make up the difference between fair market value and the best purchase offer made on the home. The County would secure a noise and avigation easement from homeowners in return for their participation in the program.

Implementation Status: Implemented

Measure LU-10 recommends a sales assistance or purchase assurance program be established for single-family homes within the 70 DNL contour. The goal of these programs is to provide financial assistance to homeowners who wish to move from areas that experience higher noise levels and are unable to obtain fair market value for the sale of their home. These programs are voluntary, and an avigation easement were conveyed in exchange for the Airport's assistance in selling the properties. This measure was implemented; a Home Sales Assistance Program was instituted per the Airport's website.[31] The Sales Assistance Program was comprised of two components: (1) the sale of an avigation easement in exchange for a $2,000 cash payment or (2) agreement to receive assistance from the Airport to facilitate the sale of their home. Of the 305 eligible homes, 198 chose the avigation easement option and 13 parcels chose to have assistance with the sale of their home. There were 94 parcels that did not participate in the program.

Recommendation: Modify and continue measure in 2024 NCP as part of the measure to maintain existing compatible land uses (LU-1).

[31] https://www.msnairport.com/about/ecomentality/noise_faq

3.1.11 LU-11: Install sound insulation for schools impacted by noise above 65 Ldn

The statement of measure **LU-11** in the 1991 MSN NCP is as follows:

Two schools are impacted by noise above 65 Ldn, based on 1995 baseline conditions – Holy Cross Lutheran School on Milwaukee Avenue and Lowell School, just north of Lake Monona. If technically feasible, sound insulation should be installed in both schools. Both school operators should understand that effective sound insulation requires keeping the windows closed. This could raise heating and cooling costs. While the capital costs of the sound insulation project are eligible for 90 percent FAA funding assistance, all operating costs must be borne by the school operators.

Implementation Status: Not implemented

Measure LU-11 identified two schools within the 65 DNL contour, based on the 1995 forecast NEM, and recommends them for sound insulation. At the time of publication an estimate of $500,000 was provided to insulate Lowell School and $300,000 for Holy Cross School.

Recommendation: Eliminate as it is the intent of the Airport to address incompatible land uses through noise abatement measures and other land use measures recommended in the 2024 NCP.

3.2 Recommended Land Use Measures

This section describes land use measures that are recommended as part of the 2024 MSN NCP. Corrective land use measures are applicable to off-airport land within the 65 DNL contour. Based on the experience of other airports and according to the FAA, the preventive land use measures discussed in this NCP Report can be effective in preventing the development of new noncompatible land uses. It is up to state and local governments to decide whether to pursue preventative land use management measures to reduce noncompatible land use that are consistent with the requirements of 14 CFR Part 150, Appendix A, Sec. 150.123.

3.2.1 LU-1: Maintain existing compatible land uses in the airport vicinity

The County recommends maintaining existing compatible land uses in the airport vicinity by working with the local municipalities responsible for land use. The County desires to encourage the development of compatible land uses around the Airport and to strongly discourage the development of noncompatible land uses such as residential development. The County understands that much of the affected area is located within the City of Madison, which is outside the County's authority. The City of Madison has indicated there are planned residential developments located near the airport and under existing flight paths. Any new development that occurs in these areas will not be eligible for noise mitigation.

The County will work with the City of Madison, Town of Burke, Sun Prairie, and DeForest to implement the following elements:

1. Redefine "airport affected area" for purposes of implementing Wisconsin Statute 66.31.
2. Amend subdivision regulations to require dedication of noise and avigation easements of plat notes on final plat.
3. Encourage municipalities to recommend inclusion of sound attenuation standards for noise-sensitive development in new building designs for construction within the airport noise overlay area.
4. Amend local land use plans to reflect noise compatibility plan recommendations and establish airport compatibility criteria for project review.
5. Ensure future low-income and other residential developments are not built within the 65 DNL contour or adjacent to the Airport.
6. Meet with surrounding neighborhoods on an annual basis to communicate and educate about future airport plans.

This section includes six subsections to address the measures above.

3.2.1.1 Redefine "airport affected area" for purposes of implementing Wisconsin Statute 66.31

The County recommends this measure to limit the introduction of noncompatible land use through the adoption and enforcement of an "airport affected area." The airport affected area would promote the

continuation of existing compatible land use, limit proposed noncompatible development, and increase public awareness of areas affected by airport operations.

The continuation of the "airport affected area" would also satisfy the requirements of Wisconsin Statute 66.31. The three major components of this act include the following:

1. Each municipality with a development plan must show the location of any publicly owned airport and "airport affected areas." These are defined as areas within three miles of the airport, although smaller areas can be defined through intergovernmental agreements.
2. The municipality with zoning authority must notify the airport owner of proposed zoning changes within the "airport affected area."
3. If the airport owner objects to the proposed zoning change, a two-thirds vote of the municipal governing body is required to approve of the change.

The County recommends updating the definition of the "airport affected area" into three distinct "zones" to reflect the following land use compatibility goals:

- **Zone A**: If any of the 65 DNL contours generated as part of the NCP analyses extend beyond the three-mile buffer add an additional half-mile buffer in those areas.
    - The addition of the half-mile buffer will allow the County to plan any future potential noise increase that may occur. This updated buffer area will serve to meet the requirements of Wisconsin Statute 66.31.
- **Zone B**: Limit the construction of noise-sensitive structures within the 65 DNL contours with a half-mile buffer.
- **Zone C**: Restrict residential construction of noise-sensitive structures within the 70 DNL contours with a quarter-mile buffer.

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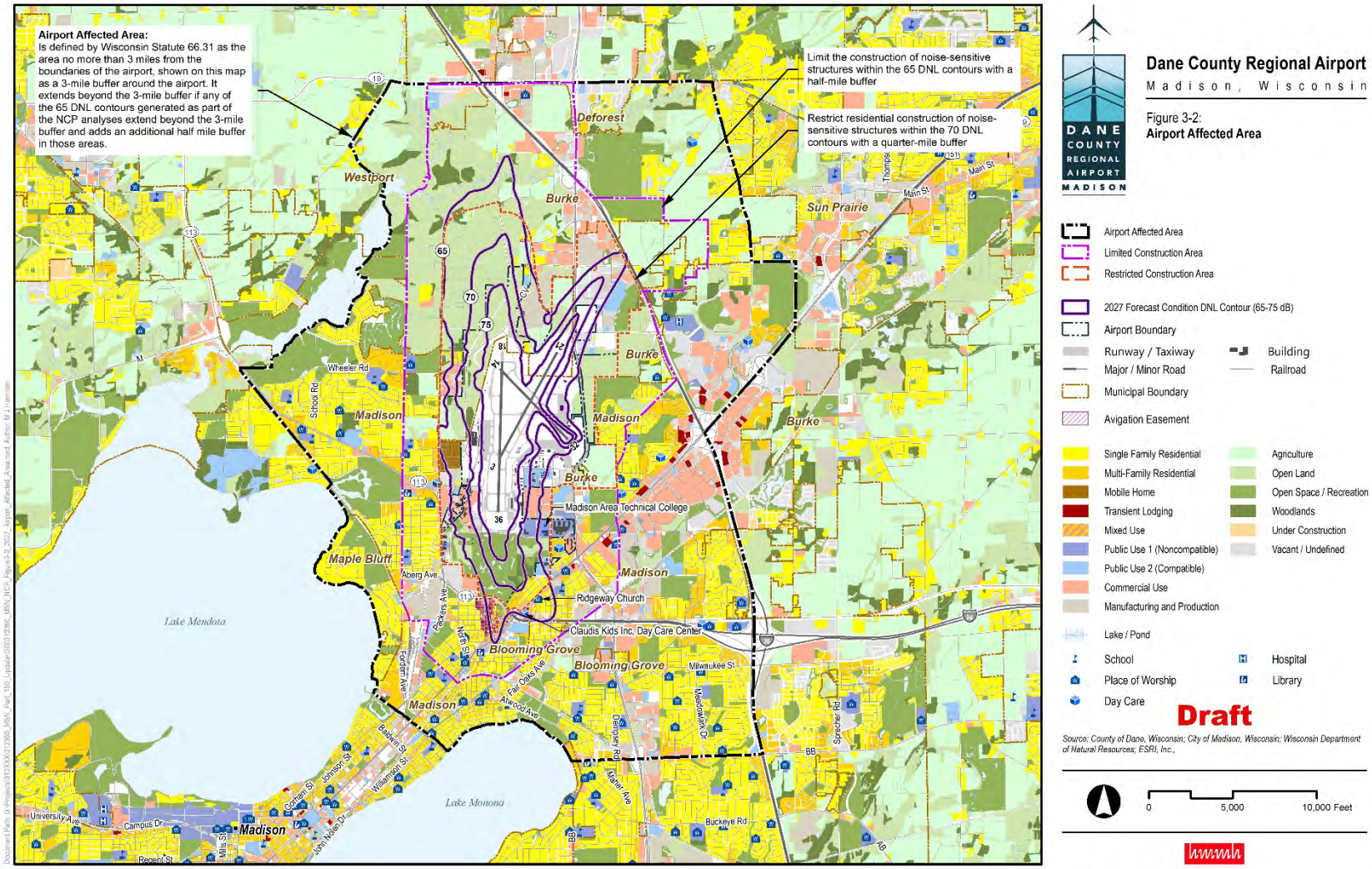

Figure 3-2. Recommended Approximate Airport Affected Area 2024

Source: HMMH, JPG 2023

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3.2.1.2 Amend subdivision regulations to require dedication of noise and avigation easements of plat notes on final plat

Avigation easements grant airspace rights to the Airport and can be effective in eliminating noncompatible land uses. The Airport will continue to consider avigation easements as a way of eliminating future noncompatible land uses by requiring an avigation easement be attached to any new residential or noise sensitive development within the "airport affected area."

Plat notes are currently required per Dane County Ordinance, Chapter 75. The ordinance states that the below notation must be placed on the plat or certified survey map for any approved subdivision within the airport affected area:

> "Lands covered by this [plat] [certified survey map] are located within an area subject to heightened noise levels emanating from the operation of aircraft and equipment from a nearby airport."

3.2.1.3 Encourage municipalities to recommend to developers to include sound attenuation standards for noise-sensitive development in their building designs for construction within the airport noise overlay area

This measure recommends Dane County and the City of Madison and surrounding municipalities to recommend to developers to include sound attenuation standards for new developments within the airport noise overlay area. Dane County and the City of Madison follow statewide building code and cannot implement differing standards unless approved by the state of Wisconsin, as detailed in Uniform Dwelling Code (UDC), SPS 320.06.

The County does not intend to submit an ordinance request, as detailed in UDC, SPS 320.20, and pursue formal approval of soundproofing standards for new construction within the airport noise overlay area. Adoption of sound attenuation standards would require interjurisdictional coordination and political advocacy. Because of this, the County will advocate for them informally through outreach to local municipalities and developers to encourage including sound attenuation standards for noise-sensitive development in their new building designs for construction in the airport noise overlay area to provide a minimum noise level reduction of 30 dB from F-35A aircraft.

The County acknowledges the City of Madison is pursuing residential development at or near the 2027 65 DNL contour. The County recommends new development meet noise level reduction requirements that meet or exceed a 45 dB DNL interior noise level as required for land use compatibility per Part 150 guidance.[32]

[32] FAA Order 5100.38D or current version, Airport Improvement Handbook, Appendix R. and FAA Advisory Circular 150/5000-9B, Guidelines for Sound Insulation of Structures Exposed to Aircraft Noise

In "airport affected area" Zone B, at a minimum, new residential structures should be constructed using the following guidelines for acoustically rated products:

- Windows: product with at least an Outdoor Indoor Transmission Class (OITC) of 32.
- Exterior stand-alone doors: product with at least an OITC of 30 to 32 or a prime door with an OITC 27 to 28 in series with a storm door with an OITC 26 to 28 which achieves OITC 30 to 32.
- Walls:
    - Masonry exterior facades: No treatment required
    - Non-masonry exterior facades:
        - With existing insulation: No treatment required
        - Without existing insulation: Add insulation in existing exterior walls or add one layer of QuietRock 510
- Air Conditioning Units: Do not use through-wall units.

3.2.1.4 Amend local land use plans to reflect noise compatibility plan recommendations and establish airport compatibility criteria for project review

The County recommends the continued review of proposed development within the airport affected area for Dane County, City of Madison, and the Town of Burke. The County recommends the updated NCP be reflected in the respective municipalities' land use plans.

3.2.1.5 Ensure future low-income and other residential developments are not built within the 65 DNL noise contour or adjacent to the Airport

The objective of airport noise compatibility planning under Part 150 is to promote compatible land use in communities surrounding airports. Part 150 considers all residential land use noncompatible with aircraft noise exposure greater than 65 DNL, regardless of the socioeconomics of the community. Municipalities maintain the authority to regulate land use in the vicinity of MSN, including Dane County, the City of Madison, and the Town of Burke.

The "airport affected area" intends to limit noncompatible land uses, including residential, within the 65 DNL contour.

3.2.1.6 Meet with surrounding neighborhoods on an annual basis to communicate and educate about future airport plans

The County recommends maintaining and building on existing relationships with the local officials in the surrounding neighborhoods. As a proactive measure to communicate, educate, and discuss ongoing future airport plans – as well as to learn of plans from the communities, an annual meeting is proposed.

Conclusion: *MSN Land Use Measure LU-1* will limit the introduction of new noncompatible land uses and will maintain existing compatible land use. The measure also allows for increased public awareness of noise-affected areas, and advocates for the consideration of sound attenuation standards in new residential development.

Table 3-3 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Land Use Measure LU-1.

Table 3-3. Implementation Summary for MSN NCP Measure LU-1
Source: HMMH, JPG 2023

Implementation Item	Discussion
Benefits	This measure encourages compatible land uses in the airport affected area, and increased public awareness of the airport affected area would promote compatible land uses.
Rationale	The County is recommending this measure because it may provide a long-term, cost-effective way to prevent future noncompatible land uses.
Responsible Parties	The County, local municipalities
Estimated Costs	County staff time and effort in pursuing the sub-measures
Funding Sources	The County
Requirements	FAA approval of this measure
Estimated Schedule	Aspects of this measure are currently in effect and can be continued. Pursuit of sound attenuation standards can begin immediately and does not require FAA approval. Annual meetings will be established within 6 months of ROA of the NCP.

3.2.2 LU-2: Continue voluntary land acquisition inside the 70 DNL noise contour

The County recommends the potential acquisition of residential properties within the 70 DNL and higher contours as a corrective mitigation measure to make the properties compatible. The program is voluntary, but any acquisitions must follow the provisions set forth in the Uniform Relocation Assistance and Real Property Acquisition Policies Act (49 CFR Part 24; Uniform Act). The 2027 Future Condition identifies 23 housing units located within the 70 DNL contour.

Conclusion: *MSN Land Use Measure LU-2* will allow the County to purchase current noncompatible land and reuse it in a manner that would render it compatible with airport operations.

Table 3-4 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Land Use Measure LU-2.

Table 3-4. Implementation Summary for MSN NCP Measure LU-2
Source: HMMH, JPG 2023

Implementation Item	Discussion
Benefits	This measure helps eliminate noncompatible land uses.
Rationale	The County is recommending this measure because it would reduce noncompatible land use where other mitigation options are not viable.
Responsible Parties	The County
Estimated Costs	The estimated cost to purchase a single-family home is $535,000. The current median sold home price in Madison is $410,000.[33] Relocation costs are estimated at $35,000 in addition to program management fees of $90,000. Based on those estimates, the total estimated cost to acquire 23 housing units with relocation of the residents is $12,305,000.
Funding Sources	The County, and state and federal grants
Requirements	FAA approval of this measure
Estimated Schedule	The County can apply for funding once this measure is approved by the FAA, assuming the property owners wish to sell.

[33] Median price as of July 2023 provided by Realtor.com.

3.2.3 LU-3: Continue the planned expansion of the voluntary land acquisition boundaries in Cherokee Marsh and Token Creek Park areas

The County recommends the potential acquisition of areas in the Cherokee Marsh and Token Creek Park areas as identified for acquisition in the 1991 NCP. The purpose of this measure is to prevent future noncompatible land use being potentially developed within the airport affected area. As they are parcels of land that extend from partially within the 2027 65 DNL contour, the County seeks the potential opportunity to acquire the lands if they were to become available. The program is recommended to be maintained as voluntary, and any acquisitions must follow the provisions set forth in the Uniform Relocation Assistance and Real Property Acquisition Policies Act (49 CFR Part 24; Uniform Act). The Token Creek County Park is 418 Acres, and the Cherokee Marsh North Unit is 947 Acres, and the areas are depicted on Figure 3-3 in relation to the 2027 65 DNL Contour

Conclusion: *MSN Land Use Measure LU-3* will allow the County to purchase land to prevent future noncompatible land uses.

The combined identified acreage of the two areas is 1,365 acres. The estimated cost for the acquisition of this land based on current land values in the Dane County, WI area of $9,800 per acre is $13,377,000. Approximately 435 acres of these areas are located northeast and west of the airport within the 2027 65 DNL Contour. Table 3-5 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Land Use Measure LU-3.

Table 3-5. Implementation Summary for MSN NCP Measure LU-3
Source: HMMH, JPG 2023

Implementation Item	Discussion
Benefits	This measure prevents future noncompatible land uses within the airport affected area.
Rationale	The County is recommending this measure because it would protect compatible land use near the airport from future rezoning to a noncompatible land use.
Responsible Parties	The County
Estimated Costs	The total estimated cost to acquire this land is $13.4M
Funding Sources	The County, and state and federal grants
Requirements	FAA approval of this measure
Estimated Schedule	Indeterminate and based on the availability of the parcels for land acquisition.

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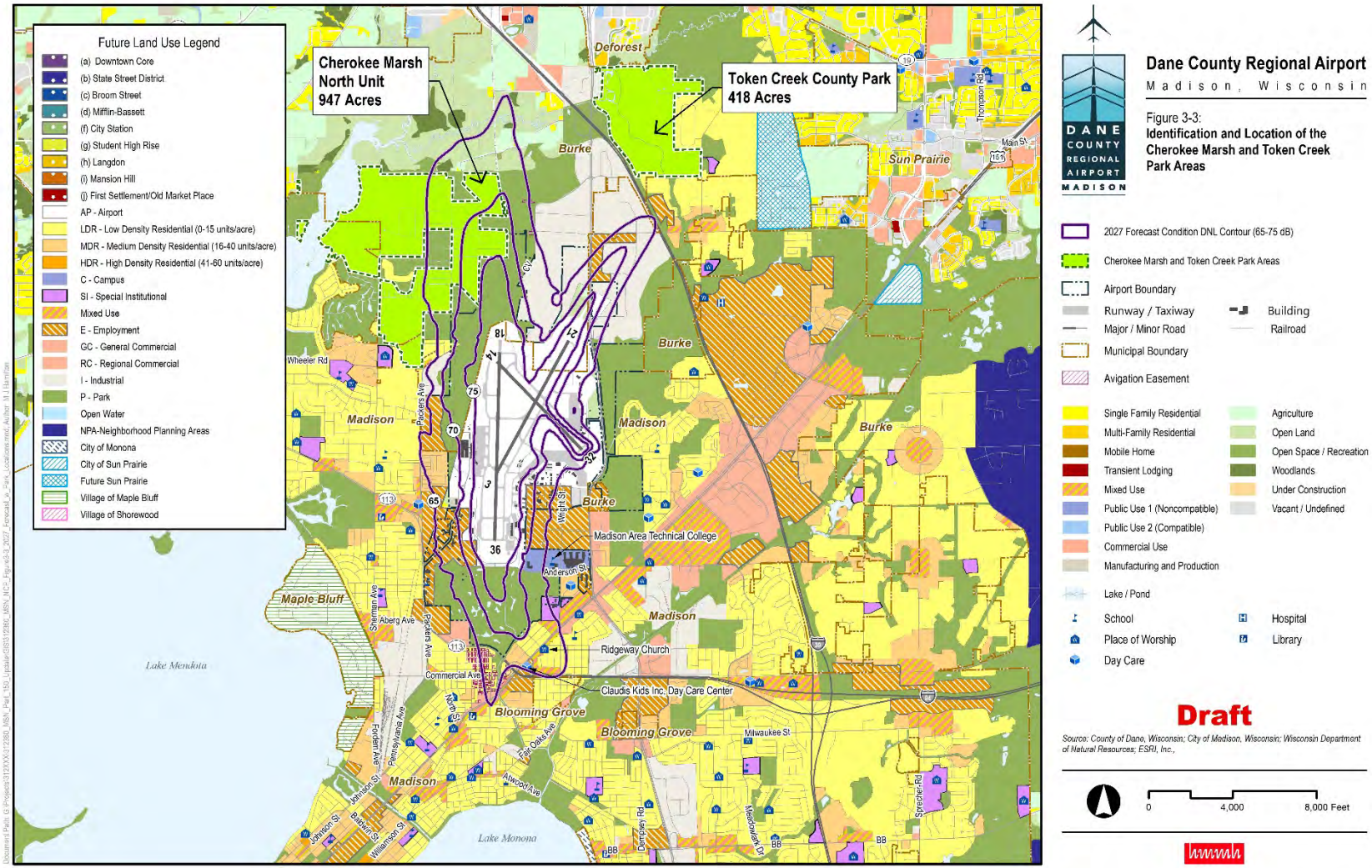

Figure 3-3. Identification and Location of the Cherokee Marsh and Token Creek Park Areas

Source: HMMH, JPG 2023

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3.3 Land Use Measures Considered but Not Recommended

The County considered but does not recommend the following land use measures as part of the MSN Noise Compatibility Program.

3.3.1 Consider environmental justice and low-income communities

Environmental justice refers to "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies."[34] Under NEPA, the FAA interprets that "Environmental justice analysis considers the potential of Federal actions to cause disproportionate and adverse effects on low-income or minority populations. Environmental justice ensures no low-income or minority population bears a disproportionate burden of effects resulting from Federal actions."[35] Federal actions subject to NEPA regulations require analysis of Environmental Justice as an environmental resource category. "Approval of a noise compatibility program under this part [Part 150] does not by itself constitute an FAA implementing action."[36] Although approval to implement specific noise compatibility measures may require an environmental assessment of the proposed action under NEPA.

Part 150 studies are specific to land use compatibility planning around airports. Part 150 regulations consider all land uses compatible with aircraft noise exposure less than 65 DNL. Noise compatibility programs seek to reduce noise exposure to individuals and noncompatible land uses, while preventing new noncompatible uses within the NEM contour.[37] Part 150 does not specify consideration or analysis of the socioeconomics or demographics of the communities within the 65 DNL noise contours but does seek to reduce noise exposure for all individuals. The NCP seeks to ensure that noise is not simply shifted from one community to another, but rather that exposure to 65 DNL is reduced on a net-basis.

3.3.2 Report alternative metrics and consider use of lower DNL threshold

The FAA requires the use of the DNL metric and a 65 dB threshold for land use compatibility assessment in accordance with 14 CFR Part 150. The FAA guidelines indicate that all land uses are compatible with aircraft noise exposure less than 65 DNL.

In 2021, the FAA released results of the Neighborhood Environmental Survey (NES), a research effort to quantify the relationship between aircraft noise exposure and community annoyance and update the aircraft noise annoyance dose-response curve.[38] The FAA invited public comments on the results of the

[34] Environmental Protection Agency. Learn About Environmental Justice. 2023. https://www.epa.gov/environmentaljustice/learn-about-environmental-justice

[35] Federal Aviation Administration. 1050.1F Desk Reference. Chapter 12. Socioeconomics, Environmental Justice, and Children's Environmental Health and Safety Risks. February 2020. https://www.faa.gov/sites/faa.gov/files/about/office_org/headquarters_offices/apl/12-socioecon-enviro.pdf

[36] 14 CFR 150.5(c). https://www.ecfr.gov/current/title-14/chapter-I/subchapter-I/part-150

[37] 14 CFR 150.23(e)(5)

[38] https://www.airporttech.tc.faa.gov/Products/Airport-Safety-Papers-Publications/Airport-Safety-Detail/ArtMID/3682/ArticleID/2845/Analysis-of-NES

NES and the FAA's broader aircraft noise research program, through a Federal Register notice and associated 90-day public comment period which closed on April 14, 2021. The FAA considered over 4,000 comments received on the docket[39] and is currently undertaking a Civil Aircraft Noise Policy Review to determine if changes are warranted based on recent research, technology, and scientific advancements. As a component of the Noise Policy Review, the FAA is reviewing use of DNL as the primary noise metric, DNL thresholds for determining significant noise levels, and considering alternative noise metrics. Additional information on this effort can be found at: https://www.faa.gov/noisepolicyreview.

For the airport to elect a lower DNL threshold prior to a change in the Civil Aviation Noise Policy, Dane County and the City of Madison would need to adopt a lower threshold as part of the land use compatibility and zoning regulations. The County and the City of Madison would need to enforce all development within the new DNL threshold to be compatible with Part 150, Appendix A, Table 1. Since the City of Madison has expressed an interest in developing several residential areas in close approximation to the airport, it is unlikely this measure would be implemented.

3.3.3 Acquire the mobile home park and relocate the residents

The County does not recommend acquisition of the mobile home park due to the local housing shortage as described by the land use planning municipalities represented on the TAC. Note that mobile dwelling units are not eligible for mitigation because the FAA has determined that there are no effective sound insulation methods or materials for mobile homes.

3.3.4 Home Sales Assistance Program

The objective of a Home Sales Assistance Program is to provide eligible property owners who wish to relocate outside the noncompatible land use identified in the accepted NEM with technical and financial assistance in the sale of their home on the open market. The Airport sponsor does not acquire the property and would be responsible for closing costs. The property owner is not eligible for relocation benefits. There would not be any change to the underlying land use zoning.

A home sales assistance program was implemented as part of LU-10 in the existing NCP. The airport does not desire to continue this measure due to the logistics of implementation and estimated cost associated with these types of programs.

[39] FAA-2021-0037-001

3.3.5 Implement a noise mitigation program to provide sound insulation treatment to noise sensitive parcels including residential structures, schools, and other noise sensitive buildings within the 65 – 70 DNL

Noise mitigation programs provide sound insulation treatment to noise-sensitive structures located within the 65 DNL contour based on an FAA-accepted NEM. Sound insulation can be used as a corrective mitigation measure for noncompatible residential, schools, and other noise-sensitive properties. Sound-insulated buildings are considered compatible with aircraft noise.

Under Part 150, the types of dwelling units that could be sound insulated include, but are not limited to, single-family units, multi-family units, and multi-use structures (such as those with retail on the ground floor and dwelling units above). Multi-use structures with a mix of noise-sensitive and non-noise-sensitive uses (such as an apartment over a store) are not eligible for sound insulation if the zoning of the parcel is compatible with aircraft noise, such as commercial, retail, or industrial zoning. Non-residential noise-sensitive structures, according to current FAA land use compatibility designations, include public use facilities such as schools, places of worship, libraries, daycares, and transient lodging.

Sound insulation programs mitigate aircraft noise exposure by providing compatible noise environments inside the structures. Sound insulation treatments may include window and door replacement, caulking, weather stripping, and positive air ventilation. The purpose of the positive air ventilation is to allow for replacement windows and doors to remain closed to provide the full benefit of the sound insulation treatment to residents. Positive ventilation systems use a fan to draw outside air into an indoor space, pressurizing the space. Indoor air is exhausted out of the building through sound-insulated exterior openings.[40] Mobile dwelling units are not eligible because the FAA has determined that there are no effective sound insulation methods or materials for mobile homes.

At MSN, there are 1,227 residential housing units, one place of worship (church), one daycare facility, one transient lodging, and one educational facility currently within the 2027 65 and 70 DNL NEM contours. The estimated average cost to sound-insulate a residential property is $60,000 for a single-family home and $30,000 per unit for a multi-family building. The estimated cost to sound-insulate the residences is $64 million.

The estimated costs to sound insulate each of the non-residential noise-sensitive structures are as follows, $750,000 for the daycare facility, $3 million for the church, and $200,000 for the Spence Motel. The estimated cost to sound insulate the Madison Area Technical College (MATC) is $35 million due to the size and number of buildings affected. A feasibility study would need to be completed to assess the church, daycare and MATC to better determine the costs to install sound insulation treatments to those facilities. Based on these preliminary estimates, the cost to sound-insulate non-residential noise-sensitive structures is close to $39 million. Combined with the residential properties, the sound insulation program was estimated to cost $103 million.

The goal of sound insulation under 14 CFR Part 150 is to provide an average interior noise level of 45 DNL or below and to provide at least a 5-dB improvement to the structure. Sound insulation does not change the outdoor noise environment (e.g., backyards, patios, and courtyards). The County does not recommend this measure. Based on the estimated costs and anticipated amount of time needed to

[40] National Academies of Sciences, Engineering, and Medicine. 2013. Guidelines for Airport Sound Insulation Programs. Washington, DC: The National Academies Press. https://doi.org/10.17226/22519. Section 7.5.3.

carry out a sound insulation program, the County does not believe that this measure would be most beneficial for residents.

Through the NCP development process, the County sought to determine noise abatement measures that could shift the future NEM 65 DNL contour to the north of the airport to avoid noise-sensitive areas to the south of the airport. The County worked with the Guard to develop noise abatement departure profiles (NA-7) and modify the existing preferential runway use program to encourage aircraft arriving from and departing to the north (NA-6). The County is also considering runway reconfiguration to address noncompatible land use to the south of the airport that could include extending the length of the "Noise Abatement" Runway (Runway 3/21) to better accommodate all F-35A aircraft departures (NA-8) and/or extending Runway 18/36 to the north. Together, these measures could shift the contours and they show the potential for removing noncompatible land uses to the south of the airport.

4 Noise Compatibility Program – Program Management Measures

Program management measures enable the County to monitor the implementation and compliance of the recommended noise abatement and land use management measures in Chapters 2 and 3 of this NCP, as well as enhance stakeholders' understanding of aircraft noise. Program management measures are critical to the success of the NCP.

Section 4.1 of this chapter identifies all existing program management measures at MSN, including their implementation status. For this Part 150 Study, Dane County determined, for each measure recommended in the 1991 MSN NCP, whether to continue as written, continue with minor modifications, or eliminate.

Section 4.2 describes each of the four County-recommended program management measures in each of the Part 150-required categories to analyze for inclusion in the updated NCP, as shown in Table 4-1.

Table 4-1. Summary of Dane County-Recommended Program Management Measures
Source: MSN, 2023

Part 150 Category	Program Management Measure	
	Number	Title
Implementation, Promotion, Monitoring & Reporting	PM-1	Re-establish and maintain a noise advisory committee
N/A	PM-2	Continue and improve noise complaint response program
NEM Updating	PM-3	Regular updates of the Noise Exposure Map
NCP Revision	PM-4	Periodic evaluation and update of the Noise Compatibility Program when necessary

Section 4.3 discusses the program management measures considered that the County is not recommending in this NCP.

4.1 Existing Program Management Measures

The County currently has three program management measures in place to monitor aircraft noise exposure and engage local communities in understanding aircraft noise. This section describes the existing program management measures at MSN and the current implementation status of each. Table 4-2 lists the three Dane County-recommended program management measures in the 1991 NCP that were approved by the FAA in the 1993 Record of Approval and summarizes the implementation status of each measure. This section details each of the existing program management measures and their implementation status based on analysis. This information is presented in the NEM document Section 4, *Existing Noise Compatibility Program*, and the NEM document's Appendix B.

Table 4-2. Status of 1991 NCP Program Management Measures
Source: MSN 2023

Number	Title	Implementation Status	Recommendation for 2024 NCP
PM-1	Program monitoring and noise contour updating	Implemented	Modify
PM-2	Evaluation and update of the plan	Implemented	Modify
PM-3	Noise complaint response	Implemented	Modify

4.1.1 PM-1: Program Monitoring and Noise Contour Updating

The statement of this measure in the 1991 MSN NCP is as follows:

The airport management should follow the progress of the Madison city planning department and the Dane County Regional Planning Commission in implementing the land use recommendations. They also should check periodically with the Airport Traffic Control Tower to verify compliance with the noise abatement procedures. If the airport has a major increase in operations or a major change in the aircraft fleet, the Ldn contour maps should be updated to determine the impact of the changes.

Implementation Status: Implemented

Airport management maintains continued contact with the City of Madison and Dane County on land use in the area. Airport management maintains regular contact with the FAA ATCT regarding noise abatement procedures. The evaluation of noise exposure at the Airport is ongoing. The first NEM was generated in 1991 with a recent update in 2022. Noise exposure may be reevaluated, if necessary, after the F-35A is fully operational at the airport to verify the assumptions used for operations.

Recommendation: Modify and incorporate as measure in 2024 NCP.

4.1.2 PM-2: Evaluation and Update of the Plan

The statement of this measure in the 1991 MSN NCP is as follows:

The airport management should periodically review the Noise Compatibility Plan and consider refinements as necessary. As a rule of thumb, the Plan should be updated every six to eight years.

Implementation Status: Implemented

Since the 1991 study, the Airport has periodically reviewed the Noise Compatibility Plan. As a result of the 115th Fighter Wing transitioning their fleet aircraft from F-16C to F-35A, the airport initiated a Part 150 update to address the transition.

Recommendation: Modify and incorporate as measure in 2024 NCP.

4.1.3 PM-3: Noise Complaint Response

The statement of this measure in the 1991 MSN NCP is as follows:

The airport management should continue recording and responding to noise complaints. These should be evaluated to determine if a pattern of common problems is occurring and is in need of attention.

Implementation Status: Implemented

Airport management has implemented an online noise report form for residents to submit noise complaints. The Airport determines complaint patterns based on the complaints received and follows up if requested or appropriate. The Dane County website contains the following links:

- A "Noise FAQ" page providing answers to frequently asked questions about noise-related issues specific to MSN.[41]
- A "Noise Report Form" page for submitting noise complaints or noise questions/comments.[42]

According to the Airport, all noise complaints are documented but not all complaints are followed up with a response. To the extent possible, the airport responds to complaints when requested; however, the 115th Fighter Wing maintains a separate phone line through their Public Affairs department dedicated to complaints which are neither documented nor responded to by the airport.

Recommendation: Modify and incorporate as measure in 2024 NCP.

[41] https://www.msnairport.com/about/ecomentality/noise_faq

[42] https://www.msnairport.com/about/ecomentality/noise_report_form

4.2 Recommended Program Management Measures

The County has considered and is recommending the following program management measures.

4.2.1 PM-1: Re-establish and maintain a noise advisory committee

A noise advisory group would advise and assist with the management of aircraft noise-related issues. The committee may serve as a vital link between the Airport, DMA and communities on aircraft noise concerns. From 2017 through 2019, the Airport held regular Airport Noise Abatement Subcommittee meetings which were halted at the onset of this Part 150 update and due to the COVID-19 pandemic meeting restrictions. With the F-35A aircraft operations being the dominant contributor to the aircraft noise exposure contours, the Airport and DMA would collaborate on re-establishing and maintaining a noise advisory committee at MSN.

A noise advisory group could be beneficial for re-engaging this work and coordinating with community stakeholders related to noise concerns at MSN. An advisory group also helps to improve local knowledge of noise information and build trust amongst stakeholders. The group may choose to cover other related topics such as land use planning through coordination with the local jurisdictions. The group could serve as a vital link between the Airport and communities on aircraft noise concerns by formalizing and improving coordination efforts. The responsibilities of the group would include implementation of the recommended NCP measures and monitoring adherence with the implemented noise abatement measures. It is recommended for the noise advisory group to meet on a bi-annual basis.

Conclusion: *MSN Program Management Measure PM-1* re-establishes a noise advisory committee to assist the Airport with implementation, promotion, monitoring and reporting of the County-recommended NCP measures.

Table 4-3 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Program Management Measure PM-1.

Table 4-3. Implementation Summary for MSN NCP Measure PM-1
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This measure provides accountability to all those responsible for implementation of the County-recommended NCP measures.
Rationale	The County is recommending this measure as it provides assistance to the Airport in the implementation, promotion, monitoring and reporting of the County-recommended NCP measures.
Responsible Parties	The County and DMA
Estimated Costs	MSN staff time and resources
Funding Sources	Not applicable
Requirements	MSN to determine committee members, work with members to set up meeting protocols and committee responsibilities, and begin meeting twice per year
Estimated Schedule	Schedule established within 6 months of NCP ROA

4.2.2 PM-2: Continue and improve noise complaint response program

The airport management should continue recording and responding to noise complaints; and improve the maintenance of their noise complaint program by implementing a noise complaint management system, which, at a minimum, includes noise complainant information, flight track responsible for the noise complaint, weather at the time of the complaint, and airport configuration and runway status at the time of the complaint. Noise complaints should be evaluated to determine if a pattern of common problems is occurring and needs attention. The airport may choose to implement a system with transposition capabilities that can receive complaints via a standard webform, automatically assign a dedicated noise complaint number, and enter the complaint into a database. An automated complaint system could help the airport track complaints more accurately, provide the ability to map complaints, and streamline reporting processes for staff. The airport currently uses the ARIVA platform to allow airport staff to access non-military flight tracking information[43]. Either as part of the ARIVA platform, or by procuring a new system, the county proposes to create an enhanced noise complaint database to better track and respond to complaints. This system will also track Meteorological Aerodrome Reports (METARs)[44], Runway closures, and other applicable airport field conditions that may affect operations.

Conclusion: *MSN Program Management Measure PM-2* continues the Airport's noise complaint management system and provide opportunity for improvements aimed at reducing staff time and resources required to manage and respond to noise complaints by updating the system.

Table 4-4 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Program Management Measure PM-2.

Table 4-4. Implementation Summary for MSN NCP Measure PM-2
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This measure provides opportunities for Airport staff to be apprised of community concerns and to determine whether something may have changed that needs to be addressed.
Rationale	The County recommends MSN staff continue to log, manage, and respond as appropriate to noise complaints of aircraft operations.
Responsible Parties	The County
Estimated Costs	$150,000 and MSN staff time and resources
Funding Sources	80% FAA AIP grants and 20% Dane County
Requirements	FAA's approval of this measure; and Dane County to secure funding for the enhanced noise complaint database development and implementation.
Estimated Schedule	Within one year of FAA approval of the measure

[43] https://passur.com/ariva-platform/
[44] https://www.aviationweather.gov/metar

4.2.3 PM-3: Regular updates of the Noise Exposure Map

The FAA requires airport operators maintain Noise Exposure Maps that reflect current or reasonably projected conditions in order to obtain FAA funding for noise programs. Specifically, 14 CFR Part 150, Section 150.21(d), states that an airport operator shall "promptly prepare and submit a revised noise exposure map" if any change in operation of the airport creates a "substantial, new noncompatible use" or a "significant reduction in noise over existing noncompatible uses" that is not reflected on the FAA-accepted noise exposure map on record. The former condition reflects an increase of 1.5 dB DNL over noncompatible land uses exposed to DNL 65 or greater, while the latter condition reflects a reduction of 1.5 dB over noncompatible land uses that were formerly exposed to DNL 65 or greater.

Dane County will evaluate changes in the noise environment at MSN, particularly related to WIANG operations as compared to the currently accepted NEM and prepare an update to the NEM prior to requesting FAA funding for the continued implementation of NCP measures if such changes have met the FAA requirements of a significant change as provided above.

Conclusion: *MSN Program Management Measure PM-3* updates the NEMs to enable the County to meet the requirements of 14 CFR Part 150, Section 150.21(d), if applicable changes in the noise environment occur at MSN.

Table 4-5 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Program Management Measure PM-3.

Table 4-5. Implementation Summary for MSN NCP Measure PM-3
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This measure will enable the County to meet the Part 150 requirements if applicable changes in the noise environment occur at MSN.
Rationale	The County is recommending this measure to meet the requirements of 14 CFR Part 150, Section 150.21(d).1.125.
Responsible Parties	The County
Estimated Costs	$750,000
Funding Sources	80% FAA AIP grants and 20% Dane County
Requirements	FAA's approval of this measure; and Dane County to secure funding for the update of the Noise Exposure Map when warranted.
Estimated Schedule	To be determined when a significant change has occurred triggering the NEM update or when FAA requires an update for FAA funding of NCP measures.

4.2.4 PM-4: Periodic evaluation and update of the Noise Compatibility Program when necessary

14 CFR Part 150, Section 150.23(e)(9) states that NCPs must include a "[p]rovision for revising the program if made necessary by revision of the noise exposure map." This may occur if a significant change is identified that results in a revision to the NEMs. Examples of changes are a large addition of noncompatible land uses, or new elements required to achieve land use compatibility. The NCP does not require an update with each NEM update. The County anticipates updating the NCP only when additional measures and/or modified measures are required to reduce noncompatible land use. The County is recommending this measure in order to meet 14 CFR Part 150 requirements if an update to the NCP is made necessary by a revision of the NEM documentation.

Conclusion: *MSN Program Management Measure PM-4* updates the Noise Compatibility Program to enable the County to meet the requirements of 14 CFR Part 150, Section 150.23(e)(9), if made necessary by a revision of the NEMs for MSN.

Table 4-6 provides a summary of implementation requirements, along with the benefits and rationale for the recommendation of MSN Program Management Measure PM-4.

Table 4-6. Implementation Summary for MSN NCP Measure PM-4
Source: HMMH 2023

Implementation Item	Discussion
Benefits	This measure will enable the County to meet the requirements of 14 CFR Part 150 if a revision of the NCP is made necessary by a revision of the NEM for MSN.
Rationale	The County is recommending this measure to meet the requirements of 14 CFR Part 150, Section 150.23(e)(9).
Responsible Parties	The County
Estimated Costs	$1,000,000
Funding Sources	80% FAA AIP grants and 20% Dane County
Requirements	FAA's approval of this measure; and Dane County to secure funding for the update of the Noise Compatibility Program when appropriate.
Estimated Schedule	No schedule set at this time.

4.3 Program Management Measures Considered but Not Recommended

The County considered but does not recommend the following two program management measures as part of the MSN Noise Compatibility Program: (1) Flight track monitoring system and (2) Noise monitoring system.

4.3.1 Public Flight Track Monitoring System Portal

A public Flight track monitoring system portal can be useful tools for some airports. For airport staff, they provide a graphical user interface to view flight track data that allows for monitoring compliance with flight procedures and responding to noise complaints. The systems are designed to provide information to the airport they can use to communicate with the public concerning civil aircraft operations. In a public flight track monitoring system portal; the public can view a history of flight tracks associated with operations at the airport.

Members of the public suggested the Airport consider installing a public flight track monitoring system at MSN. At MSN, community members have expressed the most interest in tracking F-35A operations flown by the 115th Fighter Wing. Military operations are excluded from flight track monitoring systems due to current federal requirements restricting the monitoring of military operations in the interest of national security. The airport currently uses the ARIVA platform for day-to-day operational situational awareness.

The Airport does not require a public flight track monitoring system portal to respond to the aircraft noise complaints that they receive and therefore does not recommend this measure. PM-2 addresses the public's request for an increased noise complaint response system. The cost to acquire, operate, and maintain such a public portal system is not justified considering it is not needed for complaint response or to understand flight operations at MSN. It would not meet the community's desire to track F-35A flights as flight track and aircraft identification data excludes military flights per federal requirements.

4.3.2 Noise Monitoring System

Noise monitoring systems are used to integrate flight tracking and aircraft identification data (flight tracking system data) with measured noise events and complaints to correlate each noise event and complaint with specific aircraft operations.

Members of the public suggested the Airport consider the installation of a noise monitoring system to track noise levels at monitor locations. Both stationary, or fixed, noise monitoring systems and portable noise monitoring systems exist. The FAA only provides initial funding for fixed noise monitors within the 65 DNL contour based on FAA-accepted NEMs. Measurement data from a noise monitoring system has no influence on the noise contour. Noise monitoring results cannot be used to determine the shape, size, or extent of the 65 DNL contour used for land use compatibility analysis; the contour must be determined through the FAA's noise model, AEDT. Additionally, noise monitoring results cannot be used to determine sound insulation program eligibility, which is also based on the 65 DNL contour based on FAA-accepted NEMs. This could cause confusion for community members who may expect that if monitors show noise levels higher than 65 dB at the monitor closest to their home that they are eligible for sound insulation.

In addition, installation, operation, and maintenance of a fixed or portable noise monitoring system requires a financial investment and ongoing commitment of staffing and resources to operate and maintain it with annual recurring costs. Portable noise monitoring programs are labor intensive programs requiring staff and/or consultants to consistently maintain the noise monitors, set them up for deployment, deploy the noise monitors, download/upload the data, analyze the data, and report the results.

The Airport does not require installation of a noise monitoring system to respond to the aircraft noise complaints that they receive and therefore does not recommend this measure. The cost to acquire, operate, and maintain such a system is not justified considering it is not needed for complaint response or development of aircraft noise exposure contours used for the assessment of land use compatibility leading to the determination of eligibility for noise mitigation.

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5 Stakeholder Engagement

This chapter describes outreach efforts conducted throughout the development of the NCP to engage airport stakeholders. Stakeholders and those interested in aircraft noise compatibility planning were afforded an ongoing opportunity to learn about the Study and provide comments. This occurred through various mechanisms, including a TAC, a project website, project newsletters, public draft documents, public open houses, a 30-day public comment period, and a public hearing. The County formed a TAC to ensure the key stakeholders remained engaged in the process and to efficiently keep them apprised of the progress and results.

5.1 Technical Advisory Committee

Part 150 studies benefit from the creation of an engagement with a TAC, to represent various stakeholder perspectives with an interest in the outcomes of the Study. TAC members represent the views of their respective organizations and/or constituencies. TAC members participate in regular meetings, distribute information about the Study to their organizations/constituencies, review technical components of the Study, and provide feedback throughout the study process. As of the release of this draft NCP, the TAC has met five times, two of which were held in Phase 2, NCP. The TAC will meet a sixth time to review elements of this draft NCP. The TAC's role is advisory in nature; members do not have decision-making authority over elements of the Study. That is, the TAC offered opinions, advice, and guidance throughout the Study, but MSN retained the sole discretion to accept or reject the TAC recommendations in accordance with 14 CFR Part 150.

TAC membership includes:

- MSN staff
- WBOA staff
- FAA Airport District Office
- FAA air traffic control tower
- 115th Fighter Wing of the WIANG
- 64th Troop Command of the WIARNG
- Airport tenants, users, and operators
- Local land use jurisdictions

Table 5-1 provides the list of member organizations that were invited to participate on the TAC. The regulations governing the stakeholder consultation requirements of the Part 150 process are found at 14 CFR 150.21(b) and 14 CFR 150.105(a). While a TAC is not specifically described in Part 150, MSN and WBOA supported creation of a TAC as part of this Part 150 study to obtain robust feedback related to all aspects of the Study. Not all member organizations invited to the TAC chose to send a representative, but a broad range of representatives took part, and all members were invited to each meeting whether or not they attended previous meetings.

Table 5-1. Member Organizations on the Technical Advisory Committee
Source: HMMH

States, Public Agencies or Planning Agencies	FAA Regional Officials	Regular Aeronautical Users of the Airport
• Dane County Regional Airport • Dane County Department of Planning and Development • City of Madison Planning Division • Township of Burke*	• FAA Airport Traffic Control Tower (ATCT) • Great Lakes Regional Airports District Office (ADO)	• 115th Fighter Wing of the Wisconsin Air National Guard • Wisconsin Army National Guard • Delta Airlines • Wisconsin Aviation
* Invited and was forwarded TAC meeting materials but has not attended as of November 2023		

MSN scheduled TAC meetings in accordance with project milestones when feedback was most influential. The Study Team served as meeting facilitators, presented technical information, and engaged the TAC members in discussions to validate data, assumptions, and provide input on various study components. Major topics discussed at each of the TAC meetings are presented in Table 5-2. The first three TAC meetings were focused on the NEM component of the Study while the final three TAC meetings were focused on NCP development. Presentations and meeting summaries from TAC meetings 1 through 3 are available in Appendix D-1 of the NEM document.[45] Presentations and meeting summaries from TAC meetings 4 through 6 are available in Appendix D of this NCP.

Table 5-2. Meeting Topics of the Technical Advisory Committee
Source: HMMH

TAC Meeting Number	Date	Topics Covered
1	4/26/2022	Overview of the Part 150 process, the TAC, and roles and responsibilities
2	7/26/2022	NEM Overview: Operations forecast development, noise model inputs, military noise modeling, land use, NCP review
3	10/18/2022	Draft NEM: Final noise model inputs, preliminary draft noise exposure maps, existing NCP review, public workshop
4	3/7/2023	NCP Overview: Existing NCP review, NCP public recommended measures, TAC proposed NCP measures
5	6/27/2023	NCP Development: Analysis of proposed NCP measures, TAC feedback and collaboration
6	2/20/2024	Draft NCP

In addition to the TAC, to further ensure that all airport tenants were made aware of the ongoing Part 150 study, the Study team presented an overview of the Study at the April 2023 MSN Airport Security & Tenant Meeting. Tenants were provided information concerning the Study and were offered the opportunity to provide feedback on the Study.

[45] https://www.msnairport.com/documents/pdf/MSN-P150-NEM-Update-Final-20221228-Rev1.pdf

5.2 Public Open Houses

Members of the public were given opportunities to follow the Study's progress and provide input. The public was encouraged to stay abreast of progress by visiting the Study website at https://www.msnairport.com/about/ecomentality/Part-150-Study, reviewing the project newsletters, participating in the public open houses, and submitting comments on the Study.

Dane County held four public open houses to share information with the public throughout the Study. The Study Team members as well as MSN and WBOA staff served as facilitators at various stations at the public open houses to discuss the project and answer questions from the public. The first public open house was held at the beginning of the Study to introduce the Part 150 process and schedule. The second was held during the public comment period for the NEM and presented information on the aviation forecast, with a focus on the resulting noise exposure contours and land use compatibility. Materials for Open House 1 and Open House 2, associated with the NEM documentation, are provided in Appendix D-1 of the NEM document.[46] A third public open house was added to the schedule based on feedback received from the public that there was interest in providing additional input during the NCP development process. The fourth public open house will present this draft NCP to the public and provide the opportunity for a public hearing. Materials for Open House 3 and Open House 4, associated with the NCP, are provided in Appendix E of this NCP. The public open house events are summarized in Table 5-3.

The County shared the public open house information with TAC members and elected officials to share with their constituencies. Announcements concerning Open House 1 and Open House 2 are summarized in the NEM document. To announce the third open house, the County posted to the Study website, released a newsletter, and also sent out a postcard. The County sent postcards to over 9,600 residences in communities immediately surrounding the airport. The postcard contained information about the open house, as well as a QR code that linked to the Part 150 website. Copies of the postcard were also available as handouts at Public Open House 3.

Table 5-3. Public Open Houses
Source: HMMH 2023

Meeting	Date	Topics Covered
Open House #1	4/26/2022	Open house to provide overview of the Part 150 process, the TAC, noise metrics, and roles and responsibilities of all interested stakeholders
Open House #2	11/14/2022	Open house to present the results of the Part 150 Update and the draft NEM document prior to submittal to the FAA
Open House #3	6/27/2023	Open house added to present the NCP measures considered to date and obtain additional public recommendations for the NCP
Open House #4	2/20/2024	Final public open house and public hearing for the presentation of the Dane County-recommended NCP measures

[46] https://www.msnairport.com/documents/pdf/MSN-P150-NEM-Update-Final-20221228-Rev1.pdf

5.3 Public Review and Comment on the NCP

MSN is providing this draft NCP document for public review and comment from February 12, 2024 through March 13, 2024. An electronic version of the full draft NCP is posted on the Study website during this public review period at https://www.msnairport.com/about/ecomentality/Part-150-Study. A hard copy (printed paper edition) of the draft NCP Report is available for public review at the following locations:

- MSN offices – 4000 International Lane, Madison, WI 53704, during normal business hours
- Madison Public Library – Lakeview, 2845 North Sherman Avenue, Madison, WI 53704

This draft NCP is the primary topic of the fourth public open house, held on February 20, 2024. The open house and draft NCP availability and comment period were publicized through the Study website, a newsletter, a postcard, and the TAC membership.

Public comments will be accepted in writing at the public open house and through the project email address (part150study@msnairport.com) throughout the project duration. This draft NCP includes all public comments received after publication of the NEM documentation; the final NCP will include comments received through the close of the NCP public comment period. Public comments received prior to NEM publication were included in Appendix D-2 of the NEM. Public comments received throughout the Study are considered and influenced NCP development.

This section will be updated in the final NCP to include a listing of all comments received, and a summary of their content and responses.

See Appendix F for public comments received on the MSN 2024 Draft NCP.

Table 5-4 will list, and provide summary descriptions of, the 10 most frequent categories in descending order from most to least frequent of comments received prior to the closing of the 30-day public comment period. Appendix F in the final NCP will present a table that lists all the comments received and provides a response for each comment. Scanned copies of each of the written comments received will also be contained in Appendix F in the final NCP.

Table 5-4. Top Ten Most Frequent Public Comments Received
Source: Dane County and HMMH, 2024

Comment Category	Description

The following items were entered into the table for each comment:

- First and last name (and title, if applicable)
- Affiliation/organization, if applicable
- Address (city only)
- The medium in which the comment originated – Comment form, electronic mail, letter
- Comment identification number (including sub-identification number for comments addressing multiple topics)
- Comment topic (general categories addressed in each comment)
- Verbatim transcription each comment, broken down into separate topics, where multiple topic categories were addressed
- Response to each comment topic raised

All comments received to date were entered verbatim, as accurately as feasible for handwritten comments. Typographical or grammatical errors were not corrected. A review of the table in Appendix F will be completed for the final NCP; thus far, the comments largely identified noise issues of concern and/or suggested noise compatibility measures to consider in this NCP phase of the Study. If additional comments received during the NCP public comment period raise issues that require revision of the MSN 2024 Draft NCP, those changes will be reflected in the Final NCP.

5.4 Project Newsletters

The Study Team prepared four newsletters throughout the study process. The first newsletter introduced the Study and summarized the first public open house. The second newsletter presented the NEM and publicized the second public open house. The third newsletter provided an overview of the NCP process and announced Open House 3. The fourth newsletter described the updated NCP and announced Open House 4 and the public hearing. The newsletters were posted to the Study website. Copies of the newsletters are provided in Appendix E and are also available on the project website.

5.5 Project Website

The MSN Part 150 Study website is found at https://www.msnairport.com/about/ecomentality/Part-150-Study. All Study-related information and resources are posted on this site.