



# Chicago Rockford International Airport 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

DRAFT  
October 2023

Prepared for  
Greater Rockford Airport Authority





# SPONSOR’S CERTIFICATION

The Noise Exposure Maps (NEMs) and the Noise Compatibility Program (NCP) for the Greater Rockford Airport Authority (GAAA), hereby submitted in accordance with Title 14 CFR Part 150, were prepared with the best available information and are certified as true and complete to the best of my knowledge and belief.

The Existing Condition NEM is based on data generated for a timeframe representing the year of submission. The assumptions and activity levels used to develop the Existing Condition NEM are based on data from calendar year 2022 FAA Tower counts. The noise contours representing the existing condition are identified as the 2023 Noise Exposure Map.

The assumptions and activity levels used to develop the Future Condition NEM are based on reasonable forecasts and other planning assumptions. The Future Condition NEM is based on data generated for a timeframe 5 years in the future from the year of submission. The noise contours representing the future condition are identified as the 2028 Noise Exposure Map.

The NEMs and NCP were developed and prepared in consultation with Federal Aviation Administration (FAA) regional officials, the officials of the state, and of any public and planning agencies whose area of jurisdiction, or any portion thereof, is within the DNL contour depicted on the NEM, and other Federal officials having local responsibility for land uses depicted on the map. This consultation included regular aeronautical users of the airport, including air carriers and other aircraft operators, as appropriate.

It is further certified that prior to and during the development of the NCP, and prior to submission of the resulting program to the FAA, the GAAA afforded adequate opportunity for the active and direct participation of the state, public agencies and planning agencies in the areas surrounding the airport, aeronautical users of the airport, and the general public to submit their views, data, and comments on the formulation and adequacy of the NCP. Prior to submitting this NCP to the FAA, the GAAA held multiple public workshops and a public hearing.

This document constitutes the official NEMs and NCP for the Chicago Rockford International Airport (RFD), as recommended by the GAAA. The recommendations in this NCP are those of the GAAA, not the consultant or another party.

\_\_\_\_\_  
Mike Dunn  
Executive Director  
Greater Rockford Airport Authority

Date \_\_\_\_\_



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## NEM CHECKLIST

Noise Exposure Map (NEM) Checklist	Yes / No / NA	Page No.\Other Reference
<b>I. IDENTIFICATION AND SUBMISSION OF MAP DOCUMENT:</b>		
A. Is this submittal appropriately identified as one of the following, submitted under 14 CFR Part 150: <ol style="list-style-type: none"> <li>1. A NEM only?</li> <li>2. NEM and NCP together?</li> <li>3. A revision to NEMs which have previously been determined by FAA to be in compliance with Part 150?</li> </ol>	No Yes Yes	Letter of Transmittal Letter of Transmittal Letter of Transmittal
B. Is the airport name and qualified airport operator's identified?	Yes	Letter of Transmittal & Chapter 1, Page 1-1
C. Is there a dated cover letter from the airport operator which indicates the documents are submitted under Part 150 for appropriate FAA determinations?	Yes	Letter of Transmittal
<b>II. CONSULTATION: [150.21(b), A150.105(a)]</b>		
A. Is there a narrative description of the consultation accomplished, including opportunities for public review and comment during map development?	Yes	Chapter 1, pages 1-6 to 1-7 and Appendix D
B. Identification:		
1. Are the consulted parties identified?	Yes	Chapter 1, pages 1-6 to 1-7 and Appendix D
2. Do they include all those required by 150.21(b) and A150.105(a)?	Yes	Chapter 1, pages 1-6 to 1-7 and Appendix D
C. Does the documentation include the airport operator's certification, and evidence to support it, that interested persons have been afforded adequate opportunity to submit their views, data, and comments during map development and in accordance with 150.21(b)?	Yes	Sponsor's Certification
D. Does the document indicate whether written comments were received during consultation and, if there were comments, that they are on file with the FAA region?	Yes	Appendix D will contain the responses to comments made at the public hearing
<b>III. GENERAL REQUIREMENTS: [150.21]</b>		
A. Are there two maps, each clearly labeled on the face with year (existing condition year and future forecast)?	Yes	Exhibits NEM-1 & NEM-2

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<p>B. Map currency:</p> <ol style="list-style-type: none"> <li>1. Does the existing condition map year match the year on the operator's NEM submittal?</li> <li>2. Is the future map based on reasonable forecasts and other planning assumptions?</li> <li>3. Forecast aircraft operations?</li> <li>4. Forecast fleet mix?</li> <li>5. Forecast Number of night operations?</li> <li>6. Forecast Flight tracks or any planned IFPs under development?</li> <li>7. If the answer to 1 and 2 above is no, has the airport operator verified in writing that data in the documentation are representative of existing condition and future forecast conditions as of the date of submission?</li> </ol>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No</p> <p>NA</p>	<p>Letter of Transmittal &amp; Exhibit NEM-1</p> <p>Chapter 1, Pages 1-2 to 1-5, Chapter 3, Page 3-5, Appendix B, Appendix C, Pages C-60 to C-64</p> <p>Appendix B</p> <p>Appendix B</p> <p>Appendix B</p> <p>NA</p> <p>NA</p>
<p>C. If the NEM and NCP are submitted together:</p> <ol style="list-style-type: none"> <li>1. Has the airport operator indicated whether the future map is based on future contours without the program vs. contours if the program is implemented?</li> <li>2. If the 5-year map is based on program implementation? <ol style="list-style-type: none"> <li>a. Are the specific program measures which are reflected on the map identified</li> <li>b. Does the documentation specifically describe how these measures affect land use compatibilities depicted on the maps?</li> </ol> </li> <li>3. Only one future condition NEM can be designated for a finding under Part 150 Section 21(a)(1). The NEM forecast map must be based on reasonable forecast aircraft operations and other reasonable planning assumptions for the fifth calendar year or later beginning after the year the NEM's are submitted to the FAA. This does not preclude the inclusion of additional maps for supporting information, analytical purposes, or longer range planning.</li> </ol>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p>	<p>Letter of Transmittal &amp; Chapter 4, Page 4-1 to 4-2</p> <p>Letter of Transmittal</p> <p>Chapter 4</p> <p>Chapter 4</p> <p>Letter of Transmittal, NEM-2, Chapter 4, Exhibit 4-1</p>



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<b>IV. MAP SCALE, GRAPHICS, AND DATA REQUIREMENTS: [A150.101, A150.103, A150.105, 150.21(a)]</b>		
<p>A. Are the maps of sufficient scale to be clear and readable (they must not be less than 1" to 2,000'), and is the scale indicated on the maps?</p> <p>B. Is the quality of the graphics such that required information is clear and readable?</p> <p>C. Depiction of the airport and its environs</p> <p>1. Is the following graphically depicted to scale on both the existing condition and future maps: [A150.101e2,4]</p> <p>a. Airport boundaries</p> <p>b. Runway configurations with runway end numbers</p> <p>2. Does the depiction of the off-airport data include:</p> <p>a. A land use base map depicting streets and other identifiable geographic features</p> <p>b. The area within the DNL 65 dB contour (or beyond, at local discretion)</p> <p>c. Clear delineation of geographic boundaries and the names of all jurisdictions with planning and land use control authority within the DNL 65 dB contour (or beyond, at local discretion)? [A150.105(a),(b)]</p> <p>D. Noise Contours</p> <p>1. Continuous contours for at least the DNL 65, 70, and 75 dB?</p> <p>2. Based on current airport and operational data for the existing condition year NEM, and forecast data for the future NEM? [A150.101(a), (e), (3)]</p> <p>E. Flight tracks for the existing condition and future forecast timeframes (which must use the same scale as the NEM, and the same land use base map as the existing condition and future NEM), which are numbered to correspond to accompanying narrative? [A150.101(e) (2)]</p>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>No</p> <p>Yes</p>	<p>Exhibits NEM-1 &amp; NEM-2</p> <p>Letter of Transmittal, Exhibits NEM-1 &amp; NEM-2</p> <p>Appendix C, Exhibits C-11 to C-20</p>



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<p>F. Locations of any noise monitoring sites (these may be on supplemental graphics that must use the same land use base map as the official NEMs). [A150.101(e) (7)]</p> <p>G. Noncompatible land use identification:</p> <ol style="list-style-type: none"> <li>1. Are noncompatible land uses within at least the 65 Ldn depicted on the maps? [150.21(a), A150.101 (a),(b),(c),(d),(e) (5)]</li> <li>2. Are noise sensitive public buildings identified? [150.21 (a)] National Register Properties? [150.101(e) (6), (9)]</li> <li>3. Are the noncompatible uses and noise sensitive public buildings readily identifiable and explained on the map legend?</li> <li>4. Are compatible land uses, which would normally be considered noncompatible, explained in the accompanying narrative?</li> </ol>	<p>No</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>NA</p>	<p>NA – No noise monitoring was conducted</p> <p>Exhibits NEM-1 &amp; NEM-2, Chapter 3, Exhibits 3-1 and 3-2, Chapter 4, Exhibit 4-1</p> <p>Chapter 2, Exhibit 2-5, Appendix E, Table E-2, Exhibits NEM-1 &amp; NEM-2</p> <p>Chapter 2, Exhibit 2-5, Appendix E, Table E-2, Exhibits NEM-1 &amp; NEM-2</p> <p>NA</p>
<p>V. NARRATIVE SUPPORT OF MAP DATA: [150.21(a), A150.1, A150.101. A150.103]</p>		
<p>A. Technical Data:</p> <ol style="list-style-type: none"> <li>1. Are the technical data, including data sources, on which the NEMs are based adequately described in the narrative?</li> <li>2. Are the underlying technical data and planning assumptions reasonable? [150.21(a) (1), A150.103(b)]</li> </ol> <p>B. Calculation of Noise Contours</p> <ol style="list-style-type: none"> <li>1. Is the methodology indicated? <ol style="list-style-type: none"> <li>a. Is it FAA approved? [A150.103(a)]</li> <li>b. Was the same model used for both maps?</li> <li>c. Has AEE approval been obtained for use of a model other than those which have previous blanket FAA approval?</li> </ol> </li> </ol>	<p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>Yes</p> <p>NA</p>	<p>Chapter 3, Appendix C</p> <p>Chapter 3, Appendix C</p> <p>Chapter 3, Chapter 4, Appendix C</p> <p>Chapter 3, Chapter 4, Appendix C</p> <p>NA</p>



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<p>2. Correct use of noise models:</p> <p>a. Does the documentation indicate the airport operator has adjusted or calibrated FAA-approved noise models or substituted one aircraft type for another?</p> <p>b. If so, does this have written approval from AEE?</p> <p>3. If Noise monitoring was used, does the narrative indicate the Part 150 guidelines were followed?</p> <p>4. For noise contours below DNL 65 dB contour, does the supporting documentation include explanation of local reasons (i.e., local planning purposes? Narrative explanation is highly desirable but not required by the Rule.</p>	<p>No</p> <p>NA</p> <p>NA</p> <p>NA</p>	<p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p>
<p>C. Noncompatible Land Use Information: [150.21(a), A150.101(a),(b),(c),(d),(e) (5)]</p> <p>1. Does the narrative give estimates of the number of people residing in each of the contours (L<sub>DN</sub> 65, 70, and 75 at a minimum) for both the existing condition and future maps?</p> <p>2. Does the documentation indicate whether Table 1 of Part 150 was used by the airport operator?</p> <p>a. If a local variation to Table 1 was used:</p> <p>(1) Does the narrative clearly indicate which adjustments were made and the local reasons for doing so?</p> <p>(2) Does the narrative include the airport operator's complete substitution for Table 1?</p> <p>3. Does the narrative include information on self-generated or ambient noise where noncompatible land use identifications consider nonairport/aircraft sound sources?</p> <p>4. Where normally noncompatible land uses not depicted as such on the NEMs, does the narrative satisfactorily explain why, with reference to the specific geographic areas?</p>	<p>Yes</p> <p>Yes</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p>	<p>Chapter 3, Table 3-4 &amp; Table 3-5</p> <p>Appendix A, Table A-1</p> <p>NA</p> <p>NA</p> <p>NA</p> <p>NA</p>

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NEM Checklist



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Noise Exposure Map (NEM) Checklist	Yes / No / NA	Page No.\Other Reference
5. Does the narrative describe how forecasts will affect land use compatibility?	Yes	Chapter 3, Page 3-5, Appendix B
VI. MAP CERTIFICATIONS: [150.21(b), 150.21(e)]		
A. Has the operator certified in writing that interested persons have been afforded adequate opportunity to submit views, data, and comments concerning the correctness and adequacy of the draft maps and forecasts?	Yes	Sponsor's Certificate
B. Has the operator certified in writing that each map and description of consultation and opportunity for public comment are true and complete?	Yes	Sponsor's Certificate
C. If NEM dates are older than the date of submittal (DOS), has the airport operator certified in writing that aircraft operations, fleet mix, number of operations, and airport operating procedures are representative of existing conditions, and that forecasts for future NEM remain valid as of the DOS? Often a sensitivity analysis is necessary.	NA	NA
Comments: NA		



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## NCP CHECKLIST

Noise Compatibility Program (NCP) Checklist	Yes / No / NA	Page No. \ Other Reference
<b>I. IDENTIFICATION AND SUBMISSION OF PROGRAM:</b>		
A. Submission is properly identified:		
1. 14 C.F.R. Part 150 NCP?	Yes	Letter of Transmittal
2. NEM and NCP together?	Yes	Letter of Transmittal
3. Program revision?	Yes	Letter of Transmittal
B. Airport and Airport Sponsor's name identified?	Yes	Letter of Transmittal & Chapter 1, Page 1-1
C. NCP transmitted by airport operator cover letter?	Yes	Letter of Transmittal
<b>II. CONSULTATION: [150.23]</b>		
A. Documentation includes narrative of public participation and consultation process?	Yes	Chapter 1, pages 1-6 to 1-8 and Appendix D
B. Identification of consulted parties:		
1. Are parties in 150.23(c) consulted?		Chapter 1, pages 1-6 to 1-7 and Appendix D
2. Public and planning agencies identified?	Yes	Chapter 1, pages 1-6 to 1-7 and Appendix D
3. Agencies in 2., above, correspond to those indicated on the NEM?	Yes	Chapter 1, pages 1-6 to 1-7 and Appendix D
C. Satisfies 150.23(d) requirements:		
1. Documentation shows active and direct participation of parties in B., above?	Yes	Chapter 1, pages 1-6 to 1-7 and Appendix D
2. Active and direct participation of general public?	Yes	Chapter 1, pages 1-6 to 1-7 and Appendix D
3. Participation was prior to and during development of NCP and prior to submittal to FAA?	Yes	Chapter 1, pages 1-6 to 1-7 and Appendix D
4. Indicates adequate opportunity afforded to submit views, data, etc.?	Yes	Chapter 1, pages 1-6 to 1-7 and Appendix D
D. Evidence included of notice and opportunity for a public hearing on NCP?	Yes	Chapter 1, pages 1-6 to 1-7 and Appendix D
E. Documentation of comments:		
1. Includes summary of public hearing comments, if hearing was held?	Yes	Appendix D

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Noise Compatibility Program (NCP) Checklist	Yes / No / NA	Page No.\Other Reference
2. Includes copy of all written material submitted to operator?	Yes	Appendix D
3. Includes operator's responses / disposition of written and verbal comments?	Yes	Appendix D
F. Informal agreement received from FAA on flight procedures?	NA	NA
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?	Yes	Exhibits NEM-1 & NEM-2, Chapter 4, Exhibit 4-1, Appendix C, Large scale NEMs (1":2000') at back of document
2. Maps previously found in compliance by FAA?	Yes	Letter of Transmittal
3. Compliance determination still valid?	Yes	Letter of Transmittal
4. Does 180-day period have to wait for map compliance finding?	Yes	None
B. Revised NEMs submitted with program: (Review using NEM checklist if map revisions included in NCP submittal)		
1. Revised NEMs included with program?	No	NA
2. Has airport operator requested FAA to make a determination on the NEM(s) when NCP approval is made?	Yes	Letter of Transmittal
C. If program analysis uses noise modeling:		
1. AEDT, Heliport Noise Model (HNM) or FAA-approved equivalent?	Yes	Chapter 3, Appendix C
2. Modeling in accordance with A150.5?	Yes	Chapter 3, Appendix C
D. Existing condition and future maps clearly identified as the official NEMs?	Yes	Exhibits NEM-1 & NEM-2, Large Scale NEMs at end of document



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IV. CONSIDERATION OF ALTERNATIVES: [B150.7, 150.23(e)]		
A. At a minimum, are the alternatives below considered?		
1. Land acquisition and interests therein, including air rights, easements, and development rights?	Yes	Chapter 4, Measure LU-16, Appendix G
2. Barriers, acoustical shielding, public building soundproofing	Yes	Chapter 4, Measure LU-15, Appendix G, Appendix F
3. Preferential runway system	Yes	Chapter 4, Measures NA-10, NA-11
4. Flight procedures	Yes	Chapter 4, Measures NA-3, NA-7, NA-8, NA-9, NA-12, NA-13, NA-15, Appendix F
5. Restrictions on type/class of aircraft (at least one restriction below must be checked)		
a. Deny use based on Federal standards	No	NA
b. Capacity limits based on noisiness	Yes	Appendix F
c. Noise abatement takeoff/approach procedures	Yes	Chapter 4, Measures NA-3, NA-7, NA-8, NA-9, NA-12, NA-13, NA-15, Appendix F
d. Landing fees based on noise or time of day	Yes	Appendix F
e. Nighttime restrictions	Yes	Appendix F
6. Other actions with beneficial impact?	Yes	Appendix F
7. Other FAA recommendations?	No	NA
B. Responsible implementing authority identified for each considered alternative?	Yes	Chapter 4, Appendix F
C. Analysis of alternative measures:		
1. Measures clearly described?	Yes	Appendix F, Appendix G
2. Measures adequately analyzed?	Yes	Appendix F, Appendix G
3. Adequate reasoning for rejecting alternatives?	Yes	Appendix F, Appendix G
D. Other actions recommended by the FAA: Should other actions be added? (list separately on back of this form actions and discussions with airport operator to have them included prior to the start of the 180-day cycle)	NA	NA

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NCP Checklist



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V. ALTERNATIVES RECOMMENDED FOR IMPLEMENTATION: [150.23(e), B150.7(c); 150.35(b), B150.5]		
A. Document clearly indicates:		
1. Alternatives recommended for implementation?	Yes	Chapter 4
2. Final recommendations are airport operator's not those of consultant or third party?	Yes	Letter of Transmittal
B. Do all program recommendations:		
1. Relate directly or indirectly to reduction of noise and noncompatible land uses?	Yes	Chapter 4, Appendix F, Appendix G
2. Contain description of contribution to overall effectiveness of program?	Yes	Chapter 4, Appendix F, Appendix G
3. Noise/land use benefits quantified to extent possible?	Yes	Chapter 4, Appendix F, Appendix G
4. Include actual/anticipated effect on reducing noise exposure within noncompatible area shown on NEM?	Yes	Chapter 4, Appendix F, Appendix G
5. Effects based on relevant and reasonable expressed assumptions?	Yes	Chapter 4, Appendix F, Appendix G
6. Have adequate supporting data to support its contribution to noise/land use compatibility?	Yes	Chapter 4, Appendix F, Appendix G
C. Analysis appears to support standards set forth in 150.35(b) and B150.5?	Yes	Chapter 4
D. When use restrictions are recommended:		
1. Are alternatives with potentially significant noise/compatible land use benefits thoroughly analyzed so that appropriate comparisons and conclusions can be made?	NA	NA
2. Use restriction coordinated with APP-400 prior to making determination on start of 180-days?	NA	NA
E. Do the following also meet Part 150 analytical standards:		
1. Formal recommendations which continue existing practices?	Yes	Chapter 4
2. New recommendations or changes proposed at end of Part 150 process?	Yes	Chapter 4, Appendix F, Appendix G



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F. Documentation indicates how recommendations may change previously adopted plans?	Yes	Chapter 4, Appendix F, Appendix G
G. Documentation also:		
1. Identifies agencies which are responsible for implementing each recommendation?	Yes	Chapter 4
2. Indicates whether those agencies have agreed to implement.	Yes	Chapter 4
3. Indicates essential government actions necessary to implement recommendations.	Yes	Chapter 4
H. Timeframe:		
1. Includes agreed-upon schedule to implement alternatives?	Yes	Chapter 4
2. Indicates period covered by the program?	Yes	Chapter 4
I. Funding/Costs:		
1. Includes costs to implement alternatives?	Yes	Chapter 4, Table 4-5
2. Includes anticipated funding sources?	Yes	Chapter 4, Table 4-5
VI. PROGRAM REVISION: [150.23(e)(9)]		
A. Supporting documentation includes provision for revision?	Yes	Chapter 4, Measure PM-3



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## OFFICAL NOISE EXPOSURE MAPS

The following pages contain small-scale representations of the official Noise Exposure Maps (NEMs) for Existing (2023) and Future (2028) conditions and supporting maps for the Chicago Rockford International Airport. The official NEMs and supplemental maps, at a scale of 1 inch equals 2,000 feet, are included at the back of this document. The Existing (2023) NEM is based on data developed between 2021 and 2023. The Future (2028) NEM was developed based on an FAA approved forecast, approved noise abatement procedures and input parameters developed for the Existing (2023) NEM. The development of the Existing (2023) and Future (2028) NEM input parameters is further explained in **Chapter 3, Baseline Noise Exposure** and **Appendix C, Noise Modeling Methodology**.



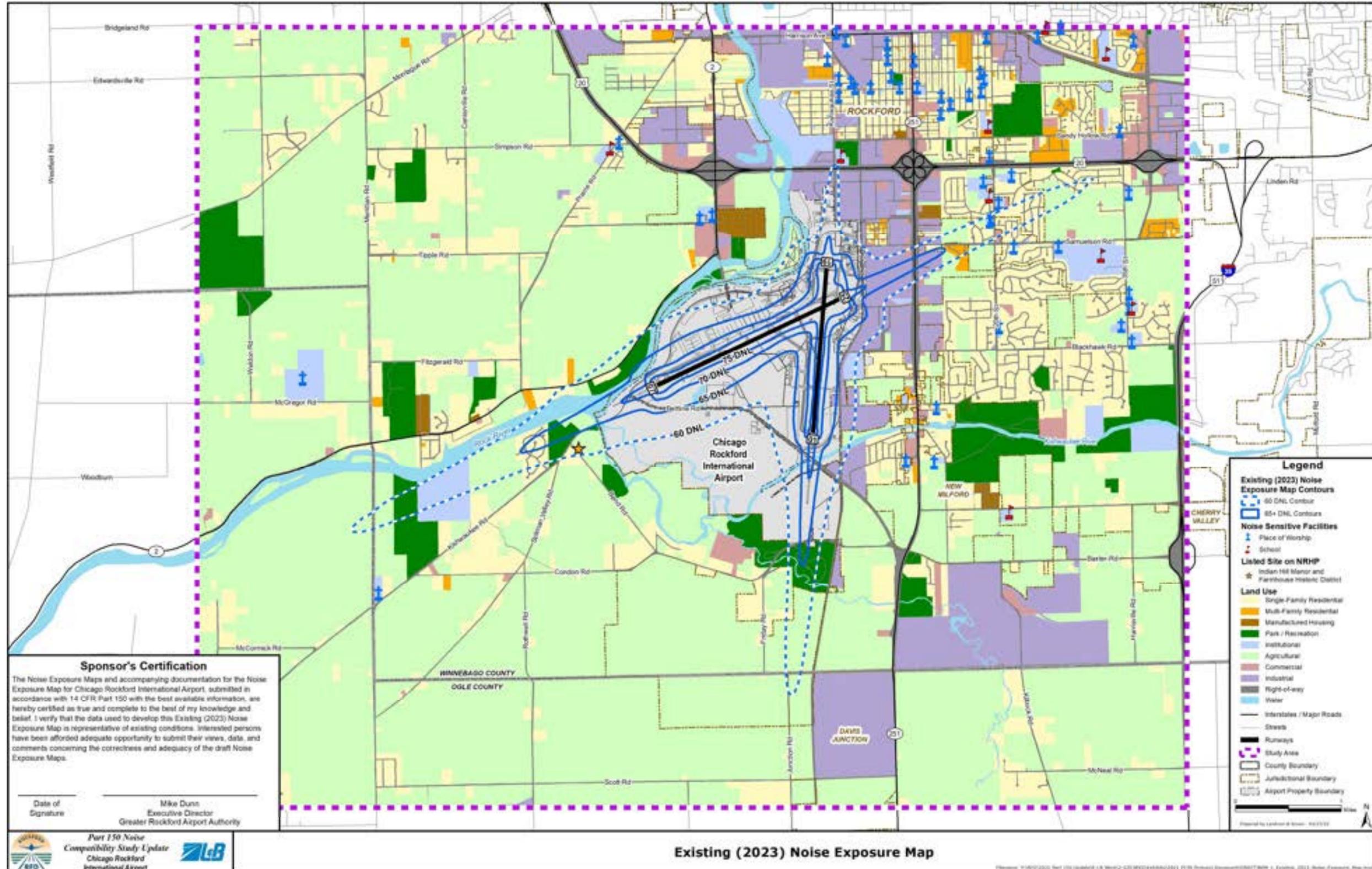
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EXISTING (2023) NOISE EXPOSURE MAP

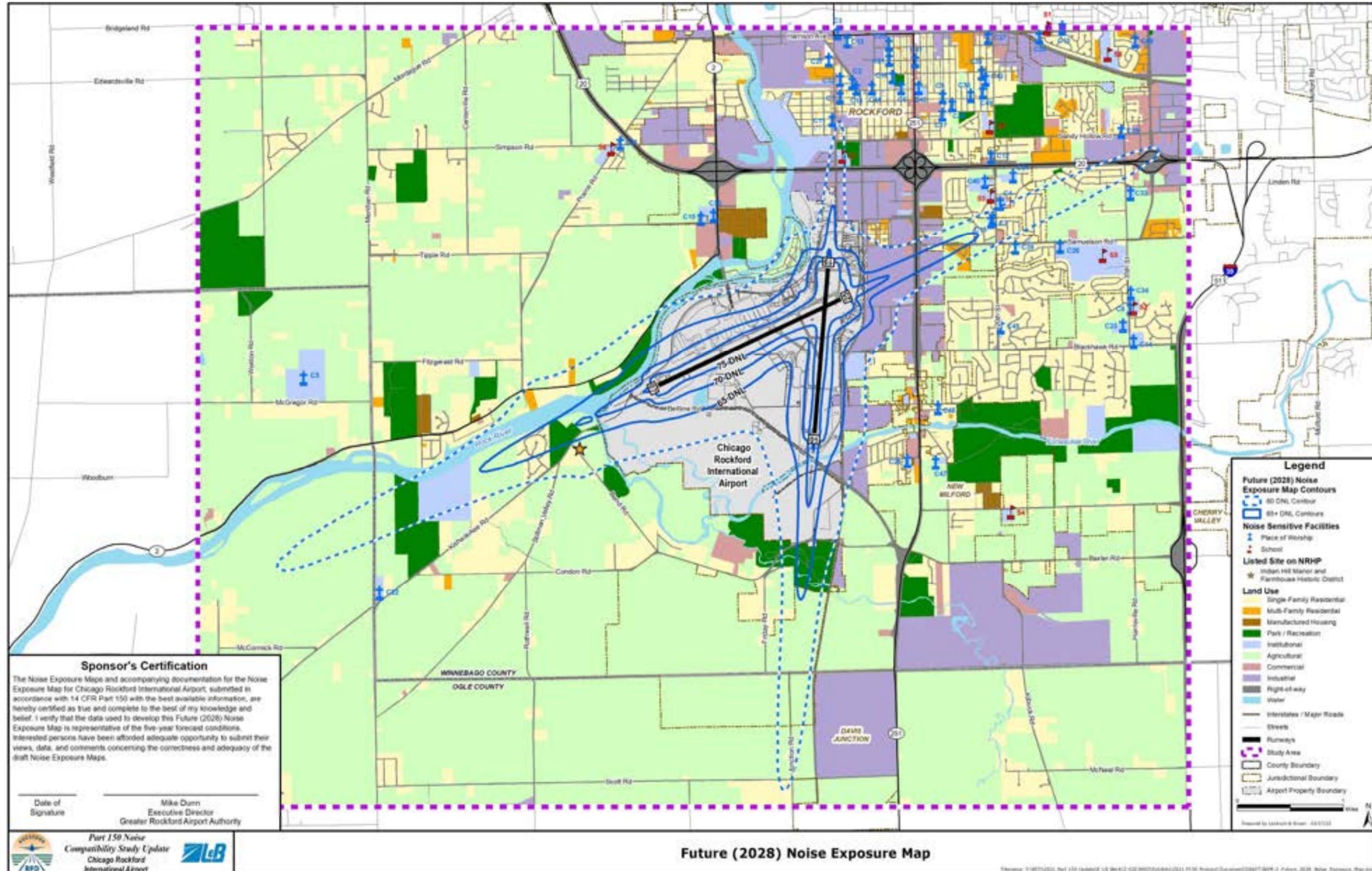




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FUTURE (2028) NOISE EXPOSURE MAP





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## CHAPTER 1



# BACKGROUND



## 1 Background

The Greater Rockford Airport Authority (GRAA) is conducting an update to its Part 150 Noise Compatibility Study (Part 150 Study) to document the noise levels from aircraft operations at the Chicago Rockford International Airport (Airport or RFD). The purpose of conducting a Part 150 Study is to identify potential measures to reduce the impacts of noise from existing aircraft operations on incompatible land uses, and to discourage the introduction of new incompatible land uses in the areas that are determined to be impacted by aircraft noise. This chapter provides the background information necessary for public and/or governmental reviewers to make an informed decision as to the adequacy of the Part 150 Study to meet the requirements set forth by Title 14 of the U.S. Code of Federal Regulations (14 CFR) Part 150 Airport Noise Compatibility Planning<sup>1</sup>, under which it was prepared.

### » 1.1 Title 14 Code of Federal Regulations Part 150

Part 150 is a section of the CFR that sets forth rules and guidelines for airports desiring to undertake airport noise compatibility planning. The regulations were promulgated by the Federal Aviation Administration (FAA) pursuant to the Aviation Safety and Noise Abatement Act (ASNA) of 1979, Public Law 96-193. ASNA was enacted to "... provide and carry out which noise compatibility programs, to improve assistance to assure continued safety in aviation and for other purposes." The FAA was vested with the authority to implement and administer this act. This legislation required the establishment of a single system for measuring aircraft noise, determining noise exposure, and identifying land uses, are normally compatible with various noise exposure levels. Through 14 CFR Part 150, the FAA established regulations governing the technical aspects of aircraft noise analysis and the public participation process for airports choosing to prepare airport noise compatibility plans.

#### 1.1.1 Purpose of Conducting a Part 150 Noise Compatibility Study

The purpose for conducting a Part 150 Study at an airport is to develop a balanced and cost-effective plan for reducing current noise impacts from an airport's operations, where practical, and to limit additional impacts in the future. By following the process, the airport operator is assured of the FAA's cooperation through the involvement of air traffic control professionals in the study and the FAA's review of the recommended Noise Compatibility Program (NCP). An airport with an FAA-approved NCP also becomes eligible for funding assistance for the implementation of measures in the NCP.

Among the general goals and objectives addressed by a Part 150 Study are the following:

- To reduce, where feasible, existing and forecasted noise levels over existing noise-sensitive land uses;
- To reduce new noise-sensitive developments near the airport;
- To mitigate, where feasible, adverse impacts in accordance with Federal guidelines;
- To provide mitigation measures that are sensitive to the needs of the community;
- To minimize the impact of mitigation measures on local tax bases; and
- To be consistent, where feasible, with local land use planning and development policies.

The FAA recommends updating an airport Part 150 Study periodically to reflect current operating conditions. These updates would include modifications to the NCP or the Noise Exposure Maps (NEMs). Updates are recommended when there is a notable change in operating levels or a change to the airfield that affects how aircraft operate. The previous Part 150 Study Update for RFD was completed 18 years ago in 2003 and

<sup>1</sup> Title 14 Code of Federal Regulations, U.S. Department of Transportation, Part 150, Airport Noise Compatibility Planning, Federal Aviation Administration, May 19, 2021.



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approved by the FAA in November 2003, this update included modifications to the NCP and the NEMs. The NEMs were again updated and accepted by the FAA in January 2014.

The Part 150 Study planning process involves the methods and procedures an airport operator must follow when developing an NCP. The decision to undertake noise compatibility planning is entirely voluntary on the part of the airport operator. If the airport operator chooses to prepare an NCP, the FAA will provide funding assistance if the operator follows the regulations of 14 CFR Part 150. As a further encouragement to undertake noise compatibility planning, an airport operator becomes eligible for Federal funding assistance for the implementation of measures in an FAA-approved NCP. See **Exhibit 1-1, Noise Compatibility Planning Process**, for a flowchart of the planning process.

A Part 150 Study involves six major steps:

- Study initiation, including identification of airport noise and land use issues and data collection;
- Definition of current and future noise exposure patterns;
- Evaluation of alternative measures for abating noise (e.g., changing aircraft flight paths), mitigating the impact of noise (e.g., sound insulation), and managing local land uses (e.g., airport-compatible zoning);
- Development of an NCP;
- Development of an implementation and monitoring plan; and
- FAA review and approval of the recommended NCP, including the analysis of alternatives, the compatibility plan, and the implementation and monitoring plan.

The Part 150 Study process is designed to identify noise incompatibilities surrounding an airport, and to recommend measures to both correct existing incompatibilities and to prevent future incompatibilities. For Part 150 Study purposes, noise incompatibilities are generally defined as residences or public use noise-sensitive facilities (libraries, churches, schools, nursing homes, and hospitals) within the 65 Day-Night Average Sound Level (DNL) noise contour. See **Appendix A, FAA Policies, Regulations and Guidance**, for more information on land use and noise compatibility guidelines contained in 14 CFR Part 150.

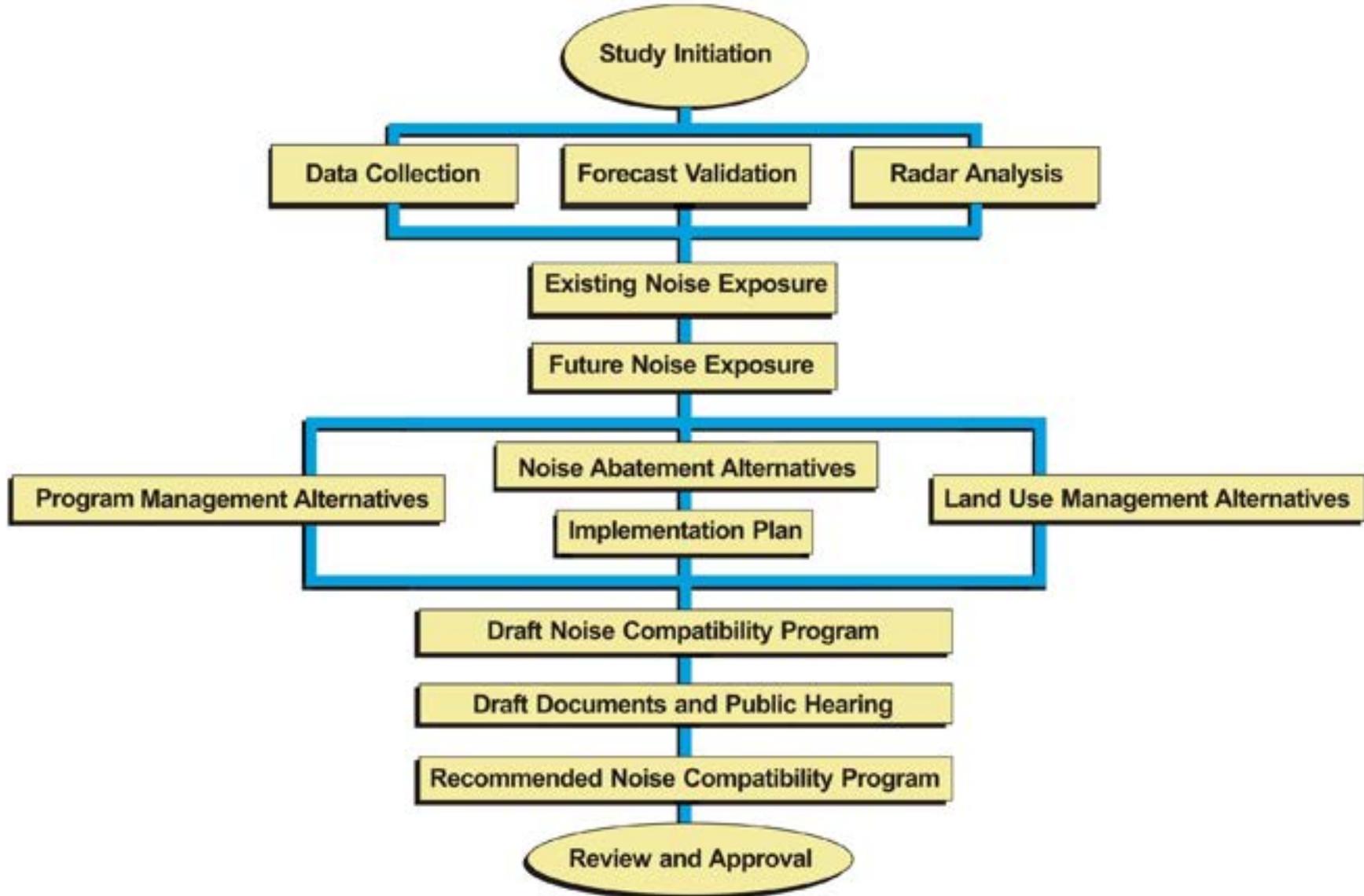
The planning process has both technical and procedural components. The first component involves the preparation of NEMs, which requires the use of specific technical criteria and methods to complete analyses of aircraft noise exposure, potential noise abatement, and land use mitigation measures. NEMs show the official noise contours for the airport. For this Part 150 Study, NEMs were prepared for existing conditions (2023) and for five years in the future. The future year NEM for this Part 150 Study is labeled 2028. The NEMs must be prepared according to 14 CFR Part 150 guidelines with regard to methodology, noise metrics, identification of incompatible land uses, and public participation. More detailed information regarding the NEM process is included in **Section 1.1.2** of this chapter.

The second component of the planning process involves the development of an NCP. The NCP sets forth measures intended to mitigate the impacts of significant noise exposure on residential or other noise-sensitive areas near an airport, and to limit, to the extent possible, the introduction of new incompatible land uses at locations exposed to significant noise levels. Levels of significant noise are identified in 14 CFR Part 150 (see **Appendix A**).

The regulations also require that potentially affected airport users, local governments, and the public be consulted during the study, with the process culminating in the opportunity for a public hearing on the recommended NCP. More detailed information regarding the NCP process is included in **Section 1.1.3** of this chapter.



## EXHIBIT 1-1 | NOISE COMPATIBILITY PLANNING PROCESS





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### 1.1.2 Noise Exposure Maps (NEMs)

The NEM component of a Part 150 Study presents airport noise exposure contours for the existing condition and a forecast condition five years from the date of submission of the documentation for FAA review. The current year NEM is labeled 2023. The data collection and analysis for this Part 150 Study began in 2020 and continued through 2023. The Existing (2023) Baseline condition Noise Exposure Contour is based on data from December 2021 through November 2022. The total aircraft operations during this period was 46,509<sup>2</sup>, which converts to 127.4 average-annual day operations.

The Future (2028) Baseline condition Noise Exposure Contour is based upon the Forecast Working Paper (FWP)<sup>3</sup> and subsequent update to account for impacts due to the COVID-19 health emergency.<sup>4</sup> This forecast projects annual operations to be 63,899 for the year 2028 or 175.1 average-annual day operations. The year 2028 is used as the future year because it is five years from the date of submission of this Part 150 Study for FAA review. The updated FWP operations summary is presented in **Appendix B, Forecasts**.

The NEM noise contours are superimposed on a land use map to show areas of incompatible land use, as defined in 14 CFR Part 150, and presented in **Appendix A. Appendix C, Noise Modeling Methodology**, contains detailed information on the inputs and methodology for preparing the noise exposure contours, including guidelines on the use of the DNL noise metric. 14 CFR Part 150 requires the use of standard methodologies and metrics for analyzing and describing noise. It also establishes guidelines for the identification of land uses that are incompatible with noise of different levels. Small scale NEMs are located at the front of this document with the NEM and NCP checklist, official large scale 1 inch equals 2000 feet NEMs are located at the back of this document with supplemental flight track maps.

The airport proprietor can gain limited protection through preparation, submission, and publication of NEMs. ASNA provides in Section 107(a), as codified in 49 U.S.C. § 47506, that:

“No person who acquires property or an interest therein after the date of enactment of the Act in an area surrounding an airport with respect to which a noise exposure map has been submitted under section 47503 of the Act shall be entitled to recover damages with respect to the noise attributable to such airport if such person had actual or constructive knowledge of the existence of such noise exposure map unless, in addition to any other elements for recovery of damages, such person can show that:

- i. A significant change in the type or frequency of aircraft operations at the airport; or
- ii. A significant change in the airport layout; or
- iii. A significant change in the flight patterns; or
- iv. A significant increase in nighttime operations; occurred after the date of acquisition of such property or interest therein and that the damages for which recovery is sought have resulted from any such change or increase.”

ASNA provides that “constructive knowledge” shall be imputed to any person if a copy of the NEM was provided to them at the time of property acquisition or if notice of the existence of the NEM was published three times in a newspaper of general circulation in the area.

In addition, 14 CFR Part 150 defines “significant increase” as an increase of 1.5 decibel (dB) of DNL. For purposes of this provision, FAA officials consider the term “area surrounding an airport” to mean an area within

<sup>2</sup> Federal Aviation Administration, *Operations Network (OPSNET)*. Accessed December, 2023 at: <https://aspm.faa.gov/opsnet/sys/Main.asp>.

<sup>3</sup> Development of Northwest Cargo Apron & Midfield Development Program, Forecast Summary, September 2018, Crawford Murphy & Tilly.

<sup>4</sup> Chicago Rockford International (RFD) – 2018 Forecast Working Paper (FWP) Sensitivity Analysis, July 2021, Crawford Murphy & Tilly.



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the 65 DNL contour (See 14 CFR Part 150, Section 150.21(d), (e), (f)(1), and (f)(2)). An acceptance of the NEMs by the FAA is required before the FAA will approve an NCP for the airport.

## 1.1.3 Noise Compatibility Program (NCP)

An NCP includes provisions for the abatement of aircraft noise through aircraft operating procedures, air traffic control procedures, or airport facility modifications. It also includes provisions for land use compatibility planning and may include actions to mitigate the impact of noise on incompatible land uses. **Chapter Four, Noise Compatibility Program**, includes detailed information for the RFD 2023 NCP recommendations. The NCP must also contain provisions for updating and periodic revision.

14 CFR Part 150 establishes procedures and criteria for FAA evaluation of the NCP. Two criteria are of particular importance: the airport proprietor may not take any action that imposes an undue burden on interstate or foreign commerce; nor may the proprietor unjustly discriminate between different categories of airport users.

The FAA also reviews changes in flight procedures proposed for noise abatement for potential effects on flight safety, safe and efficient use of the navigable airspace, management and control of the national airspace and traffic control systems, security and national defense, and compliance with applicable laws and regulations. Because the FAA has the ultimate authority for air traffic control and flight procedures related to air traffic control requirements, any measures relating to these subjects that are recommended in an NCP must be explicitly approved by the FAA and may not be implemented unilaterally by the airport proprietor.

FAA approval of NCP measures, through a Record of Approval (ROA) that is supported by an environmental assessment and a finding of no significant impact, environmentally clears the agency to participate in actions over which it has primary implementation responsibility (e.g., air traffic modifications). With an approved NCP, an airport proprietor becomes eligible for Federal funding to implement the eligible items of the program. Approval by the FAA does not, however, commit the agency to either a specific schedule of implementation or guarantee the allocation of Federal funds for implementation of any NCP measure.

## » 1.2 Public Involvement

As discussed previously, a key element in the Part 150 Study process is public involvement, which is designed to inform and gather input from the public regarding the data and findings of the Part 150 Study. An Advisory Committee (AC) was convened and met to review study progress and provide input as necessary. Virtual public information meetings were held at key points throughout the Part 150 Study Update. Additional information on the public involvement process is included in **Appendix D, Public Involvement**.

### 1.2.1 Advisory Committee (AC)

An AC was organized to provide feedback and advice to the study team on the contents and preparation of the Part 150 Study. The AC provided airport users, agencies, and local officials an opportunity to be involved in developing RFD's Part 150 Study. In refining the Part 150 Study, staff from the GRAA, as well as the consultant team wanted to benefit from the AC members' special viewpoints and the people and resources they represented. A process was therefore designed to encourage the open exchange of creative ideas to achieve results. The members of the AC assisted the process in several ways;

- **As a Sounding Board** – The AC provided a forum in which the consultant team and other AC members could present information, findings, ideas, and recommendations. All benefited from listening to the diverse viewpoints and concerns of the wide range of interests represented on the committee.
- **As a Link to the Community** – Each member represented a key constituent interest – local neighborhoods, local governments, public agencies, or airport users. Committee members provided a



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link between the study team and the people they represented. They were asked to inform their constituents about the study as it progressed, and to convey the views of others at committee meetings.

- **As a Critical Reviewer** – The consultant team wanted to have its work scrutinized closely for completeness of detail and clarity of thought. The committee membership was urged to review the consultant's work and provide any input to help improve it.
- **As an Aid to Implementation** – Each member has a unique role to play in implementing the plan, ranging from making changes in flight procedures to changes in local land use plans and regulations.

The AC operated informally, with no compulsory attendance, no voting, and no officers. The final decision on which measures to include in the Part 150 Study NCP rests with the GRAA. The meetings were conducted by the consultant team and were held at key points in the study when committee input was especially needed. Members were urged to attend the general public information meetings held during the study to listen firsthand to the concerns that were raised and to speak with members of the consultant team and representatives of the GRAA one-on-one. Many organizations were contacted and invited to designate a representative to serve on the AC. The resulting membership represents a broad range of interests that includes pilots, commerce, community, environmental, air traffic controllers, government and planning, as well as interested and affected citizens. A list of local representatives and organizations that participated in the committee is provided in **Appendix D**.

### 1.2.2 Public Information Workshops

During the course of the Part 150 Study, three (3) virtual workshops were held. The third workshop was held in conjunction with the release of a Draft Part 150 Study document and the Public Hearing. Meeting dates and times are noted below. The public information meetings were attended by interested citizens, elected officials, and local media representatives. **Appendix D**, includes copies of meeting notices, sign-in sheets, comments received, and meeting handouts and presentations.

**Public Information Workshop Meeting #1 – December 15<sup>th</sup>, 2021 (6:00 p.m. – 8:00 p.m.)**

**Public Information Workshop Meeting #2 – December 8<sup>th</sup>, 2022 (6:00 p.m. – 8:00 p.m.)**

**Public Information Workshop Meeting #3 – November 15<sup>th</sup>, 2023 (6:00 p.m. – 7:00 p.m.)**

**Public Hearing – November 15<sup>th</sup>, 2023 (7:00 p.m. – 8:00 p.m.)**

### 1.2.3 Public Information Comment Period

14 CFR Part 150 requires that Draft Part 150 NCP documents be made available to the public prior to conducting a Public Hearing. The Draft Part 150 Study Update document was made available to the public at the Rockford City Hall, Hart Interim Library and the GRAA office, and online at <https://www.airportprojects.net/rfd-part150/home/documents-reports/> as of October, 2023. A online virtual Public Hearing will be held in conjunction with the last public workshop on November 15<sup>th</sup>, 2023, from 6:00 p.m. to 8:00 p.m. A list of document locations, a summary of the hearing, meeting materials, comments received, and response to those comments are included in **Appendix D**, of the draft document.

### 1.2.4 Additional Public Coordination

Additional efforts to provide information and opportunity for public involvement in this Part 150 Study included a project website. Information about the Part 150 Study; including general information, upcoming and past meetings, and a method to contact the Part 150 Study Team; is available online at the following address: <https://www.airportprojects.net/rfd-part150/>



### 1.2.5 Noise Complaints

Noise complaint history was obtained for the period of 2016 through April of 2021 from the greater Rockford Airport Authority (GAAA). The GAAA does not have a current formal noise complaint logging and response process. However as complaints are received information is informally tracked by GAAA staff. Since 2016 approximately 20 local residents have called the GAAA to report a noise complaint.

For complaints that included an address of the local resident, Part 150 Study announcement were mailed to those address', as well as information on how to reach the study team and get information about the study. All new noise complaints since 2021 have been forwarded to the study team. Those community members were also notified of the Part 150 Study and the opportunities to participate if contact information was made available.

## » 1.3 Status of 2003 Noise Compatibility Plan

The 2003 NCP for RFD was published April of 2003 with a final FAA Record of Acceptance (ROA) on November 3, 2003. The 2003 NCP included 34 recommended measures, including 13 noise abatement measures, 14 land use management measures, and 6 implementation and other measures. Each measure is listed below, followed by its status in italics. The NEMs were updated in 2013, and received FAA acceptance in January 2014. The NEMs were labeled 2013 and 2018.

### 2003 NCP Noise Abatement Measures

Note that NA-2, NA-5, and NA-6 were previously withdrawn from the program in favor of more effective measures and therefore are not included in this list:

- NA-1:** Maintain existing noise abatement procedures per Tower Order of June 15, 1984. *This measure is currently implemented on a voluntary basis, as conditions allow.*
- NA-3:** All aircraft departing on Runway 7 should be fanned along three departure tracks: left, right, and center. *This measure is currently implemented on a voluntary basis, as conditions allow.*
- NA-4:** Direct pilots of C-130s to turn as tightly as practicable when training on Runway 19. *This measure is currently implemented on a voluntary basis, as conditions allow; however RFD no longer has pilot training from C-130 aircraft.*
- NA-7:** Establish departure turn from Runway 25 to a heading of 310 degrees (or 60 degrees to the right) for all aircraft having departure courses from 280 degrees clockwise through 99 degrees, inclusive. Maintain heading until reaching 3,000 feet mean sea level (MSL). *This measure was initially approved in the 1994 NCP to recommend departures from Runway 25 be assigned a 310-degree heading. This measure was modified in the 2003 NCP to replace the 310-degree heading with the Dubuque (DBQ) or the Nodine (ODI) navigational fixes and is currently implemented on an voluntary basis by the ATCT. Aircraft having departure courses of 250 degrees clockwise through 069 degrees typically file, and are assigned, the ODI fix. This measure is currently implemented on a voluntary basis, as conditions allow.*
- NA-8:** Retain 20-degree left turn from Runway 25 for all aircraft weighing more than 12,500 pounds and having departure courses 100 degrees clockwise through 279 degrees inclusive. Maintain heading until reaching 3,000 feet MSL. *This measure is currently implemented on a voluntary basis, as conditions allow.*
- NA-9:** For Runway 19 departures climb on runway heading to 1,200 feet MSL then turn to 170 degrees until 3,000-foot MSL – all aircraft. *This measure is currently implemented on a voluntary basis, as conditions allow.*



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**NA-10:** Establish informal Preferential Runway Use Plan, weather and operational necessity permitting, as follows for aircraft weighing more than 12,500 pounds, using five-knot tailwind and 15-knot crosswind components for runway assignments.

The recommended runway use program, as modified, is outlined below:

- All Departures
  - Runway 19 preferred for all departures.
  - Runway 25 would be used for departures when use of Runway 19 could not be used due to wind, weather, or operational necessity.
  - Runway 1 would be used for departures when both Runway 19 and Runway 25 could not be used due to wind, weather, or operational necessity.
- Daytime Arrivals
  - The runway that would maximize traffic flow would be used for arrivals.
- Nighttime Arrivals
  - Runway 1 preferred for all arrivals.
  - Runway 7 would be used for arrivals when use of Runway 1 could not be used due to wind, weather, or operational necessity.

*This measure was modified in the 2003 NCP to change the secondary nighttime arrival runway for nighttime hours from Runway 25 to Runway 7 because Runway 7 is equipped with an Instrument Landing System (ILS), which allows for precision approaches, and Runway 25. This measure is currently implemented on a voluntary basis, as conditions allow.*

**NA-11:** For all aircraft requiring more than 8,000 feet certified takeoff length, use Runway 25 preferred. *This measure is currently implemented on a voluntary basis, as conditions allow.*

**NA-12:** Establish departure turn from Runway 25 to a heading of 310-degrees as soon as practicable for daytime (7:00 a.m. to 10:00 p.m.) departures by aircraft weighing more than 12,500 pounds. Maintain heading until reaching 3,000 feet MSL. *This measure was initially approved in the 1994 NCP to recommend departures from Runway 25 be assigned a 310-degree heading. This measure was modified in the 2003 NCP to replace the 310-degree heading with the Dubuque (DBQ) or the Nodine (ODI) navigational fixes. This measure is currently implemented on a voluntary basis, as conditions allow.*

**NA-13:** Establish departure turn from Runway 25 to a heading of 200 degrees as soon as practicable for nighttime (10:00 p.m. to 7:00 a.m.) departures by aircraft weighing more than 12,500 pounds. Maintain heading until reaching 3,000 feet MSL. *This measure is currently implemented on a voluntary basis, as conditions allow.*

**NA-14:** Aircraft weighing more than 12,500 pounds conduct touch and go and low approach training activity on the south side of the airport when using Runways 7 or 25. *This measure is currently implemented on a voluntary basis, as conditions allow; however substantial pilot training is no longer occurring at RFD as it has historically.*

**NA-15:** During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 1, maintain runway heading until reaching 3,000 feet MSL before turning on course. *This measure is currently implemented on a voluntary basis, as conditions allow.*

**NA-16:** Encourage the use of noise attenuating construction standards for all new on-airport structures/facilities and use those structures as noise barriers/buffers to adjacent off-airport land uses. *This measure is currently implemented. The GRAA continues to use best management practices when locating new structures/facilities on the airport.*



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### 2003 NCP Land Use Management Measures

Note that LU-1, LU-3, LU-6, LU-7, and LU-10 were previously withdrawn from the program and therefore are not included in this list:

- LU-2:** Adopt noise overlay zoning prohibiting development of selected noise-sensitive land uses within the 60 DNL contour, high occupancy uses in the “Double-Clear Zone Area,” and residential uses in the 65 DNL contour of the 2000 NCP within the “Double-Clear Zone Area” by the city of Rockford and Winnebago County. *With the publication and FAA ROA of the 2003 NCP, this information was conveyed to the City of Rockford and Winnebago County for implementation at their discretion. This measure was implemented.*
- LU-4:** Amend local comprehensive plans by adopting Updated Part 150 NCP as their Noise Compatibility Elements for the city of Rockford and Ogle and Winnebago counties. *This measure was implemented by Ogle County in the 1996 comprehensive plan. With the publication and FAA ROA of the 2003 NCP, this information was conveyed to the City of Rockford, Winnebago County, and Ogle County for implementation at their discretion. This measure was implemented.*
- LU-5:** Adopt guidelines for discretionary review of development projects for the city of Rockford and Ogle and Winnebago counties. *With the publication and FAA ROA of the 2003 NCP, this information was conveyed to the City of Rockford, Winnebago County, Ogle County, and the GRAA for implementation at their discretion. This measure was implemented.*
- LU-8:** Acquire homes and land on Blackhawk Island, relocate residents, redevelop as a park. (Partial FAA approval included only area in 65 DNL noise contour). *This measure was implemented.*
- LU-9:** Redevelop airport-owned land parcels located along Kishwaukee Street, south of Research Parkway. *The implementation of this measure is ongoing; dependent upon interest of potential developers and availability of funding.*
- LU-11:** Acquire development and overflight rights via purchase of land use and aviation easement over undeveloped parcel in Runway 7L approach area on south side of Kishwaukee River. *This measure was implemented.*
- LU-12:** Offer options of voluntary sale to GRAA or sound insulation to owner of one residence south of the airport in the 65 DNL contour of the 1993 NCP. *This measure was implemented.*
- LU-13:** Encourage the city of Rockford and Winnebago County to require plat notes on new subdivision plats and to record the notes on deeds for new subdivisions within the Airport Noise Overlay Zones AC-1 and AC-2. *With the publication of the 2003 NCP, this information was conveyed to the City of Rockford and Winnebago County for implementation at their discretion. To date, the airport noise contours are not referenced in any local subdivision ordinance.*
- LU-14:** Encourage Winnebago County, the city of Rockford, the Village of New Milford, and the Village of Davis Junction not to allow an increase in the residential density in the Agricultural Priority (AG) or Rural Residential (RR) zoning districts (Winnebago County) in the 2008 NEM/NCP 60+ DNL noise contour. *With the publication of the 2003 NCP, this information was conveyed to The City of Rockford, Winnebago County, the Villages of New Milford and Davis Junction for implementation at their discretion. To date, the airport noise contours are not referenced in any local zoning document.*



### 2003 NCP Other Implementation Measures

- OM-1:** Noise monitoring, contour updating, and land use implementation assistance. *This measure is ongoing, noise contour and land use planning updates will occur for this NCP Update.*
- OM-2:** Noise complaint response. *This measure was implemented.*
- OM-3:** Plan review and evaluation. *This measure is ongoing, the NCP will be reviewed and updated as necessary as part of this Part 150 Study Update.*
- OM-4:** Establish a Pilot/Community Awareness Program. *Measure has not been implemented.*
- OM-5:** Publication of Instrument Departure Procedures for Runways 1, 19, and 25. *Measure has not been implemented.*
- OM-6:** Update airport information in the *Airport Facilities Directory*. *This measure is implemented as necessary.*

## » 1.4 Airport Location and History

Development of RFD began on April 9, 1946, when the citizens of Rockford, Harlem, Owen, and Cherry Valley townships approved the formation of GRAA. On May 6, 1946, the Illinois Secretary of State issued the charter to GRAA. In 1948, the U.S. deeded approximately 1,500 acres of Camp Grant, a military installation, to GRAA to construct RFD. By 1954 construction of the airport was complete and dedication ceremonies were held to commemorate the opening of RFD. Over its almost 50-year history, the airport has undergone significant airfield development including the construction of additional runways, taxiways, and FAA facilities.

Until the late 1980s, commercial air service at RFD was sporadic and difficult to maintain. Ozark Airlines operated at RFD from the early 1950s. Trans World Airlines (TWA), which merged with Ozark in 1976, initiated service at the airport in 1980. TWA service was suspended in 1982 due in part to the air traffic controller strike and slot allocation restrictions at O'Hare International Airport in Chicago. By 1986, commercial air service at RFD had all but disappeared.

The GRAA began to market RFD in the mid-1980s and in 1987 initiated a major terminal construction project as a means to attract new airlines. In September 1987, a new 56,000 square foot terminal building was completed. RFD has had passenger service by major passenger airlines in the past including Branniff, TWA, American, and Midwest Express. Until 1996, RFD had scheduled commuter airline service by American Eagle (with service to the American Airlines hub at Chicago O'Hare International Airport). Midwest Express Connection also provided commuter service until 1997 (with service to Milwaukee and Detroit). Northwest AirlinK continued to serve RFD until 2001 (with service to Detroit and the Northwest Airlines hub at Minneapolis). Scheduled commuter airline service was discontinued because of passenger load factors or lack of passenger feed to parent airline. Currently the only passenger service is offered by Allegiant Airlines which provides year-round scheduled direct service to seven destinations, as well as seasonal destinations.

Air cargo operations and airfreight services were introduced at RFD by Emery Worldwide and Airborne Express in 1989; however, Emery Worldwide discontinued flight operations in 1995, but continues to operate ground freight services at RFD. In 1994 United Parcel Service (UPS) began cargo service into RFD and by 1998 was the second largest hub after Louisville. In addition to UPS, current air cargo operators include Amazon Air, Air Transport International, ABX Air, Atlas Air and other air cargo carriers. In recent years RFD has experienced growth in air cargo operations by UPS and other air cargo operators. E-commerce has been a major influencer to the increase in air cargo operations at RFD, current social and world-wide health concerns have further contributed to the exponential growth in e-commerce.

It is anticipated that air cargo operations will continue to increase at the Airport. In support of this increase in air cargo operations the GRAA has addressed shortfalls in available aircraft parking positions and building space. In



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2018 the GRAA prepared an Environmental Assessment (EA) proposing improvements to the northwest cargo area and the development of a midfield cargo facility. Many of the proposed improvements to the northwest cargo area have been completed while development of the midfield cargo area was recently initiated.

### 1.4.1 Airport Location

The Airport is located in southwest Rockford. It is a publicly-owned air carrier airport operated by the GRAA. RFD serves the Greater Rockford Metropolitan area, which consists of Winnebago County as well as portions of Boone, Ogle, and DeKalb counties in north-central Illinois. The city of Rockford, the fifth largest city in Illinois and is located along the Rock River in north-central Illinois. Rockford is approximately 75 miles northwest of Chicago, 14 miles south of the Wisconsin state line, and 70 miles east of the Iowa border.

The airport facility encompasses approximately 3,000 acres of land in Winnebago County approximately five miles south of the Rockford Central Business District (see **Exhibit 1-2, Airport Location**). The airport is generally bounded by Illinois State Route 251 to the east, the Kishwaukee River to the south, the Rock River to the west, and the US 20 Bypass to the north. Primary access to the airport is via IL 2. Local access to the airport includes Blackhawk and Beltline Roads via 11<sup>th</sup> Street. **Exhibit 1-3, Airport Layout Plan (ALP)**, presents the existing ALP and the area in the vicinity of the airport, including roadway access.

## » 1.5 Airport Facilities and Activity

The inventory of existing conditions at RFD included a general description of the facility, its role in the aviation system of northern Illinois, and its relationship to the surrounding area. This information provided the foundation upon which subsequent aircraft operation evaluations were based.

Aircraft activity and airport facilities (i.e. runways, taxiways, navigational aids, etc.) were considered in determining aircraft noise exposure and the range of potential noise abatement measures that were available at the airport. Activity information that was considered included the number of operations, the fleet mix of aircraft, runway use, and the time of day at which operations occur.

### 1.5.1 Airport Runways

The existing layout of RFD currently consists of two general-purpose runways, Runway 1/19 and Runway 7/25. Runway 1/19 is 8,199 feet long and 150 feet wide and is oriented to the north/south. Runway 7/25 is 10,000 feet long and 150 feet wide and is oriented to the northeast/southwest. **Exhibit 1-3**, presents the existing ALP for RFD.

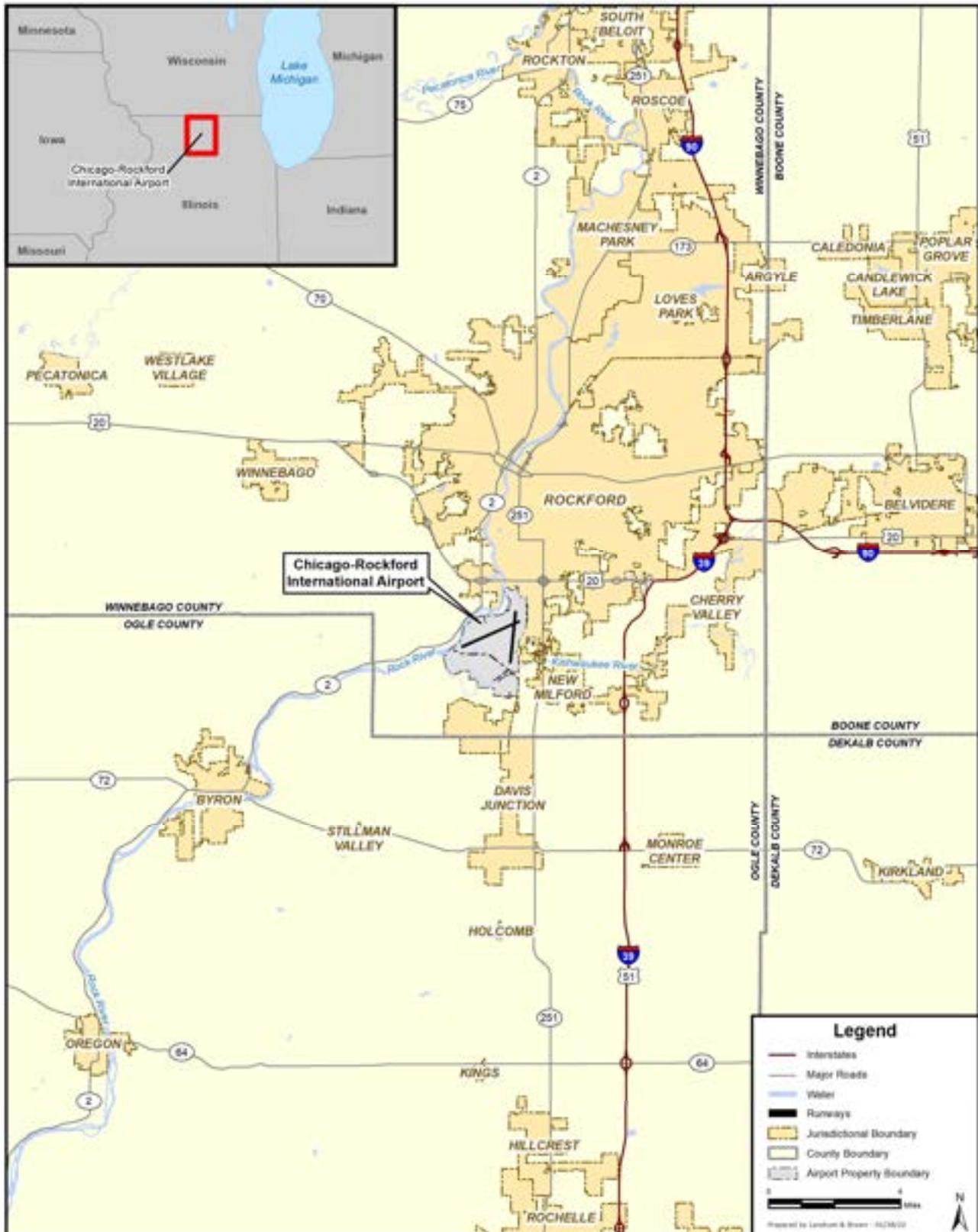
Runway 7/25, the primary runway on the airfield, is principally used for departures in west flow and arrivals in east flow during the nighttime hours, winds permitting. This is done in an effort to keep traffic away from a majority of the City of Rockford population located north of the airport. Runway 1/19 is principally used by light general aviation and commuter aircraft during calm wind patterns. The flight patterns for aircraft touch-and-go training occurs either to the south of the airport (on Runway 7/25) or to the west of the airport (on Runway 1/19).



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## EXHIBIT 1-2 | AIRPORT LOCATION



Source: Winnebago & Ogle County GIS data, 2021, Landrum & Brown analysis, 2023.



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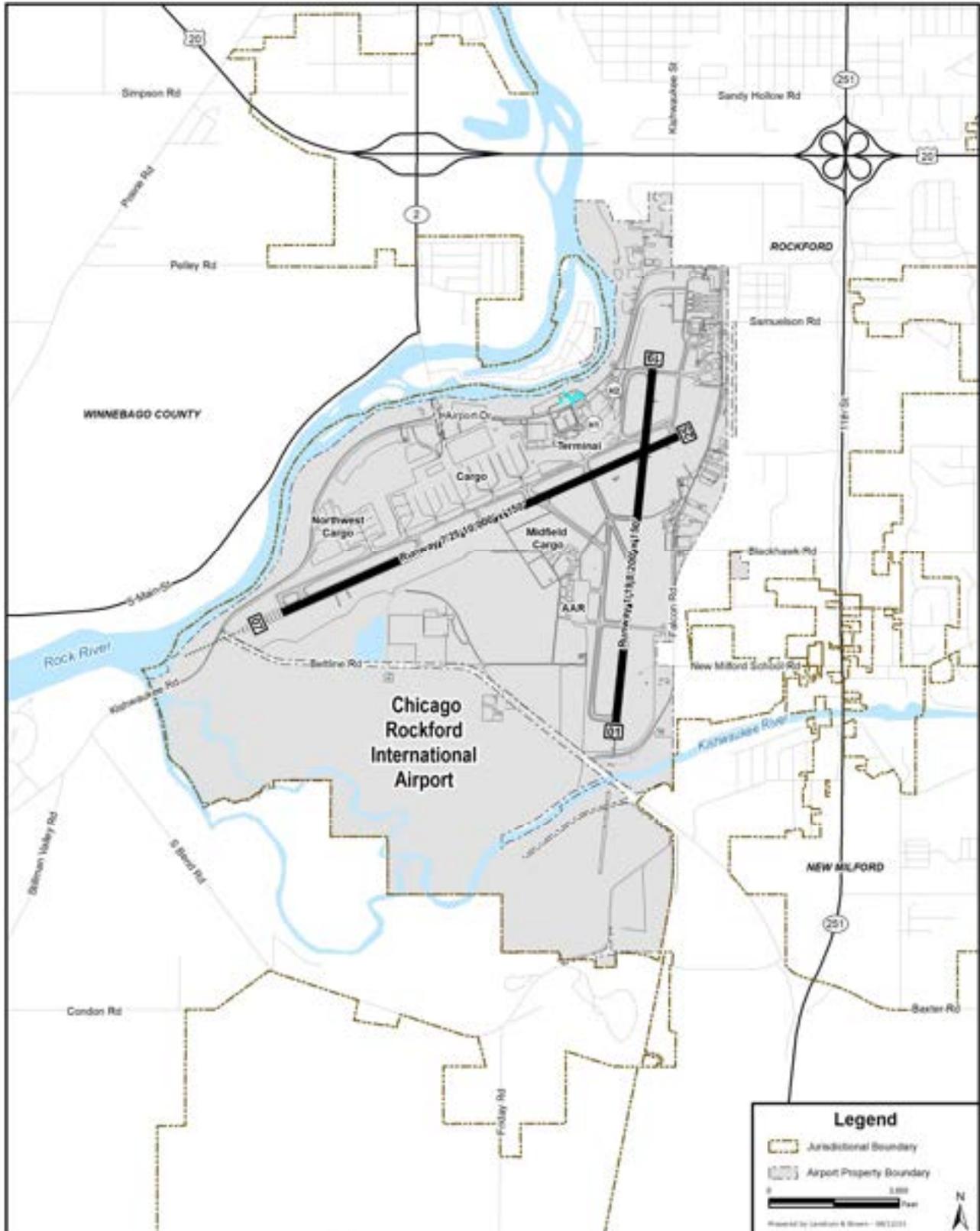
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## EXHIBIT 1-3 | AIRPORT LAYOUT PLAN (ALP)



Source: Winnebago & Ogle County GIS data, 2021, Landrum & Brown analysis, 2023.



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## 1.5.2 Navigational Aids

Aircraft making an instrument approach to an airport use both radio navigational aids and lighting systems to provide guidance to pilots in landing aircraft during periods of reduced visibility. Precision instrument approaches, including Instrument Landing Systems (ILS), provide both runway alignment and a glideslope for descent guidance. Nonprecision approaches provide only runway alignment.

Navigational aids (NAVAIDS) include visual or electronic devices, either airborne or on the ground, which provide point-to-point guidance information or position data to an aircraft in flight. Various types of NAVAIDS are in use at RFD and are functionally classified according to the type of navigational support each provides.

### 1.5.2.1 Enroute Navigational Aids

Enroute NAVAIDS are locational aids operated for the purpose of providing accurate enroute navigation information to the pilot using ground-based transmitting and on-board receiving instruments.

A Very High Frequency Omnidirectional Range (VOR) is a ground-based facility that provides course guidance to aircraft by means of a very high frequency (VHF) radio frequency. Another NAVAID known as a Tactical Air Navigation (TACAN) is frequently collocated with a VOR. The joint NAVAID is then known as a VORTAC. The TACAN, primarily a military oriented facility, provides both course guidance and distance measurement from and ultra-high frequency (UHF), line-of-sight facility. Under this configuration, civil pilots receive course guidance through the on-board distance measuring equipment (DME) from the VOR facility and distance information from the TACAN. A purely civilian facility is labeled a VOR/DME station.

Two VORTACs and one VOR/DME are used to guide air traffic into and out of the RFD area. Only one of these, the RFD VORTAC, is located in the airspace controlled by the RFD TRACON service area. These areas are shown in **Exhibit 1-4, Rockford TRACON Airspace**. The RFD VORTAC, referred to by the three-letter identifier RFD, is located approximately five miles west of the airport. The VOR operates on a frequency of 110.8 MHz, and the TACAN operates on Channel 45. The RFD VOR is used to establish ten Low-Altitude Victor Airways. The others include the Janesville VORTAC (JVL, 114.3 MHz, Channel 90) approximately 20 miles to the north, and the Polo VOR/DME (PLL, 111.2 MHz, Channel 49) approximately 20 miles southwest. All of these NAVAIDS are used for either initial approach fixes or missed approach fixes into RFD.

### 1.5.2.2 Terminal Area Navigational Aids and Landing Aids

There are a number of different NAVAIDS located at or near the airport for the purpose of providing aircraft guidance information while arriving, departing, or overflying the area under any weather condition. An example is terminal area NAVAIDS, which provide directions to the pilot for maneuvering the aircraft near the terminal. Another example is landing aids, which provide either precision or non-precision approaches to the airport. Both precision and non-precision approaches provide runway alignment course guidance to the aircraft, while precision approaches also provide glide slope information for descent purposes.

ILSs provide an approach path for exact alignment and descent of an aircraft on final approach to a runway. The system provides three functions: guidance provided vertically by a glide slope antenna, and horizontally by a localizer; range, furnished by marker beacons or DME; and visual alignment, supplied by the approach light systems and runway edge lights.

RFD has established a Category (CAT) I ILS on Runway 1. The straight-in ILS approach to the runway uses a 2.75-degree glide slope with a runway threshold crossing height of 62 feet. It can be flown whenever the ceiling is 200 feet or greater above the touch down zone elevation of Runway 1 and visibility is between one-fourth and three-eighth statute mile. The localizer antenna is located 1,500 feet off the north end of Runway 1/19, on the extended centerline of the runway. Transmitting on a frequency of 109.3 MHz, the localizer tells the pilot whether



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the aircraft is left or right of the runway centerline, while the glide slope antenna, located 1,100 feet north of the approach end of Runway 1 and 400 feet east of the centerline, provides the signal to indicate if the aircraft is above or below the desired glide path.

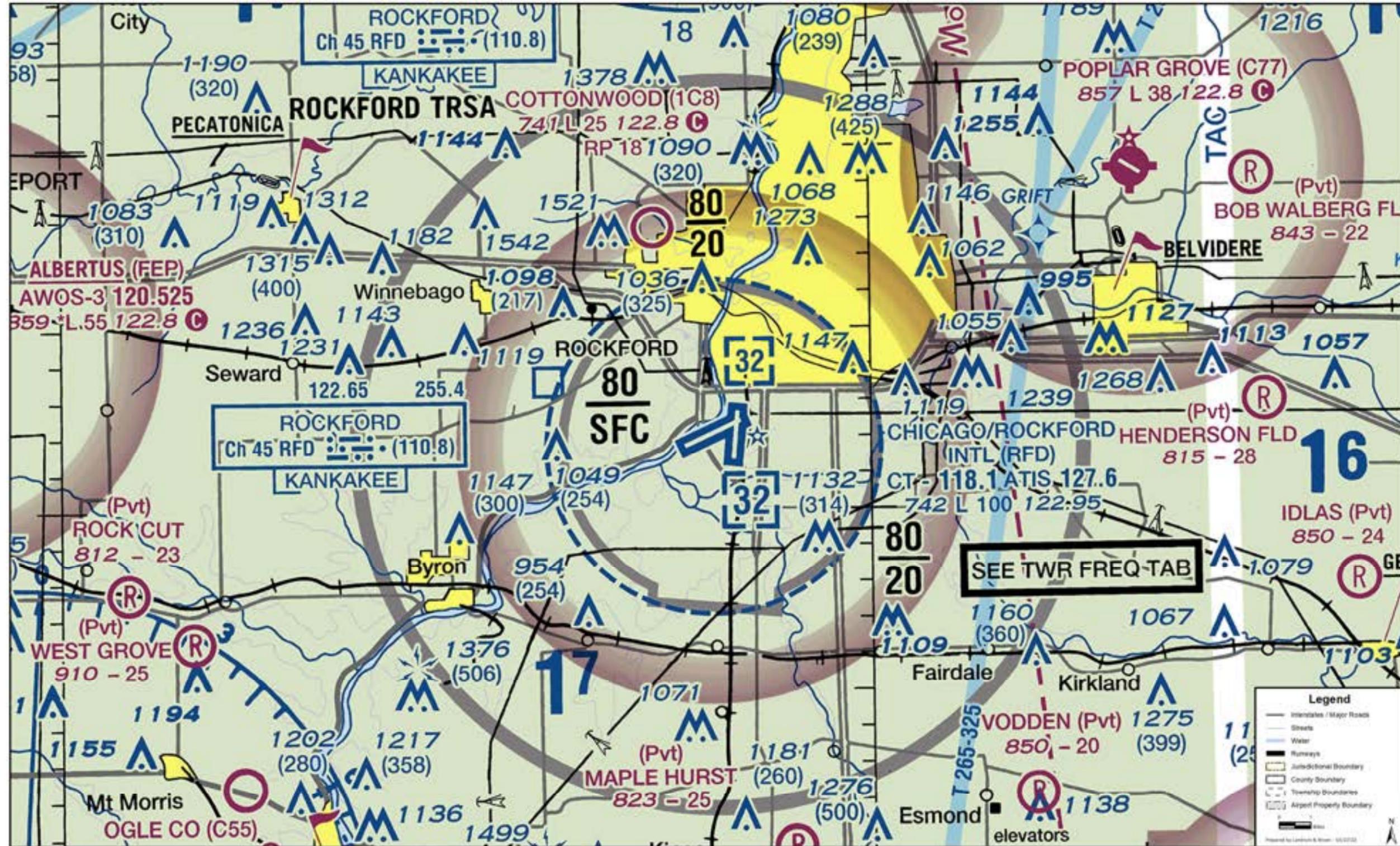
RFD also has a CAT I, II, and III ILS on Runway 7. To utilize the CAT II and III ILS, both the aircrew and the aircraft must be specially certified to fly these approaches. The straight-in ILS approach to the runway uses a 3.00-degree glide slope with a runway threshold crossing height of 60 feet. CAT I can be flown whenever the ceiling is 700 feet or greater and visibility is at least two statute miles; whereas, a CAT II can be flown whenever the ceiling is 200 feet or greater and visibility is at least one-half statute mile. However, the CAT III for Runway 7 can only be flown with a Runway Visual Range (RVR) of at least 600 feet. The RVR identifies the minimum lateral visibility for an approach. The localizer antenna is located 700 feet off the west end of Runway 7/25. Transmitting on a frequency of 109.55 MHz, the localizer tells the pilot whether the aircraft is left or right of the runway centerline, while the glide slope antenna, located 1,200 feet west of the approach end of Runway 7 and 400 feet south of the centerline, provides the signal to indicate if the aircraft is above or below the desired glide path.

Five other nonprecision, instrument-aided approaches are also available at RFD. These include a Nondirectional beacon (NDB) and Area Navigation (RNAV)/Global Positioning System (GPS) approach to Runway 1; a RNAV/GPS to Runway 7; a localizer backcourse, RNAV/GPS Y, and RNAV/GPS Z approach to Runway 19; and a RNAV/GPS Y and RNAV/GPS Z approach to Runway 25.

To utilize the RNAV/GPS approaches, aircraft must be equipped with the technology. RNAV is a method of navigation that permits aircraft operations on any desired course within the coverage of station-referenced navigation signals. GPS is a satellite-based navigation system that provides highly accurate position, time, and velocity information. GPS consists of 24 satellites that orbit the earth. It uses ranging and triangulation from a group of satellites that act as precise reference points. The GPS receiver requires at least three satellites to triangulate the lateral position of the receiver. The arrival time of a signal is used to compute the distance traveled by a signal and determines a precise position. Receivers typically use names of fixes, waypoints (a predetermined geographical position), and station identifiers on GPS display. Once a receiver calculates its own position, it can then determine and display the distance, bearing or direction, and estimated time enroute to the next waypoint.



EXHIBIT 1-4 | ROCKFORD TRACON AIRSPACE



Source: Landrum & Brown analysis, 2023.



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### 1.5.2.3 Visual Approach Aids

Various kinds of visual approach aids provide guidance to pilots in sighting the runway ends and in establishing the aircraft on a glide slope to land. The following subsections describe the visual aids available at RFD.

#### **Approach Lighting**

Approach lighting systems (ALS) are used in the vicinity of runway thresholds in conjunction with electronic navigational aids for the final portion of ILS approaches under Instrument Flight Rule (IFR) conditions and as visual guides for nighttime approaches under Visual Flight Rule (VFR) conditions. The approach lighting system supplies the pilot with visual clues concerning aircraft alignment, roll, height, and position relative to the threshold.

A Medium Intensity Approach Lighting System (MALSR) with Runway Alignment Indicator Lights (RAIL) is available on Runway 1. This system assists pilots transitioning from the cockpit instrument landing segment to the runway environment. The system provides a lighted approach path 2,400 feet in length along the extended runway centerline. Roll indication is emphasized by a single row of white lights located on either side of and symmetrically along the column of centerline lights. The entire system appears as a cross. Additionally, Runway 7 is equipped with an ALS, with centerline sequenced flashing lights in ILS Cat II configuration (ALSF-2).

A Visual Approach Slope Indicator (VASI) is an airport lighting facility providing vertical visual approach slope guidance to aircraft during approach to landing by radiating a directional pattern of high intensity red and white focused-light beams which indicate to the pilot that he is "on path" if he sees red/white, "above path" if white/white, and "below path" if red/red. The VASI systems at RFD include a "4 box" unit on Runways 07, 19 and 25.

#### **Runway End/Threshold Lighting**

The runway end, or threshold, is given special lighting consideration to assist approaching aircraft. Threshold identification lights make use of a two-color, red and green lens. The green half of the lens faces the approaching aircraft and indicates the beginning of the usable runway. The red half of the lens faces the airplane on the rollout or takeoff, indicating the end of the usable runway.

Runway End Identifier Lights (REIL) are installed at the ends of Runways 19 and 25. These lighting systems consist of a pair of synchronized flashing lights located laterally on either side of the runway threshold.

#### **Runway Edge Lighting**

Runway edge lighting is used to outline the edges of a runway during periods of darkness and restricted visibility. These systems are classified in accordance with intensity or brightness: High Intensity Runway Lights (HIRL), Medium Intensity Runway Lights (MIRL), and Low Intensity Runway Lights (LIRL). Runway 1/19 and 7/25 are equipped with a HIRL system.

Runway edge lights are white except for the final 2,000 feet of an instrument runway (yellow replaces white for the final 2,000 feet or half the runway length, whichever is less) to designate a caution zone for landing aircraft. Runway edge lighting is visible through 360 degrees of azimuth and can be seen several miles from the airport when visibility is good.

#### **Taxiway Lighting**

Taxiway lighting, which delineates the taxiway edges or centerline, provides guidance to pilots during darkness and periods of low visibility. The system most commonly used consists of a series of blue light fixtures located at not more than 200-foot intervals along the taxiway edges. These lights provide taxiway alignment up to the aircraft apron. Taxiway edge lighting is available along all taxiways and ramps at the airport.



### 1.5.3 Airspace and Air Traffic Control

Effective noise abatement procedures depend on efficient airspace management. Therefore, an analysis of air traffic control and airspace surrounding RFD was necessary for this 2021 Part 150 Study Update. Because the FAA retains the ultimate responsibility for airspace management and air traffic control, the implementation of any recommended changes in these procedures requires FAA review and approval. This authority was granted to the FAA through the FAA Act of 1958. Administrative responsibilities for airspace and air traffic control in Illinois are assigned to the FAA – Great Lakes Region, with offices in Des Plaines, Illinois.

Air Route Traffic Control Centers (ARTCC) have been established across the country to control aircraft flying under IFR within controlled airspace. Using radar and nonradar procedures, an ARTCC provides enroute air traffic services and terminal arrival and departure services to many areas outside major population centers. RFD is located within the Chicago ARTCC, which is based in Aurora, Illinois.

The air traffic flow in the area consists of a mixture of cargo, air-taxi, corporate, military, and general aviation flights. Most traffic operates under IFR, even in visual weather operating conditions, while the remaining traffic may vary depending on weather conditions. On IFR flights, pilots operate primarily in reference to aircraft instrumentation and air traffic control instructions under any weather conditions, while VFR pilots operate under visual reference to the ground.

The RFD TRACON is responsible for handling IFR traffic departing from and arriving to airports within the TRACON boundary. Arriving IFR aircraft are transferred to RFD TRACON control just prior to entering the TRACON airspace. The originating TRACON or ARTCC establishes the initial separation for all IFR traffic. After RFD TRACON controllers establish communication with the aircraft, they direct it to the airport by instructing the pilot to fly specific headings, called radar vectors. This process is used for all arriving IFR aircraft, regardless of the destination airport; therefore, proper sequencing is necessary to separate aircraft arrivals to RFD, as well as aircraft arriving at other airfields within the TRACON boundary. Because RFD TRACON controls all IFR arrivals and departures, aircraft interaction is closely coordinated.

At RFD, the ATCT controller normally issues a departure heading or fix as requested by the pilot as soon as possible after takeoff. In general, the only exceptions would be in the case of potentially conflicting traffic in the area. Actual flight tracks vary depending upon aircraft weight, type, velocity, wind speed and direction, and pilot performance. Control of departing aircraft is transferred to the Chicago ARTCC or coordinated with adjacent TRACONS before an aircraft climbs through a previously established handoff altitude, unless previously coordinated between the ARTCC and TRACON personnel.

The FAA uses Departure Procedures (DP) at some nearby airports, such as Chicago O'Hare and Milwaukee General Mitchell Field, to expedite the handling of IFR departures. Depending on the DP assigned, and the runway used, specific instructions are developed for aircraft to follow. No DPs are in place at RFD.

Most IFR aircraft transit the RFD airspace via one of the numerous Federal airways in the area. **Exhibit 1-5**, shows the IFR VOR Low Altitude Airways. The VOR Airway System is commonly referred to as the Victor Airway System and is established for flight operations below 18,000 feet MSL. The High Altitude Jet Route System is used for operations above 18,000 feet. Both Victor Airways and Jet Routes use VOR facilities on the ground to provide pilots with course guidance.

All aircraft, whether IFR or VFR, which operate within the Terminal Radar Service Area (TRSA), namely within five miles of the airport and below 8,000 feet MSL or within ten miles of the airport and between 2,000 and 8,000 feet MSL, must contact the ATCT for radar vectoring.

The ATCT operates 24 hours a day. The ATCT is responsible for control of aircraft landing and departing from the airport. An Automatic Terminal Information System is also available. This system is a recording of the most current weather and airfield conditions, automatically transmitted to all aircraft. RFD is in Class D airspace and



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extends to a radius of five miles from the airport. Class D airspace originates at ground level and extends to 2,500 feet MSL.

## 1.5.4 Air Traffic Activity

Air traffic activities are recorded by the ATCT for air carrier, air taxi (including commuter), general aviation, and military categories. The ATCT also differentiates between itinerant and local activity in the general aviation and military categories. Operations data for the past several years are summarized in **Table 1-1, RFD Historical Operations**.

**TABLE 1-1 | RFD HISTORICAL OPERATIONS**

Year	Air Carrier	Air Taxi	General Aviation	Military	Total
2015	7,982	1,784	24,799	1,886	36,451
2016	8,898	1,388	22,115	1,955	34,356
2017	12,204	1,363	24,202	1,693	39,462
2018	17,810	1,289	19,863	1,496	40,458
2019	19,541	1,223	19,277	1,357	41,398
2020	22,380	723	18,627	1,031	42,761
2021	24,224	1,935	20,780	1,045	47,261

Source: FAA Air Traffic Activity System (ATADS) accessed January 14, 2022.

## 1.5.5 Airlines

RFD is served primarily by four air cargo airlines, UPS, Air Transport International (chartered by Amazon Air), Global Trans Iris (GTI), and ABX Air (formerly Airborne Express). Several other air cargo airlines operate at RFD, the primary air cargo airlines account for approximately 98% of all air cargo operations at RFD. Airline schedules are subject to change and, during the course of this Part 150 Study Update, changes in the schedules and the type of aircraft used may occur. Scheduled service by all air cargo airlines at RFD includes daily operations by ATN, GTI, ABX Air, and UPS.

Allegiant Air is the only commercial passenger airline currently servicing RFD. Allegiant offers year-round scheduled service to five destinations as well as seasonal destinations. The commercial passenger aircraft fleet at RFD represented in the TFMS data primarily consists of Airbus A319-100 Series, Airbus A320-200 Series, and Boeing 737-800 Series aircraft.

### 1.5.5.1 General Aviation

Although classified as an air carrier airport, RFD also functions as an important general aviation (GA) facility for the RFD area. GA services such as mobile refueling services, and repair services are provided by Raytheon Aircraft Services and Emery Air Charter. In addition, Emery manages the use and maintenance of corporate-owned aircraft and helicopters on a contract basis. Raytheon Aircraft Services also provides limited maintenance service. RFD is also home to the Order of St. Francis (OSF) Health Care Life Flight Services base, which provides critical-care transportation for the region.

Based aircraft is the number of locally-owned aircraft that are kept in hangars at the airport or based at an airport. As of 2023, there were 114 aircraft based at the airport. These included 78 single-engine; 18 multi-engine, propeller-driven aircraft; 15 jets; and 3 helicopters. **Table 1-2, RFD Based Aircraft**, provides the number of based aircraft at RFD by aircraft type.



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**TABLE 1-2 | RFD BASED AIRCRAFT**

Aircraft Type	Number
Single engine airplanes	78
Multi engine airplanes	18
Jet airplanes	15
Helicopters	3
<b>Total aircraft based on the field</b>	<b>114</b>

Source: Federal Aviation Administration (FAA) 5010 Form.  
Form accessed December 13, 2022 from [www.gcr1.com/5010web/](http://www.gcr1.com/5010web/).

### 1.5.5.2 Fixed Base operators (FBOs)

A FBO is a retail firm that sells general aviation products or services at an airport. Emery Air Charter provides such services as aviation fuel, oxygen service, aircraft parking (ramp or tiedown), hangars, aircraft charters, and aircraft maintenance. Emery also manages the use and maintenance of corporate-owned aircraft on a contract basis. Raytheon Aircraft Services provides such services as aircraft maintenance and avionics service.



## » 1.6 Annual Operations

The number of annual operations at RFD for the Existing (2023) Baseline condition was approximately 46,509, which results in 127.4 average-annual day operations. The number of annual operations at RFD was based on FAA sources, ATCT records, and discussions with operators. **Table 1-3, Summary of Average-Annual Day Operations**, presents a summary of the Existing (2023) Baseline condition average-annual day operations by primary user group. For a detailed breakdown of the annual operations, refer to **Appendix C, Noise Modeling Methodology**.

**TABLE 1-3 | SUMMARY OF AVERAGE-ANNUAL DAY OPERATIONS**

Aircraft Type	Arrivals		Departures		Touch and Go		Total	Percent of Total
	Day	Night	Day	Night	Day	Night		
Cargo Jets	11.16	18.51	11.62	18.05	--	--	59.33	46.6%
Commercial Jets	2.00	0.58	1.88	0.70	--	--	5.16	4.0%
General Aviation Jets	2.89	0.17	2.89	0.18	--	--	6.13	4.8%
General Aviation Props	26.86	0.63	26.73	0.77	--	--	54.98	43.1%
General Aviation Helicopter	0.05	0.04	0.06	0.03	--	--	0.18	0.1%
Military Aircraft	0.8	--	0.8	--	0.04	--	1.64	1.3%
<b>Grand Total</b>	<b>43.79</b>	<b>19.92</b>	<b>44.00</b>	<b>19.71</b>	<b>0.04</b>	<b>--</b>	<b>127.42</b>	<b>100.0%</b>

Notes: Totals may not equal sum total due to rounding.  
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Source: Federal Aviation Administration (FAA) Operations Network (OpsNet) data, Traffic Flow Management System (TFMS) data, National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



## CHAPTER 2



# AFFECTED ENVIRONMENT



## 2 Affected Environment

Identifying and evaluating land uses within the airport environs is an important step in the Part 150 process. This evaluation is necessary to identify residential and other noise-sensitive land uses around the Chicago Rockford International Airport (RFD or Airport). The land use mapping methodology and detailed zoning information is provided in **Appendix E, Land Use Methodology**.

### » 2.1 Existing Land Use

This section describes the airport environs, existing land uses, and significant development trends.

#### 2.1.1 Airport Environs

The airport environs is the regional area around RFD that may experience the broader effects from the noise of aircraft and overflights. The airport environs for this 2023 Part 150 Study Update, shown on **Exhibit 2-1, Airport Environs**, is a 150+ square mile area that extends between five and seven miles off of each runway end and includes portions of the city of Rockford; the villages of New Milford and Cherry Valley, Rockford and Cherry Valley townships in southern Winnebago County; Marion, Byron, Scott, and Monroe townships in northeastern Ogle County; and the villages of Davis Junction and Stillman Valley. The airport environs exhibit shows an area between Meridian Road to the west, Mulford Road to the east, Auburn Street to the north, and IL 72 to the south. This exhibit also identifies local roads and major highways; city, village, and township boundaries; and unincorporated areas in the airport environs.

The study area, shown on **Exhibit 2-2, Study Area Boundary**, is the area that experiences the more direct effects from the noise of aircraft overflights. Three primary criteria were used to define the study area boundary: (1) the expected existing and future 60 Day Night Average Sound Level (DNL) (for land use planning purposes) and the 65+ DNL noise contour boundaries; (2) aircraft flight tracks; and (3) primary areas of noise complaint data. In addition, the study area boundary is delineated to include communities potentially affected by future aircraft operational procedures. The boundaries of the study area generally follow: IL 251 and Harrison Avenue to the north, Interstate 39 to the east, Scott Road to the south, and North Crestview Road to the west.

According to *Appendix A, Table 1 of FAR Part 150 Airport Noise Compatibility Planning*, reproduced in **Appendix A, FAA Policies Regulations and Guidance**, of this document as **Table A-1, Land Use Compatibility Guidelines – 14 CFR Part 150** states that all land uses exposed to aircraft noise below 65 DNL are generally considered compatible with aircraft and airport operations. At RFD, the Greater Rockford Airport Authority (GRAA) has chosen to also show the 60 DNL noise contour. While the land uses between the 60 and 65 DNL noise contours are not defined in 14 Code of Federal Regulations (CFR) Part 150 as being significantly impacted by aircraft noise, this area receives aircraft overflights. Therefore, the analysis of land uses in the 60-65 DNL noise contour provides information to local planning agencies that can assist in the development of local land use policies, plans, and development standards.



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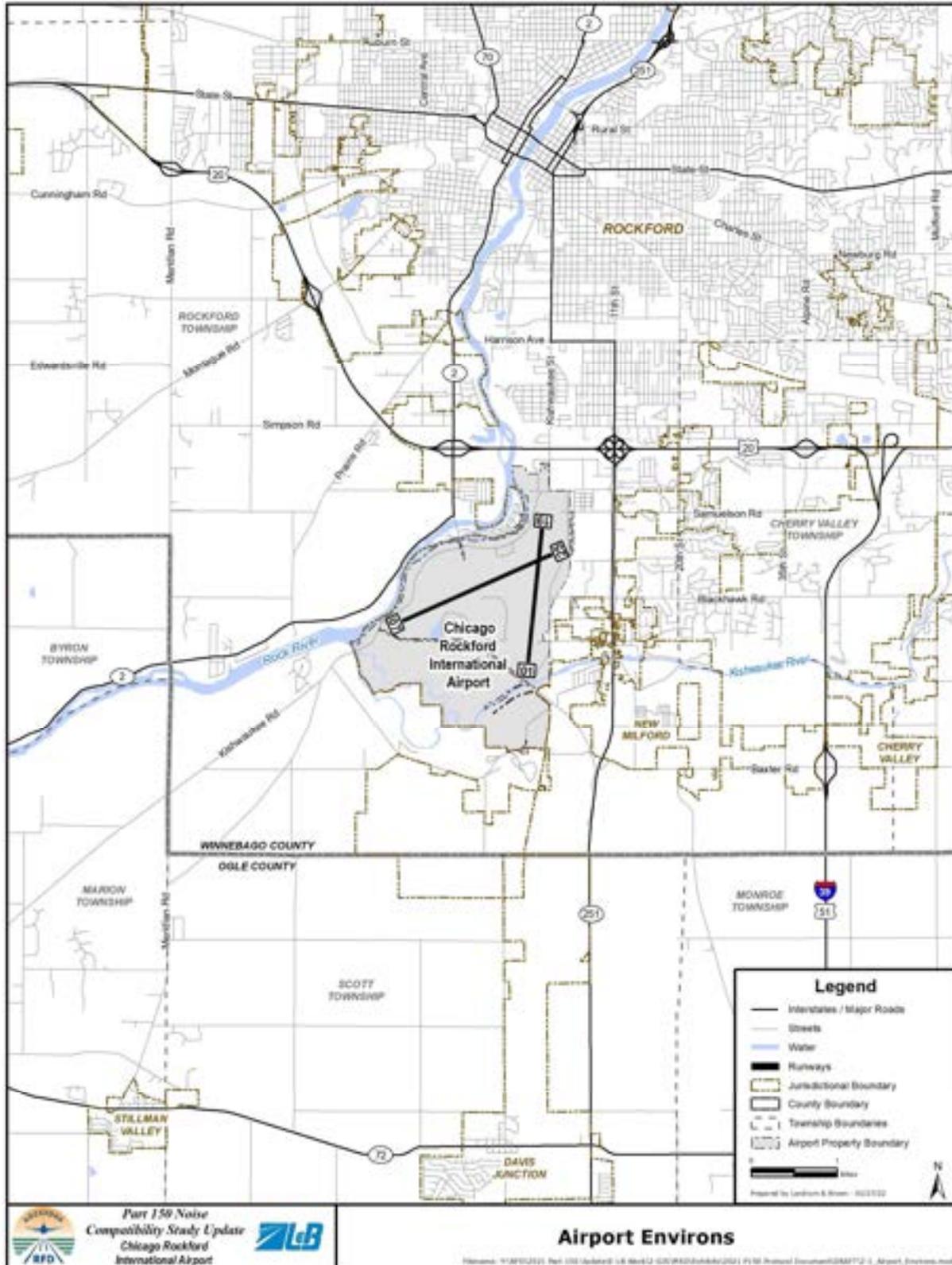
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## EXHIBIT 2-1 | AIRPORT ENVIRONS



Source: Winnebago & Ogle County GIS data, 2022, Landrum & Brown analysis, 2023.



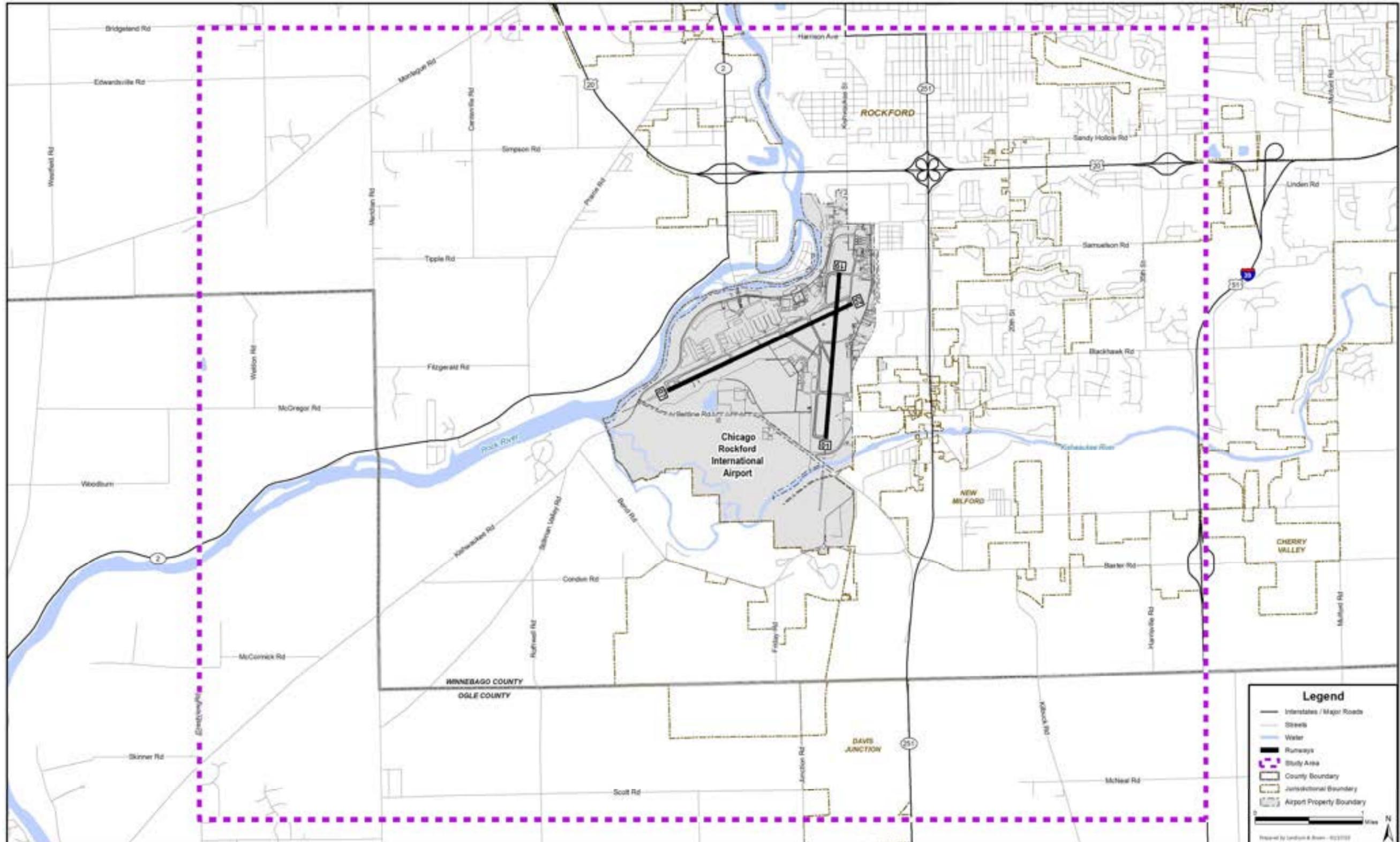
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EXHIBIT 2-2 | STUDY AREA BOUNDARY



Source: Winnebago & Ogle County GIS data, 2022, Landrum & Brown analysis, 2023.



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## 2.1.2 Existing Land Uses

Most of the land uses to the west and south of the airport are agricultural, with scattered residential in-fill development occurring along roadway frontages. RFD is located in southwestern Winnebago County and is part of the city of Rockford. The majority of the city of Rockford lies to the north of the airport. Ogle County lies to the south of the Airport and includes the nearby communities of Davis Junction and Stillman Valley. Compatible mixed use industrial and commercial areas border the airport and transitions into incompatible single-family and multi-family residential land uses.

For the purposes of this 2023 Part 150 Study Update, existing land uses were categorized in terms of the general land use classifications as outlined in 14 CFR Part 150 and shown in **Appendix E, Table E-1, Generalized Existing Land Use Classifications**. These classifications include residential (single, multi-family and manufactured housing), commercial, industrial and utility (e.g., manufacturing and production), institutional (e.g., public use, churches, schools, government offices), park/recreational, agricultural/open space/vacant. These land uses were identified based on each jurisdiction's GIS database, published land use and zoning maps and were verified as necessary with aerial photography and current assessment records. The land uses within the study area boundary are shown in **Exhibit 2-3, Generalized Existing Land Uses**. Land uses within the 65+ DNL noise contour that are considered incompatible with airport operations, per Part 150 guidelines, include: residential and noise-sensitive facilities (i.e., churches, schools, nursing homes, hospitals, and libraries).

## » 2.2 Land Use Planning and Zoning

Local planners and elected officials are typically responsible for local land use planning and zoning. They review and implement zoning and land use regulations, and prepare comprehensive plans. The responsibility of regulating land use around an airport, in order to prevent future land use incompatibilities, is traditionally delegated to state and local governments. In the case of RFD, the state of Illinois does not directly implement and administer land use controls, but has delegated this authority to the local governments that include the city of Rockford, Winnebago County, and Ogle County.

In addition to regulating land uses, local municipalities may facilitate the acquisition of property or the initiation of sound insulation programs as a means to mitigate and prevent future incompatible land uses resulting from airport noise. At airports with an approved Part 150 Study, an airport sponsor may apply directly to the FAA for funding of noise mitigation projects.

**Section 2.2.1** details local land use plans for each jurisdiction, and **Section 2.2.2** discusses zoning ordinances for each.

### 2.2.1 Local Land Use Plans

#### City of Rockford

The city of Rockford current comprehensive plan was originally adopted by the City Council in 2004, with amendments in 2009 and 2011. In 2015 the City Council concluded a review of the comprehensive plan and approved a 5-year implementation plan concluding in 2020.

Planning elements discussed in the city of Rockford comprehensive plan include: the environment, population, economy, public facilities and services, housing, and land use. The plan specifically mentions the Airport and the important role it plays in the community's economy. Recommendations are made to encourage additional passengers service at the Airport while expanding growth in the freight sector supported by the existing and planned infrastructure.



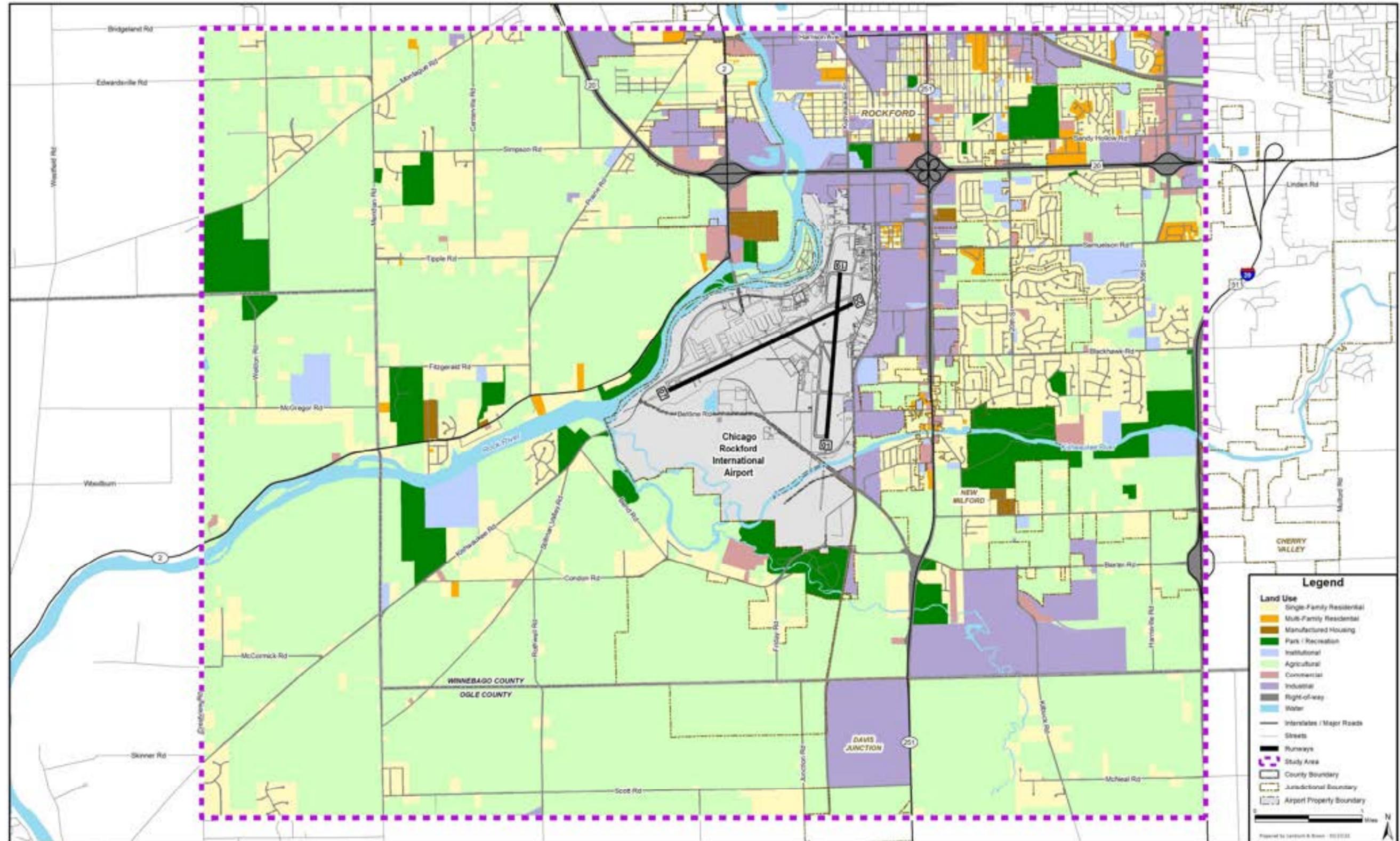
# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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EXHIBIT 2-3 | GENERALIZED EXISTING LAND USES



Source: Winnebago & Ogle County GIS data, 2022, Landrum & Brown analysis, 2023.



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## Greater Rockford Airport Authority

### Winnebago County

Winnebago County adopted the 2030 Land Resource Management Plan in 2009. The plan is a vision of how growth and development will affect areas in unincorporated Winnebago County through the year 2030. The plan details the counties growth goals, objectives and policies through the target 2030 year. The plan incorporates existing or updated land use plans of local municipalities and townships to the extent possible. There is no direct reference to planning objectives related to the Airport within the 2030 Land Resource Management Plan, but does mention the Airport as a important factor in the economic development and transportation services in the county.

### Ogle County

The Ogle County Amendatory Comprehensive Plan was adopted on May 21, 1996 and was most recently amended August 2012 and adopted in October 2012. One of the policies of the plan is for Ogle County to maintain an active presence in RFD activities. In previous versions of the plan Ogle county had incorporated elements of the 1994/2003 NCP with regards to land use planning districts based on noise levels around RFD.

### Metropolitan Planning Organization

The Metropolitan Planning Organization (MPO) for the Rockford area includes a 22-member Technical Committee comprised of planners and or engineers from the surrounding communities and townships along with representatives from Rockford Mass Transit District, RFD staff and other local partners. In 2017, the MPO transitioned under the umbrella of the Illinois Region 1 Planning Council with a similar objective of planning and coordinating decisions regarding the Rockford regions major transportation systems.

### Capital Improvement Programs

Neither Ogle County nor Winnebago County has a traditional capital improvement program. Both counties have relatively limited capital improvement responsibilities, maintenance, and construction of county roads. The city of Rockford has a five-year capital improvement program (2021-2025) with roadway, water service, and stormwater management elements that are consistent with land use compatibility for RFD. The Rock River Reclamation District provides sanitary sewer services to the city of Rockford and Winnebago County, but does not serve in a planning role. It responds to requests from developers.

## 2.2.2 Local Zoning Ordinances

Zoning is one of the primary tools available to local communities to ensure land use compatibility. Zoning ordinances and regulations are intended to promote public health, safety, and welfare by regulating the use of the land within a jurisdiction based on factors such as existing and expected socioeconomic conditions. Local jurisdictions have the responsibility to implement zoning ordinances. Zoning ordinances and regulations are important tools in preventing incompatible land uses around an airport.

The following sections summarize the zoning districts of Ogle and Winnebago counties and the City of Rockford. Because of the complexity and uniqueness of the zoning classification in each jurisdiction, the zoning districts for each jurisdiction in the airport environs have been assigned to a generalized zoning category for the purposes of this 2023 Part 150 Study Update. The generalized zoning categories are listed in **Table 2-1, Generalized Zoning Categories** and a generalized zoning map is shown in **Exhibit 2-4, Generalized Existing Zoning**



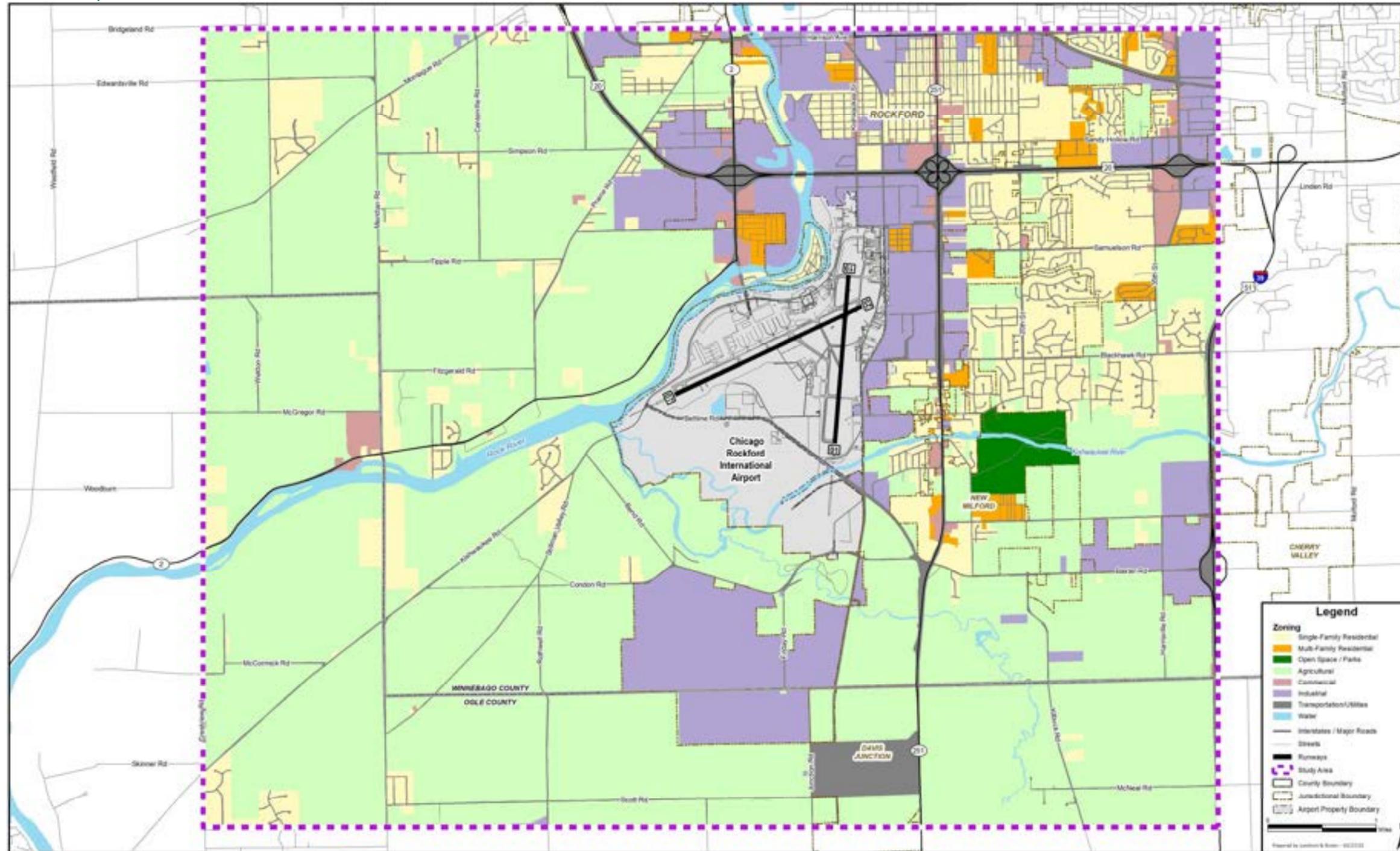
# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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EXHIBIT 2-4 | GENERALIZED EXISTING ZONING



Source: Winnebago & Ogle County GIS data, 2022, Landrum & Brown analysis, 2023.



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**TABLE 2-1 | GENERALIZED ZONING CATEGORIES**

Generalized Zoning Category	Land Uses
<b>Compatible Zoning</b>	
Commercial	Retail Centers, Office Space, Entertainment, Hotel/Motel
Industrial	Manufacturing, Warehouse
Agricultural/Vacant	Farmland, Vacant
Transportation/Utilities	Landfill, Stormwater Management, Aviation, Railway and Roadway transportation facilities
Open Space/Parks	Golf Course, Trail or Greenway, Parks and Conservation
<b>Incompatible Zoning</b>	
Single-Family Residential	Single-Family Attached and Detached
Multi-Family Residential	Apartments, Condominiums, Mobile Home Parks

Source: Winnebago & Ogle County GIS data, 2022, Landrum & Brown analysis, 2023.

## City of Rockford

The City of Rockford revised its zoning ordinance in March of 2008. The revised ordinance has been amended several times since 2008, the last amendment to the ordinance occurred in 2020. The revised zoning ordinance identifies 19 zoning districts in the city. The ordinance includes a rural estate district, six residential districts, a residential conservation district, five commercial districts, three industrial districts, maximum and minimum wellhead setback overlay districts and the Rock River overlay district. Those zoning districts are summarized in **Appendix E, Land Use Methodology, Table E-3, City of Rockford - Zoning Districts that include Noise-Sensitive Uses**, of this document.

The Zoning Board of Appeals is charged with enforcing the Rockford Zoning Ordinance. The Board is composed of seven Rockford citizens who are appointed by the Mayor of the city of Rockford. The Board is authorized to make decisions on zoning map amendments, pre-annexation agreements, special use permits, and variations to the zoning ordinance.

## Winnebago County

The Zoning Ordinance of Winnebago County was adopted in 1995 and has been amended several times since its adoption, with the latest amendment occurring in November 2021. The Zoning Ordinance for Winnebago County includes sixteen districts – two agricultural districts, six residential, four commercial, and three industrial districts. Those zoning districts are summarized in **Appendix E, Land Use Methodology, Table E-4, Winnebago County - Zoning Districts**, of this document.

The Winnebago County Board, the governing body for the county, appoints the Zoning Officer. The Zoning Officer administers the zoning regulations. A zoning permit, indicating conformance with the zoning ordinance, must be issued by the Zoning Officer prior to the issuance of a building permit. A Zoning Board of Appeals is authorized to rule on appeals of the decisions of the Zoning Officer.

Winnebago County administers all planning and zoning for townships within the county. As shown on **Exhibit 2-3**, the Winnebago County portion of the study area includes Rockford Township, Cherry Valley Township, and the Village of New Milford. The townships primarily provide roadway system maintenance and construction services as well as social services for the area.

## Ogle County



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The Ogle County Zoning Regulations were last amended in 2017. The latest regulations establish 13 zoning districts in the unincorporated areas of Ogle County. The zoning regulations include two agricultural districts, four residential, three commercial and one industrial district. Also included in the regulations are planned development districts, including residential, commercial and industrial development. The zoning districts are summarized in **Appendix E, Land Use Methodology, Table E-5, Ogle County - Zoning District**, of this document.

The Ogle County Zoning Regulations are administered by an appointed zoning administrator. A Zoning Board of Appeals is also established by regulation. The boards powers include: hearing and determining appeals from decisions of the Zoning Administrator, hearing and deciding on applications for variances, and hearing and recommending to the County Board on applications for special uses and zoning amendments.

The Ogle County Planning & Zoning Department is responsible for regulating construction activities in the unincorporated county. This department regulates construction through zoning ordinances, flood hazard regulations, and subdivision regulations.

Proposed amendments to the zoning ordinance are filed with the Board of Appeals which holds a hearing on the proposal and forwards a recommendation to the County Board. The County Board makes the final decision on proposed zoning amendments.

Ogle County administers all planning and zoning for townships within the county. As shown on **Exhibit 2-2**, the Ogle County portion of the study area includes Scott and Monroe townships. The townships primarily provide roadway system maintenance and construction services as well as social services for the area.

### » 2.3 Noise Sensitive Properties and Historic Resources

As discussed in **Section 2.1.1**, the FAA has identified land use compatibility guidelines relating types of land use to airport sound levels. These guidelines are defined in Federal Aviation Regulations (FAR), 14 CFR Part 150 Land Use Compatibility with Yearly Day-Night Average Sound Levels, reproduced in **Appendix A, Table A-1**, of this document. Starting at 65 DNL, below which the FAA generally considers land uses compatible with airport operations, the table shows the compatibility guidelines for residential, public (schools, churches, nursing homes, and hospitals), commercial, manufacturing and production, and recreational land uses.

Given these guidelines, a number of noise-sensitive public facilities were identified within the study area: 9 schools and 49 churches, there are no libraries or hospitals in the study area. **Appendix E, Table E-2** lists these noise-sensitive public facilities; these facilities and are also shown on **Exhibit 2-5, Existing Noise Sensitive Facilities**.

Per 14 CFR Part 150 guidance, efforts were made to identify known historic resources, including properties listed on the National Register of Historic Places (NRHP), within the study area. The National Park Service (NPS) records and Illinois Historic Architectural Resources Geographic Information System (HARGIS) were researched for known historic sites. One site within the study area is listed on the NRHP; the Indian Hill Manor and Farm is near the intersection of Kishwaukee Road and South Bend Road and shown in **Exhibit 2-5**. The historic property was added to the NRHP list in 2001 and is also known as the Charles C. Barrett House.



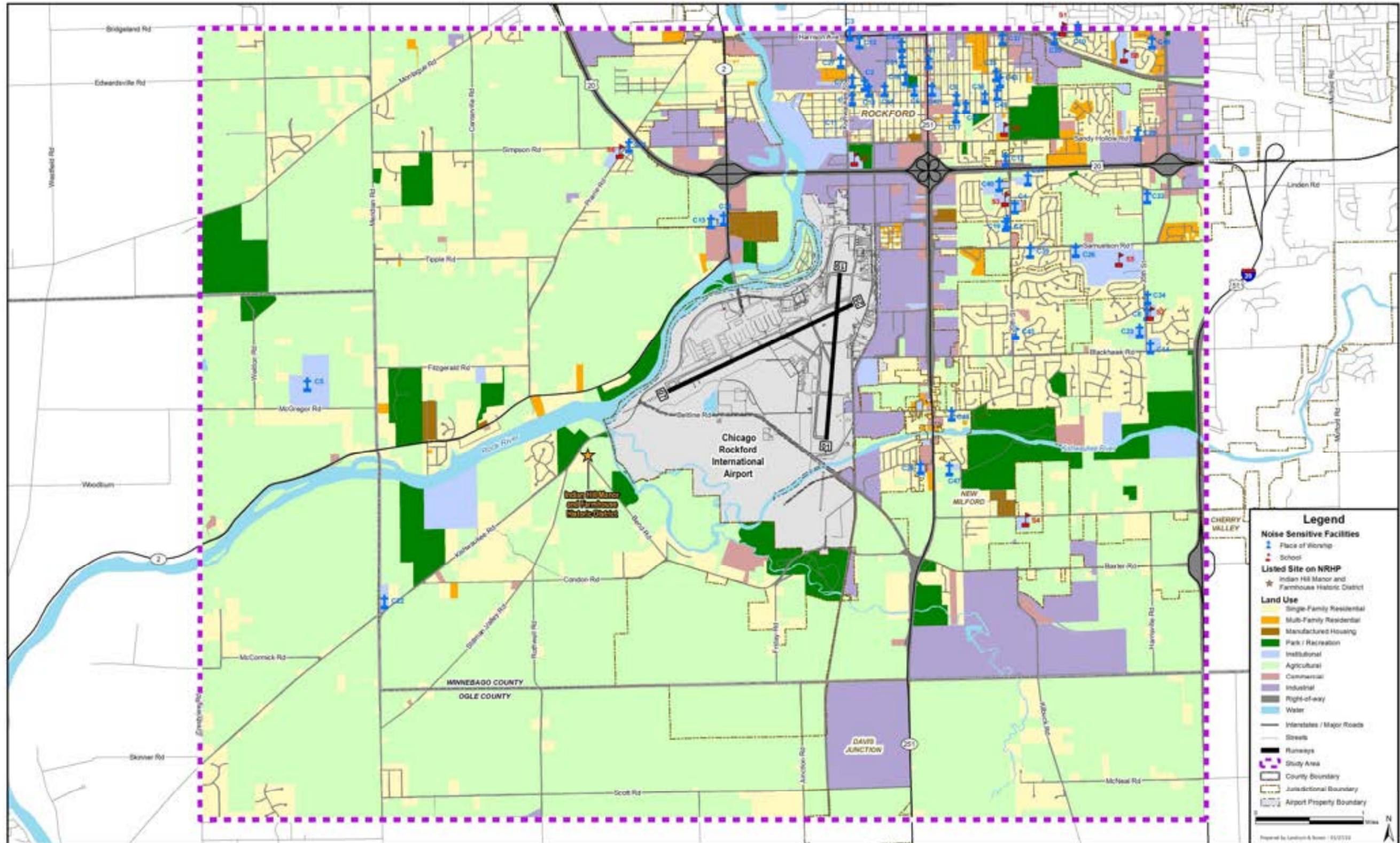
# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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EXHIBIT 2-5 | EXISTING NOISE SENSITIVE FACILITIES



Source: Winnebago & Ogle County GIS data, 2022, Landrum & Brown analysis, 2023.



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## CHAPTER 3



# BASELINE NOISE EXPOSURE



## 3 Baseline Noise Exposure

The following chapter describes the existing and future baseline noise exposure on communities surrounding the Chicago Rockford International Airport (RFD or Airport). The noise analysis presents the noise exposure for the existing conditions base year 2023 and the future baseline condition year of 2028. Aircraft-related noise exposure is defined through noise contours prepared using the Federal Aviation Administration (FAA) Aviation Environmental Design Tool (AEDT) Version 3e. This noise exposure is presented using the Day-Night Average Sound Level (DNL) metric.

This noise exposure is presented using the day-night average sound level (DNL) metric, which represents the average noise energy for an average-annual day, on the decibel (dB) scale. For the calculation of DNL, an extra penalty of 10 dB is added to nighttime (10:00 pm to 6:59 am) operations. Per federal guidelines, 65 DNL is the level at which noise sensitive land uses are considered incompatible with aircraft noise unless mitigated to reduce interior noise levels below acceptable levels.

The noise exposure patterns in this chapter are presented using noise contours, which are lines that connect areas of equal noise exposure. Noise contours for the 60, 65, 70, and 75 DNL noise contours were prepared. Below the 65 DNL, all land uses are determined to be compatible. However, the Greater Rockford Airport Authority (GRAA) has chosen to show the 60 DNL because it indicates marginal noise impacts and is useful for land use planning purposes. The noise contours are presented on exhibits, and the numbers of persons and housing units that fall within each of the noise contour levels are quantified.

An explanation of the AEDT and the DNL metric, along with a review of the physics of noise, noise impacts on humans, social impacts of noise, and the data required to develop noise exposure contours, is summarized in **Appendix C, Noise Modeling Methodology**. This information details the operating characteristics in use at the Airport, the number of operations, and the use of flight paths to and from the airport both now and as they are expected to be in 2028.

### » 3.1 Existing (2023) Baseline Noise Contour

The number of operations, runway use, flight track, and trip length data presented in **Appendix C, Noise Modeling Methodology**, are used as input to the AEDT computer model for calculation of noise exposure for the Existing (2023) and Future (2028) Baseline conditions. **Exhibit 3-1, Existing (2023) Baseline Noise Contour**, reflects the average annual noise exposure pattern present at the airport during the existing baseline period and **Table 3-1, Area Within Existing (2023) Baseline Noise Exposure Contour** summarizes the area within each noise contour level for areas on and off airport property.

The size and shape of the noise exposure contours for RFD are primarily a function of the combination of flight tracks and runway use. Wind direction is a primary factor in determining runway use. Historically, the Airport has operated in west flow, where aircraft are primarily departing from and arriving to Runway 25. Therefore, the Existing (2023) Baseline noise exposure contour is indicative of this current runway use pattern. The noise contours are larger to the west of the airport which is indicative of the types of operations that occur while aircraft are departing from Runway 25. Aircraft are typically louder while departing due to the thrust levels required and typically generate a much wider noise pattern compared to arrivals. To the east of the airport the noise pattern is indicative of arrival operations, this is displayed by the typical narrow arrival spike in the contour.

The DNL 65 DNL of the Existing (2023) Baseline noise contour extends approximately 1.4 miles beyond the west end of Runway 7/25 and approximately 1.1 miles beyond the east end of Runway 7/25. It also extends



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approximately 1.3 miles to the south end of Runway 1/19 and 0.3 miles to the north of Runway 1/19. The noise pattern on the south end of Runway 1/19 is attributed to cargo arrivals predominately when the winds are from the north. The noise contour to the north of Runway 1/19 is smaller than all other runway ends due to lack of utilization in order to keep air traffic from operating at low altitudes over the dense residential sectors of the city of Rockford. The contour to the southwest of the primary Runway 7/25 is wider and longer than the contour to the northeast of Runway 7/25, this can be attributed to Runway 7 being the primary departure runway for cargo aircraft.

Areas to the north of the airport within the 65 DNL contour are comprised of commercial/industrial land uses. Areas to the west and south of the airport within the 65 DNL are mainly comprised of agricultural land uses with scattered low density and rural residential in-fill. Directly east of the airport the land use is primarily compatible commercial and industrial land uses, however outside of this adjacent area dense single-family and multi-family residential land uses become more prevalent.

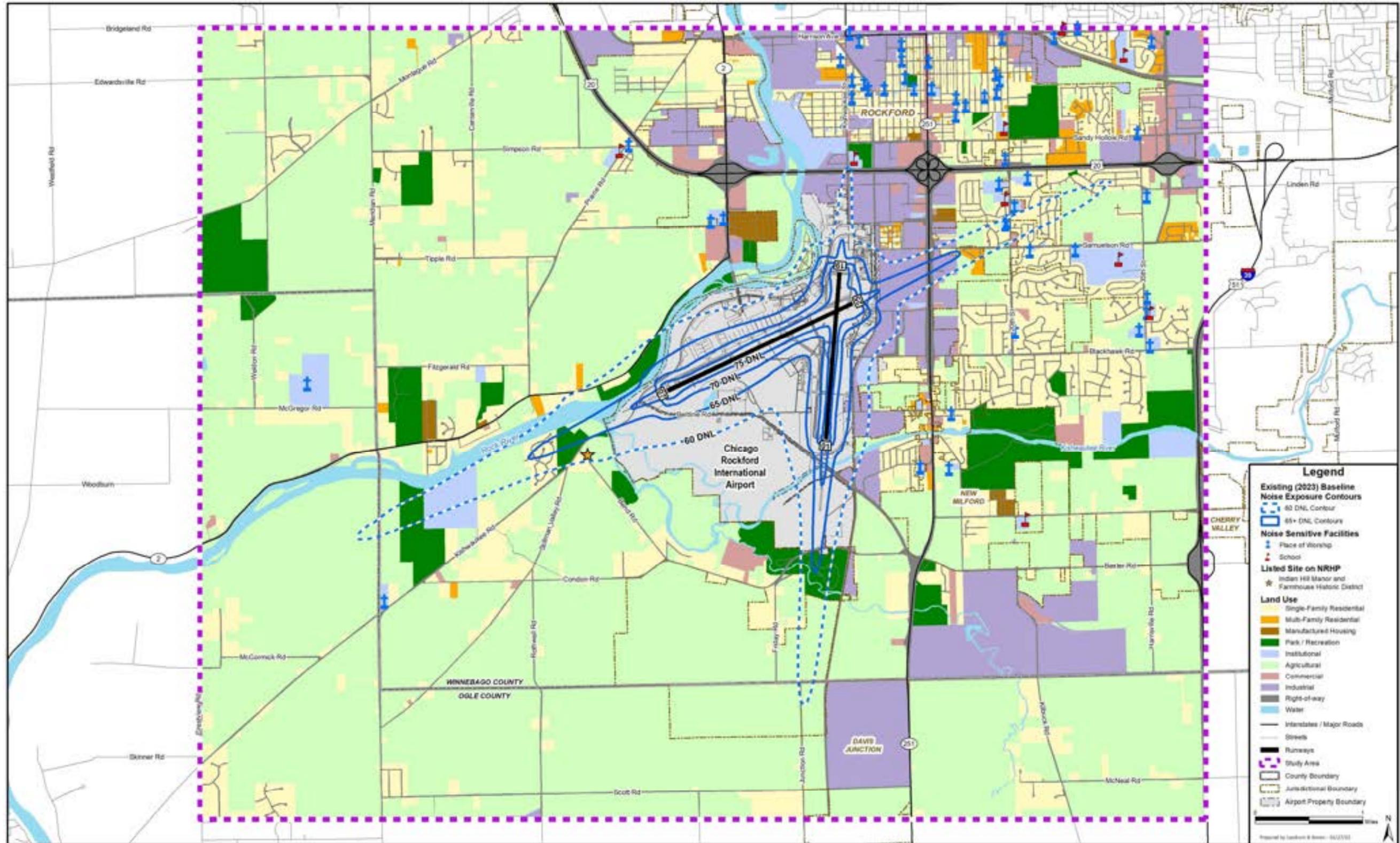
**TABLE 3-1 | AREA WITHIN EXISTING (2023) BASELINE NOISE EXPOSURE CONTOUR**

On/Off Airport Property	Area (Square Miles)				
	60-65 DNL	65-70 DNL	70-75 DNL	75+ DNL	65+ DNL
On Airport Property	1.33	0.98	0.49	0.41	1.88
Off Airport Property	2.10	0.30	0.00	0.00	0.30
<b>Total Area</b>	<b>3.43</b>	<b>1.28</b>	<b>0.49</b>	<b>0.41</b>	<b>2.18</b>

Note: Totals may not sum due to rounding.

Source: Landrum & Brown analysis, 2023.

EXHIBIT 3-1 | EXISTING (2023) BASELINE NOISE EXPOSURE CONTOUR



Source: Winnebago & Ogle County GIS data, 2021, Landrum & Brown analysis, 2023.



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## » 3.2 Future (2028) Baseline Noise Contour

The baseline noise exposure contour projected for the year 2028 is presented in **Exhibit 3-2, Future (2028) Baseline Noise Contour**. This projected contour assumes growth as forecasted in the Forecast Working Paper (FWP)<sup>1</sup> and subsequent updates to account for impacts due to the COVID-19 health emergency.<sup>2</sup> (See **Appendix H**). The use of this forecast as part of the future condition noise modeling was approved by the FAA in August of 2021. **Table 3-2, Area within Future (2028) Baseline Noise Exposure Contour** summarizes the area within each contour level for areas on and off airport property. **Table 3-3, Comparison of Area within Existing (2023) and Future (2028) Baseline Noise Exposure Contours** provides a comparison of the areas within the Existing (2023) Baseline and Future (2028) Baseline noise contours for each noise level.

**TABLE 3-2 | AREA WITHIN FUTURE (2028) BASELINE NOISE EXPOSURE CONTOUR**

On/Off Airport Property	Area (Square Miles)				
	60-65 DNL	65-70 DNL	70-75 DNL	75+ DNL	65+ DNL
On Airport Property	1.37	1.14	0.68	0.57	2.39
Off Airport Property	3.78	0.69	0.04	0.00	0.73
<b>Total Area</b>	<b>5.15</b>	<b>1.83</b>	<b>0.72</b>	<b>0.57</b>	<b>3.12</b>

Note: Totals may not sum due to rounding.  
Source: Landrum & Brown analysis, 2023

**TABLE 3-3 | COMPARISON OF AREA WITHIN EXISTING (2023) AND FUTURE (2028) BASELINE NOISE EXPOSURE CONTOURS**

Contour	Area (Square Miles)				
	60-65 DNL	65-70 DNL	70-75 DNL	75+ DNL	65+ DNL
Existing (2023) Baseline	3.43	1.28	0.49	0.41	2.18
Future (2028) Baseline	5.15	1.83	0.72	0.57	3.12
<b>Difference</b>	<b>+1.72</b>	<b>+0.55</b>	<b>+0.23</b>	<b>+0.16</b>	<b>+0.94</b>

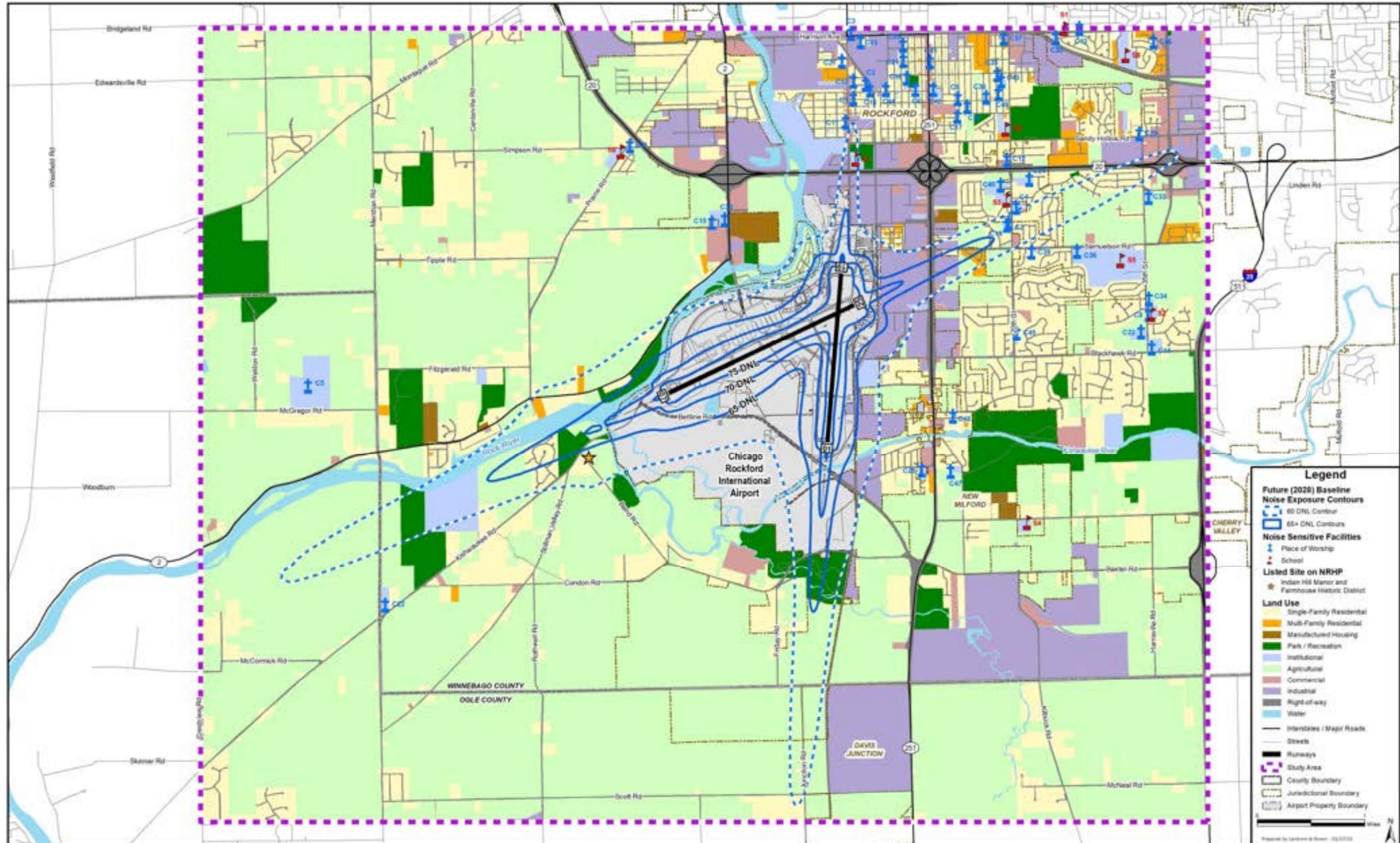
Note: Totals may not sum due to rounding.  
Source: Landrum & Brown analysis, 2023.

For the Future (2028) Baseline conditions, operating levels are expected to increase from 117.2 average annual day operations to 170.8 average annual day operations. The Future (2028) Baseline noise contour increases in size compared to the Existing (2023) Baseline noise contour due to the increase in operations projected at the Airport by 2028. The DNL 65 DNL of the Future (2028) Baseline noise contour extends approximately 1.9 miles beyond the west end of Runway 07/25 and approximately 1.4 miles beyond the east end of Runway 07/25. It also extends approximately 1.6 miles to the south end of Runway 01/19 and 0.6 miles to the north of Runway 01/19. The shape of Future (2028) Baseline noise exposure contour remains similar to the Existing (2023) Baseline noise exposure contour because there would be no change in runway use or flight track location and utilization. **Exhibit 3-3, Existing (2023) vs. Future (2028) Baseline Noise Exposure Contours** presents a comparison of the 65 DNL for the existing and future baseline conditions.

<sup>1</sup> Development of Northwest Cargo Apron & Midfield Development Program, Forecast Summary, September 2018, Crawford Murphy & Tilly.  
<sup>2</sup> Chicago Rockford International (RFD) – 2018 Forecast Working Paper (FWP) Sensitivity Analysis, July 2021, Crawford Murphy & Tilly.



EXHIBIT 3-2 | EXISTING (2028) BASELINE NOISE EXPOSURE CONTOUR

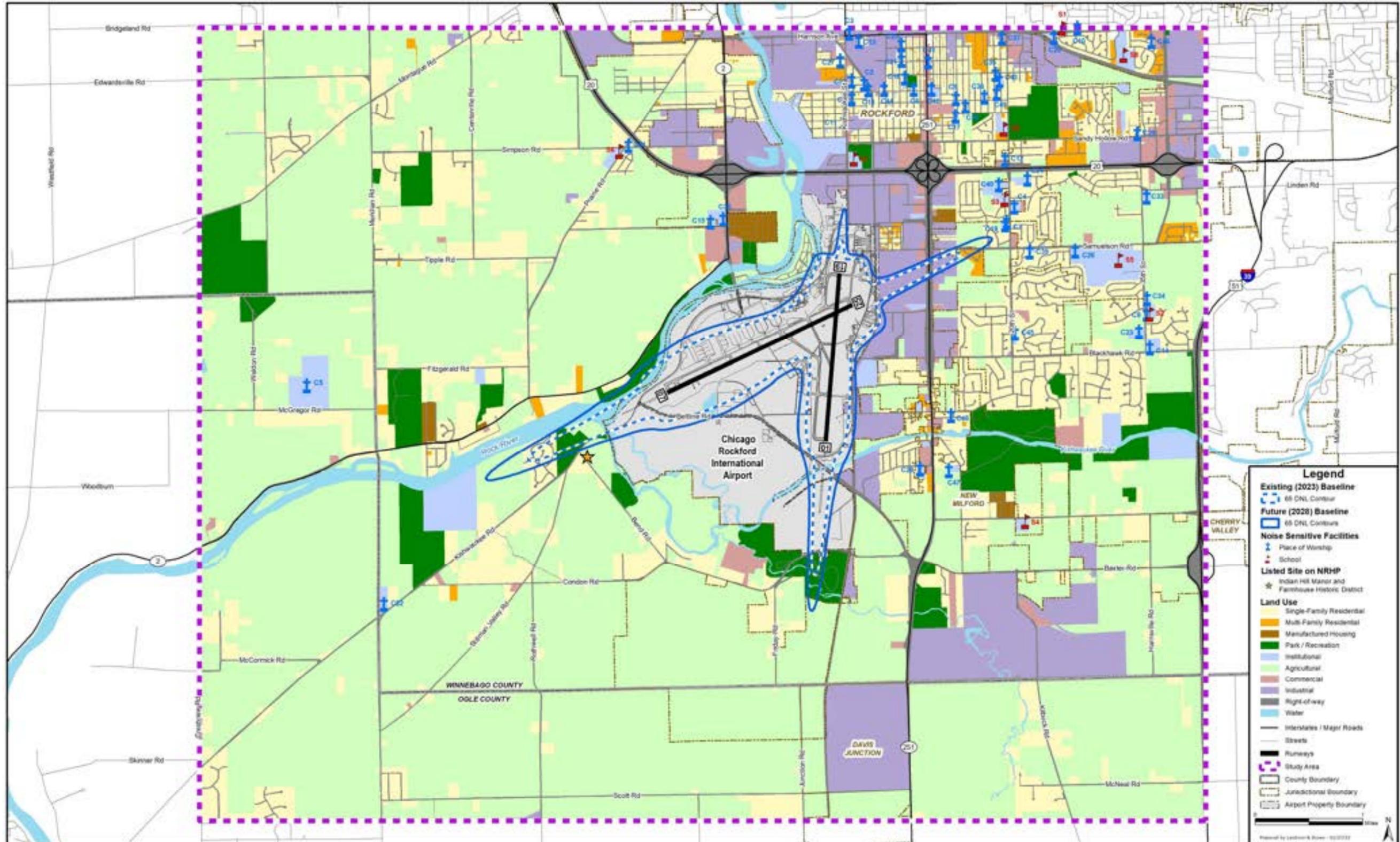


Source: Winnebago & Ogle County GIS data, 2021, Landrum & Brown analysis, 2023.



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EXHIBIT 3-3 | EXISTING (2023) BASELINE VS FUTURE (2028) BASELINE NOISE EXPOSURE CONTOURS



Source: Winnebago & Ogle County GIS data, 2021, Landrum & Brown analysis, 2023.



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## » 3.3 Baseline Noise Contour Incompatibilities

Identifying and evaluating all land uses within the detailed study area is necessary to quantify the number of residential and other noise-sensitive land uses that are impacted by aircraft noise. **Chapter Two, *Affected Environment***, and **Appendix E, *Land Use Assessment Methodology***, summarize the land use data collection process. The FAA has created land use compatibility guidelines relating to types of land use and airport sound levels. These guidelines are defined in 14 CFR Part 150, Land Use Compatibility with Yearly Day-Night Average Sound Levels. The compatibility table is reproduced in **Appendix A, *FAA Policies, Guidance, and Regulations***, of this document (see **Table A-1**).

These guidelines show the compatibility parameters for residential, public (schools, churches, nursing homes, hospitals, libraries), commercial, manufacturing and production, and recreational land uses. All land uses exposed to noise levels below the 65 DNL noise contour are generally considered compatible with airport operations. Information about land uses within the 60-65 DNL noise contour band is shown for informational purposes only.

Summaries of the residential population, housing units, and noise-sensitive facilities affected by noise level for the Existing (2023) and Future (2028) Baseline noise contours are provided in **Table 3-4, *Existing (2023) Baseline Land Use Incompatibilities*** and **Table 3-5, *Future (2028) Baseline Land Use Incompatibilities***. A comparison of the impacts for the Existing (2023) and Future (2028) Baseline is provided in **Table 3-6, *Comparison of Existing (2023) to Future (2028) Baseline Land Use Incompatibilities***. These tables show the number of housing units within each noise contour band (e.g. 60-65 DNL, 65-70 DNL)

There are 14 total housing units and an estimated 36 residents located within the 65+ DNL of the Existing (2023) Baseline noise contour. There are no homes or associated population located within the 70+ DNL of the Existing (2023) Baseline noise contour.

There are no noise-sensitive public facilities located within the 65+ DNL of the Existing (2023) Baseline noise contour.

There are 61 total housing units and an estimated 161 residents located within the 65+ DNL of the Future (2028) Baseline noise contour. There are no homes or associated population located within the 70+ DNL of the Future (2028) Baseline noise contour.

There are no noise-sensitive public facilities located within the 65+ DNL of the Future (2028) Baseline noise contour.



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**TABLE 3-4 | EXISTING (2023) BASELINE LAND USE INCOMPATIBILITIES**

Land Use	60 - 65 DNL	65 - 70 DNL	70 - 75 DNL	65+ DNL
<b>Housing Units</b>				
Single-Family Residential	223	14	0	14
Multi-Family Residential	48	0	0	0
Manufactured Homes	4	0	0	0
<b>Total Housing Units</b>	<b>275</b>	<b>14</b>	<b>0</b>	<b>14</b>
<b>Population</b>				
Single-Family Residential	606	36	0	36
Multi-Family Residential	133	0	0	0
Manufactured Homes	10	0	0	0
<b>Total Population</b>	<b>749</b>	<b>36</b>	<b>0</b>	<b>36</b>
<b>Noise-Sensitive Facilities</b>				
Churches/Places of Worship	2	0	0	0
Schools/Educational Facilities	0	0	0	0
Libraries	0	0	0	0
Hospitals	0	0	0	0
Nursing Homes	0	0	0	0

Notes: \*In accordance with 14 CFR Part 150 Land Use Compatibility Guidelines, all land uses are compatible with noise levels below 65 DNL. The count of incompatible land uses within the 60-65 DNL noise contour are shown for informational purposes only.

\*Noise contours were generated using the FAA's AEDT, Version 3e computer model.

\*Housing counts are based on field verification and Winnebago County Assessors data:

\*Population numbers are estimated based on the housing counts multiplied by the average household size from the 2000 Census.

Source: Landrum & Brown analysis, 2023.



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**TABLE 3-5 | FUTURE (2028) BASELINE LAND USE INCOMPATIBILITIES**

Jurisdiction	60 - 65 DNL	65 - 70 DNL	70 - 75 DNL	65+ DNL
<b>Housing Units</b>				
Single-Family Residential	509	41	0	41
Multi-Family Residential	46	20	0	20
Manufactured Homes	11	0	0	0
<b>Total Housing Units</b>	<b>566</b>	<b>61</b>	<b>0</b>	<b>61</b>
<b>Population</b>				
Single-Family Residential	1,385	106	0	106
Multi-Family Residential	125	55	0	55
Manufactured Homes	28	0	0	0
<b>Total Population</b>	<b>1,538</b>	<b>161</b>	<b>0</b>	<b>161</b>
<b>Noise-Sensitive Facilities</b>				
Churches/Places of Worship	2	0	0	0
Schools/Educational Facilities	1	0	0	0
Libraries	0	0	0	0
Hospitals	0	0	0	0
Nursing Homes	0	0	0	0

Notes: \*In accordance with 14 CFR Part 150 Land Use Compatibility Guidelines, all land uses are compatible with noise levels below 65 DNL. The count of incompatible land uses within the 60-65 DNL noise contour are shown for informational purposes only.

\*Noise contours were generated using the FAA's AEDT, Version 3e computer model.

\*Housing counts are based on field verification and Winnebago County Assessors data:

\*Population numbers are estimated based on the housing counts multiplied by the average household size from the 2000 Census.

Source: Landrum & Brown analysis, 2023.



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**TABLE 3-6 | COMPARISON OF EXISTING (2023) BASELINE TO FUTURE (2028) BASELINE LAND USE INCOMPATIBILITIES**

Category	Existing (2023) Baseline	Future (2028) Baseline
<b>Housing Units</b>		
60 - 65 DNL	275	566
65 - 70 DNL	14	61
70 - 75 DNL	0	0
65+ DNL	14	61
<b>Population</b>		
60 - 65 DNL	749	1,538
65 - 70 DNL	36	161
70 - 75 DNL	0	0
65+ DNL	36	161
<b>Noise Sensitive Facilities (Churches, Schools, Libraries, and Nursing Homes)</b>		
60 - 65 DNL	2	3
65 - 70 DNL	0	0
70 - 75 DNL	0	0
65+ DNL	0	0

Notes: \*In accordance with 14 CFR Part 150 Land Use Compatibility Guidelines, all land uses are compatible with noise levels below 65 DNL. The count of incompatible land uses within the 60-65 DNL noise contour are shown for informational purposes only.

\*Noise contours were generated using the FAA's AEDT, Version 3e computer model.

\*Housing counts are based on field verification and Winnebago County Assessors data:

\*Population numbers are estimated based on the housing counts multiplied by the average household size from the 2000 Census.

Source: Landrum & Brown analysis, 2023.



## CHAPTER 4



# NOISE COMPATIBILITY PROGRAM



# 4 Noise Compatibility Program

The culmination of the Title 14 Code of Federal Regulations (14 CFR) Part 150 Study planning process is the development of a set of measures designed to enhance the compatibility between an airport and its surrounding environs. This chapter presents new measures that are being recommended for implementation. Recommended measures for the Chicago-Rockford International Airport (RFD or Airport) also includes previous measures being continued or continued with modification. Collectively, these measures are referred to as the RFD 2023 Noise Compatibility Program (NCP). These measures include noise abatement, land use mitigation and program management measures designed to reduce or mitigate the impact of aircraft noise upon the surrounding community and enhance the administration of the overall program. The measures recommended for implementation in the RFD 2023 NCP have resulted from the planning process described throughout this document.

**Appendix F, Noise Abatement Alternatives** and **Appendix G, Land Use Mitigation Alternatives**, includes a list of all alternatives assessed for potential inclusion in this NCP update. **Appendix G, Public Involvement** contains a discussion of the public consultation process that was conducted for this NCP update.

The RFD 2003 NCP included thirteen (13) noise abatement measures. All previously recommended abatement measures are considered implemented on a voluntary basis as conditions allow. Modifications to and the withdrawal of existing abatement measures are recommended in this NCP update. Two (2) abatement measures are recommended for withdrawal from the RFD 2023 NCP, six (6) abatement measures are recommended for continuation with modification and five (5) measures are recommended for continuation. A further nine (9) alternative measures were analyzed, however no alternative measures are recommended to move forward in the RFD 2023 NCP. The currently implemented abatement measures reduce noise impacts within the 65+ DNL noise contour to the fullest extent possible.

The RFD 2003 NCP included seven (7) land use mitigation measures. Five (5) mitigation measures are recommended for continuation with modifications, one (1) mitigation measure is recommended for continuation and one (1) mitigation measure recommended for withdrawal from the NCP as it is considered fully implemented. An additional five (5) mitigation alternatives were analyzed for inclusion in this NCP update. Of those, four (4) mitigation alternatives were recommended for inclusion in the RFD 2023 NCP.

The RFD 2003 NCP included seven (6) program management (other) measures. All previously approved program management measures are recommended for continuation while one (1) new program management measure is recommended for inclusion in the RFD 2023 NCP.

In total for this NCP update, there are eleven (11) abatement measures, ten (10) mitigation measures, and seven (7) program management measures that were recommended for inclusion in the RFD 2023 NCP.

## » 4.1 Noise Compatibility Program Map

Through the previous Part 150 Studies, RFD has developed and implemented several voluntary noise abatement measures that minimize noise impacts without placing undue restrictions on operations at the Airport. This Part 150 Study update reviewed these noise abatement measures and determined the currently implemented noise abatement measures reduce noise to the fullest extent possible. Potential new noise abatement measures were assessed, and several noise abatement measures were recommended for either withdrawal from the RFD 2023 NCP or continued and continued with modifications. The modifications to the existing noise abatement measures were recommended in an effort to update the measures to reflect the current operating conditions at the Airport



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and to better illustrate the true intent of the measures. The full noise abatement analysis is included in **Appendix E, Noise Abatement Alternatives**. As a result, the Future (2028) NCP Noise Exposure Map (NEM) noise contours are the same as the Future (2028) Baseline noise exposure contours.

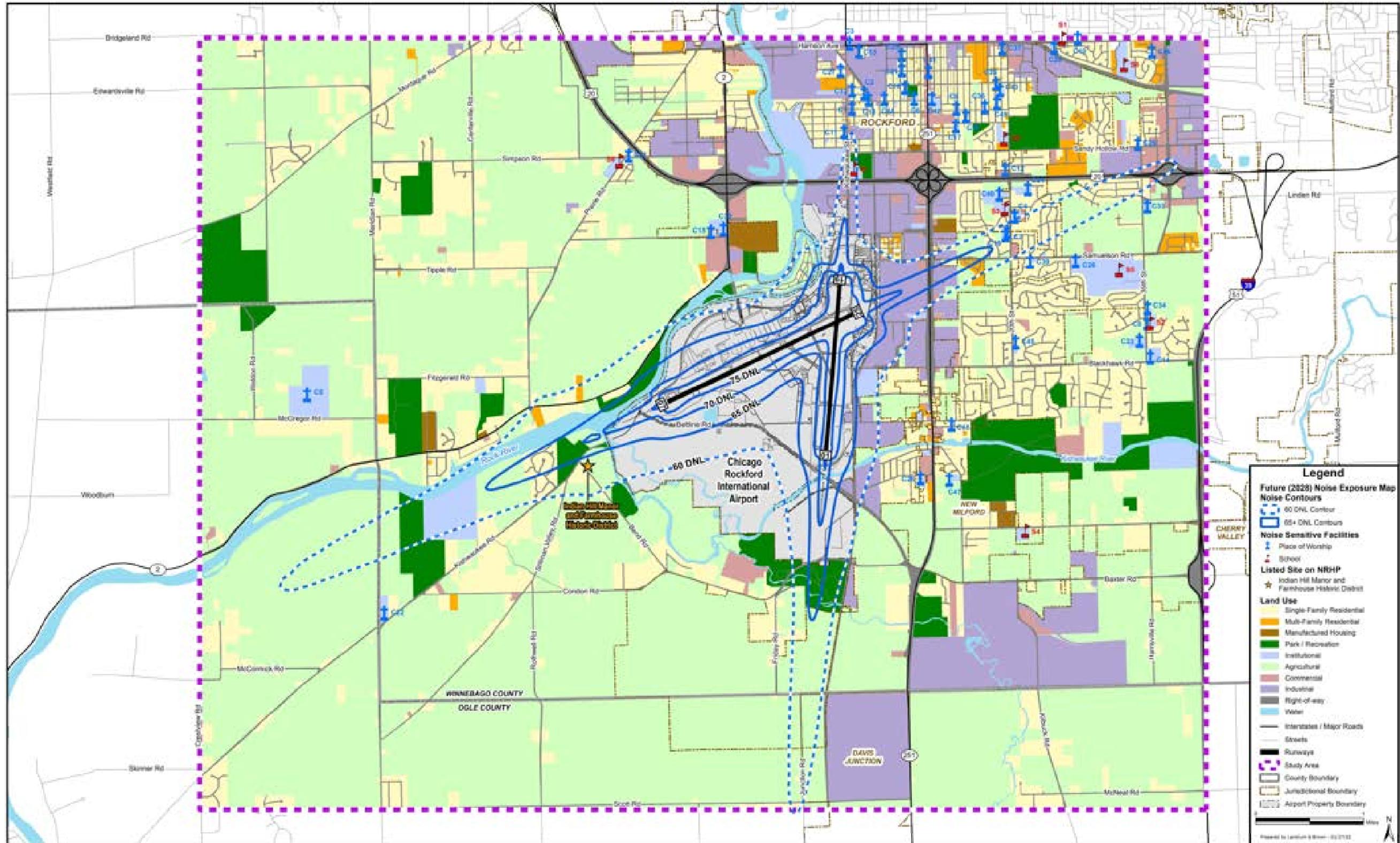
Since there are no new noise abatement measures and no recommended modifications would significantly impact the current operating conditions at RFD, implementation of the recommended NCP measures would not have any effect on the 65+ DNL noise exposure contours. **Exhibit 4-1, Future (2028) Noise Compatibility Program – Noise Exposure Map**, constitutes the noise contours shown on the official NEM for the year 2028.

**Table 4-1, Future (2028) NCP NEM Land Use Incompatibilities**, presents the noise impacts for the Future (2028) NCP NEM. There are 61 total housing units and an estimated 161 residents located within the 65+ DNL of the Future (2028) NCP NEM noise contour. Of those 61 housing units, 41 units are single-family units, and 20 are multi-family units.

There are no schools, places of worship, hospitals, nursing homes or any other noise-sensitive public facilities located within the 65+ DNL of the Future (2028) NCP NEM. The names and addresses for the noise-sensitive public facilities shown on **Exhibit 4-1** can be found in **Appendix E**.



EXHIBIT 4-1 | FUTURE (2028) NOISE COMPATIBILITY PROGRAM – NOISE EXPOSURE MAP



Source: Landrum & Brown analysis, 2023.



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**TABLE 4-1 | FUTURE (2028) NCP NEM LAND USE INCOMPATIBILITIES**

LAND USE	FUTURE (2028) NCP NEM 65+ DNL	
	TOTAL HOUSING UNITS	POPULATION
<b>Runway 07 Approach End – Southwest of Airport</b>		
Single-Family Residential	30	76
Multi-Family Residential	0	0
<b>Runway 25 Approach End – Northeast of Airport</b>		
Single-Family Residential	11	30
Multi-Family Residential	20	55
<b>Total</b>	<b>61</b>	<b>161</b>

Source: Landrum & Brown analysis, 2023.



## » 4.2 Noise Compatibility Program Measures

The NCP measures recommend for implementation for RFD have resulted from the planning process described throughout this document. **Appendix F, Noise Abatement Alternatives** and **Appendix G, Land Use Alternatives**, includes a list of all alternatives assessed for this NCP update. **Appendix D, Public Involvement** contains meeting materials and summaries of the Advisory Committee (AC) meetings, public information meetings.

The NCP measures are presented as a series of “plates” that summarize pertinent information required about each of the measures by 14 CFR Part 150 guidance. This information includes:

- A description and the background and intent of the measure;
- The relationship to the previous (1990, 1994, 2003) NCP;
- Status of the existing measure;
- Recommended action in RFD 2023 NCP;
- The anticipated effect on land use compatibility;
- The party (or parties) responsible for implementation;
- The steps necessary for implementation, its anticipated cost, and the projected timing for implementation; and
- The effects, if any, to other planning programs and other measures.
- Where helpful for clarification and exhibit or table is provided.

**Table 4-2, Summary of 2023 Noise Compatibility Program Recommendations**, summarizes the measures recommended for this NCP update. Noise abatement measures are designated with an “NA”, land use mitigation measures with an “LU” and program management measures with an “PM”.

Previously-approved measures that are recommended to be continued do not require Federal Aviation Administration (FAA) re-approval and are included in the baseline condition. Measures that are recommended to not be carried forward in this NCP update or were previously withdrawn require no further FAA action. More detailed information regarding each measure is included in the pages following **Table 4-2**.

Following the plates for individual program measures is an exhibit showing the NCP measures which constitute the RFD Land Use Management plan, as well as a description of the mitigated population and housing units associated with the implementation of the measures in the RFD 2023 NCP (see **Exhibit 4-8, RFD Land Use Management Plan**). As discussed previously, the approval of the RFD 2023 NCP by the FAA does not commit the FAA or the Greater Rockford Airport Authority (GRAA) to the costs or the implementation schedule listed in this document. This information is provided here as a planning tool to assist the implementation of the NCP measures.

Implementation of the remedial land use, and program management measures is at the discretion of the GRAA and subject to available funding from both the FAA and the GRAA. Implementation of the preventive land use measures is solely at the discretion of local governments and other local agencies. All information provided in this document will be made available to the local jurisdictions to include in any future land use or comprehensive planning initiatives at their discretion.



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**TABLE 4-2 | SUMMARY OF 2023 NOISE COMPATIBILITY PROGRAM RECOMMENDATIONS**

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<b>RECOMMENDED NOISE ABATEMENT MEASURES</b>					
<b>Measure NA-1:</b> Maintain existing noise abatement procedures per Tower Order of June 15, 1984. <i>Withdraw from NCP</i>	ATCT, Airlines, GRAA	N/A	N/A	N/A	N/A
<b>Measure NA-2:</b> Aircraft in excess of 12,500 pounds departing Runway 25 should be directed to turn 20 degrees to the right or left as soon as practicable after takeoff. <i>Previously withdrawn from NCP</i>	ATCT, Airlines, GRAA	N/A	N/A	N/A	N/A
<b>Measure NA-3:</b> All aircraft departing on Runway 7 should be fanned along three departure tracks: Left, Right, and Center. <b>Continuation</b>	ATCT, Airlines, GRAA	N/A	N/A	None	Measure implemented as conditions allow and recommended to continue
<b>Measure NA-4:</b> Direct pilots of C-130s to turn as tightly as practicable when training on Runway 19. <i>Withdraw from NCP</i>	ATCT, Airlines, GRAA	N/A	N/A	N/A	N/A
<b>Measure NA-5:</b> Direct pilots of air carrier jets when training on Runway 1, to begin turning to downwind leg after 4 distance measuring equipment (DME) from localizer and establishing the downwind leg at 5 DME. <i>Previously withdrawn from NCP</i>	ATCT, Airlines, GRAA	N/A	N/A	N/A	N/A



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TABLE 4-2 | SUMMARY OF 2023 NOISE COMPATIBILITY PROGRAM RECOMMENDATIONS, (CONTINUED)

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<b>RECOMMENDED NOISE ABATEMENT MEASURES (CONTINUED)</b>					
<p><b>Measure NA-6:</b> Establish an informal preferential runway use plan, weather and operating requirements permitting, as follows for aircraft weighing more than 12,500 pounds, using a five-knot tailwind and 15-knot crosswind component for runway assignment.</p> <p><i>Previously withdrawn from NCP Measure replaced by NA-10 in 1997 when Runway 7/25 was extended to 10,000 feet.</i></p>	ATCT, Airlines, GRAA	N/A	N/A	N/A	N/A
<p><b>Measure NA-7:</b> During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a right turn after departure, to turn right on course to navigational fix or heading as soon as practicable.</p> <p><b>Continuation with Modification</b></p>	ATCT, Airlines, GRAA	N/A	N/A	None	Measure implemented as conditions allow and recommended to continue with modification
<p><b>Measure NA-8:</b> During daytime hours (7:00 a.m. to 10:00 p.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a left turn after departure, to turn left on course to navigational fix or heading as soon as practicable.</p> <p><b>Continuation with Modification</b></p>	ATCT, Airlines, GRAA	N/A	N/A	None	Measure implemented as conditions allow and recommended to continue with modification



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TABLE 4-2 | SUMMARY OF 2023 NOISE COMPATIBILITY PROGRAM RECOMMENDATIONS, (CONTINUED)

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<b>RECOMMENDED NOISE ABATEMENT MEASURES (CONTINUED)</b>					
<b>Measure NA-9:</b> During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 19 having departure courses requiring a left turn based on destination to maintain runway heading until reaching 3,000 feet MSL before turning on course. <b>Continuation</b>	ATCT, Airlines, GRAA	N/A	N/A	N/A	Measure implemented as conditions allow and recommended to continue
<b>Measure NA-10:</b> Establish an informal preferential runway use plan for all daytime and nighttime operations. <b>Continuation</b>	ATCT, Airlines, GRAA	N/A	N/A	N/A	Measure implemented as conditions allow and recommended to continue
<b>Measure NA-11:</b> For all aircraft requiring more than 8,000 feet certified takeoff length, Runway 25 preferred. <b>Continuation</b>	ATCT, Airlines, GRAA	N/A	N/A	N/A	Measure implemented as conditions allow and recommended to continue
<b>Measure NA-12:</b> During daytime hours (7:00 a.m. to 10:00 p.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a right turn after departure, to turn right on course to navigational fix or heading as soon as practicable. <b>Continuation with Modification</b>	ATCT, Airlines, GRAA	N/A	N/A	N/A	Measure implemented as conditions allow and recommended to continue with modification



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TABLE 4-2 | SUMMARY OF 2023 NOISE COMPATIBILITY PROGRAM RECOMMENDATIONS, (CONTINUED)

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<b>RECOMMENDED NOISE ABATEMENT MEASURES (CONTINUED)</b>					
<b>Measure NA-13:</b> During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a left turn after departure, to turn left on course to navigational fix or heading as soon as practicable. <b>Continuation with Modification</b>	ATCT, Airlines, GRAA	N/A	N/A	N/A	Measure implemented as conditions allow and recommended to continue with modification
<b>Measure NA-14:</b> Recommend aircraft to conduct touch and go and low approach training activity on the south and west side of the airport, when traffic conditions permit. <b>Continuation with Modification</b>	ATCT, Airlines, GRAA	N/A	N/A	N/A	Measure implemented as conditions allow and recommended to continue with modification
<b>Measure NA-15:</b> During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 1, maintain runway heading until reaching 3,000 feet MSL before turning on course. <b>Continuation</b>	ATCT, Airlines, GRAA	N/A	N/A	N/A	Measure implemented as conditions allow and recommended to continue
<b>Measure NA-16:</b> Encourage the use of noise attenuating construction standards for all new on-airport structures/facilities and use those structures as noise barriers/buffers to adjacent off-airport land uses. <b>Continuation</b>	ATCT, Airlines, GRAA	Dependent on design of structure, and effect of noise attenuation on operational efficiency.	N/A	Dependent on design of structure and effect of noise attenuation on operational efficiency.	Measure implemented and recommended to continue



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**TABLE 4-2 | SUMMARY OF 2023 NOISE COMPATIBILITY PROGRAM RECOMMENDATIONS, (CONTINUED)**

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<b>RECOMMENDED LAND USE MITIGATION MEASURES</b>					
<b>Measure LU-1:</b> Rezoning of land south of US Route 20 Bypass and west of 20th Street from agriculture to medium-density multi-family by the city of Rockford and Winnebago County. <i>Previously withdrawn from NCP</i>	N/A	N/A	N/A	N/A	N/A
<b>Measure LU-2:</b> Adopt noise overlay zoning prohibiting development of selected noise-sensitive land uses within the 60-65 DNL noise contour, high occupancy uses in the “double-clear zone” area, and residential uses in the 65+ DNL noise contour of the 2028 NCP NEM within the “double-clear zone” of the City of Rockford and Winnebago County. <i>Continuation with Modification</i>	City of Rockford, Winnebago County	N/A	Minimal administrative costs	N/A	This measure is recommended to be continued with modification from the 2003 NCP to include the new 2028 NCP NEM.
<b>Measure LU-3:</b> Amend comprehensive plans to show planned industrial or commercial uses at interchanges of US 20 Bypass and South Main Street – city of Rockford and Winnebago County. <i>Previously withdrawn from NCP</i>	N/A	N/A	N/A	N/A	N/A



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TABLE 4-2 | SUMMARY OF 2023 NOISE COMPATIBILITY PROGRAM RECOMMENDATIONS, (CONTINUED)

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<b>RECOMMENDED LAND USE MITIGATION MEASURES (CONTINUED)</b>					
<b>Measure LU-4:</b> Amend local comprehensive plans by adopting the updated Part 150 NCP as their noise compatibility elements — City of Rockford and Ogle and Winnebago counties. <i>Continuation</i>	City of Rockford, Winnebago County, Ogle County	N/A	Minimal administrative costs	N/A	Measure implemented and recommended to continue
<b>Measure LU-5:</b> Adopt guidelines for discretionary review of development projects – City of Rockford, Winnebago County, Ogle County, and the GRAA. <i>Continuation</i>	City of Rockford, Winnebago County, Ogle County, GRAA	Minimal administrative costs	Minimal administrative costs	N/A	Measure implemented and recommended to continue
<b>Measure LU-6:</b> Acquire homes off the approach end of Runway 19 – city of Rockford or the GRAA. <i>Previously withdrawn from NCP</i>	N/A	N/A	N/A	N/A	N/A
<b>Measure LU-7:</b> Encourage the Forest Preserve District to consider acquisition of land adjacent to existing Forest Preserves south of the airport. <i>Previously withdrawn from NCP</i>	N/A	N/A	N/A	N/A	N/A
<b>Measure LU-8:</b> Voluntary acquisition of single-family residences on Blackhawk Island in the NEM/NCP 65 DNL noise contour. <i>Measure Implemented</i>	N/A	N/A	N/A	N/A	N/A



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TABLE 4-2 | SUMMARY OF 2023 NOISE COMPATIBILITY PROGRAM RECOMMENDATIONS, (CONTINUED)

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<b>RECOMMENDED LAND USE MITIGATION MEASURES (CONTINUED)</b>					
<b>Measure LU-9:</b> Redevelop airport-owned land parcels located along Kishwaukee Street south of Research Parkway. <i>Continuation</i>	GRAA	N/A	Minimal administrative costs	N/A	Measure implemented and recommended to continue
<b>Measure LU-10:</b> Revoke consideration of transfer of GRAA land of high natural value along the Kishwaukee River to the Forest Preserve or park district to be maintained as a natural area and airport noise buffer. <i>Previously withdrawn from NCP</i>	N/A	N/A	N/A	N/A	N/A
<b>Measure LU-11:</b> Acquire development and overflight rights via purchase of land use and avigation easement over undeveloped parcel in Runway 7L approach area on south side of Kishwaukee River. <i>Measure Implemented</i>	N/A	N/A	N/A	N/A	N/A
<b>Measure LU-12:</b> Offer options of voluntary sale to GRAA or sound insulation to owner of one [single family] residence south of the airport in the 65 DNL contour of the 1993 NCP [near term plan]. <i>Measure Implemented</i>	N/A	N/A	N/A	N/A	N/A



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TABLE 4-2 | SUMMARY OF 2023 NOISE COMPATIBILITY PROGRAM RECOMMENDATIONS, (CONTINUED)

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<b>RECOMMENDED LAND USE MITIGATION MEASURES (CONTINUED)</b>					
<p><b>Measure LU-13:</b> Encourage the city of Rockford and Winnebago County to require plat notes on new subdivision plats and to record the notes on deeds for new subdivisions within the Airport Noise Overlay Zones AC-1 and AC-2. <b>Continuation with Modification</b></p>	City of Rockford, Winnebago County, Ogle County, GRAA	N/A	Minimal administrative costs	N/A	This measure is recommended to be continued with modification from the 2003 NCP to include the new 2028 NCP NEM.
<p><b>Measure LU-14:</b> Encourage Winnebago County, the city of Rockford, the Village of New Milford, and the Village of Davis Junction not to allow an increase in the residential density in the Agricultural Priority (AG) or Rural Residential (RR) zoning districts (Winnebago County) in the 2028 NCP NEM 60+ DNL noise contour. <b>Continuation</b></p>	City of Rockford, Winnebago County, Ogle County, Village of New Milford, Village of Davis Junction	N/A	N/A	N/A	This measure is recommended to be continued with modification from the 2003 NCP to include the new 2028 NCP NEM.
<p><b>Measure LU-15:</b> Noise Mitigation Program Area (NMPA) <b>NMPA 1:</b> Offer Residential Sound-insulation Program to Single- and Multi-Family Homes (61 units) within the 65+ DNL noise contour. <b>NMPA 2:</b> Offer Residential Sound-insulation Program to Single- and Multi-Family Homes (87 units) within the block rounding area outside of the 65 DNL noise contour. <b>New Measure</b></p>	GRAA	<p>It is estimated 61 homes are located within the 65+ DNL noise contour plus an additional 87 homes in the block rounding area outside the 65 DNL. If 100% of all homes are eligible and participated the cost to insulate all homes is estimated at \$9,250,000 which includes all hard costs (construction) and soft costs (administrative).</p> <p>Federal AIP funding likely available (80% FAA share/20% local airport share)</p>	None	None	This is a new measure. Properties undergoing sound-insulation would have an avigation easement placed on the property and attached to the deed.



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TABLE 4-2 | SUMMARY OF 2023 NOISE COMPATIBILITY PROGRAM RECOMMENDATIONS, (CONTINUED)

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<b>RECOMMENDED LAND USE MITIGATION MEASURES (CONTINUED)</b>					
<b>Measure LU-16:</b> Offer Avigation Easements to owner-occupied Single- and Multi-Family Homes within NMPA 1 and NMPA 2 if sound-insulation is declined.  <b>New Measure</b>	GRAA	The estimated cost of each avigation easement is up to \$3,000 per home. Since the final cost of the measure is dependent on the number of property owners that decline acquisition and/or sound-insulation, an estimated overall total was not calculated.  Federal AIP funding likely available (80% FAA share/20% local airport share).	None	None	This is a new measure. Properties would have an avigation easement placed on the property and attached to the deed.
<b>Measure LU-17:</b> Adopt improved building codes.  <b>New Measure</b>	GRAA, City of Rockford, Winnebago and Ogle County	Minimal costs of up to \$50,000	Minimal administrative costs	None	This is a new measure.
<b>RECOMMENDED PROGRAM MANAGEMENT MEASURES</b>					
(former 2003 NCP Measure OM-1) <b>Measure PM-1:</b> Noise Compatibility Plan (NCP) implementation compliance.  <b>Continuation</b>	GRAA	Minimal administrative costs	None	None	Measure implemented and recommended to continue
(former 2003 NCP Measure OM-2) <b>Measure PM-2:</b> Noise complaint response system and computer database.  <b>Continuation with Modification</b>	GRAA	Minimal administrative costs to answer telephones and to log noise complaints.	None	None	Measure is implemented and recommended to be continued with modifications.
(former 2003 NCP Measure OM-3) <b>Measure PM-3:</b> Perform regular updates to the Noise Exposure Maps (NEM) and review of the Noise Compatibility Plan (NCP).  <b>Continuation</b>	GRAA	NEM Update: \$350,000 to \$400,000 NEM/NCP Update: \$650,000 to \$750,000 Federal AIP funding likely available (80% FAA share/20% local airport share)	Minimal administrative costs to participate in study	None	Measure implemented and recommended to continue



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TABLE 4-2 | SUMMARY OF 2023 NOISE COMPATIBILITY PROGRAM RECOMMENDATIONS, (CONTINUED)

MEASURE	RESPONSIBLE PARTY	COST TO AIRPORT	COST TO LOCAL GOVERNMENTS	COST TO USERS	IMPLEMENTATION STATUS
<b>RECOMMENDED PROGRAM MANAGEMENT MEASURES (CONTINUED)</b>					
(former 2003 NCP Measure OM-4) <b>Measure PM-4:</b> Establish a Pilot/Community Awareness Program. <b>Continuation</b>	GRAA	Cost to develop, print, and distribute outreach material: \$10,000 to \$20,000, subject to GRAA and FAA funding availability.	None	None	This measure is not implemented and is recommended for implementation.
(former 2003 NCP Measure OM-5) <b>Measure PM-5:</b> Publication of Instrument Departure Procedures for Runways 1, 19, and 25	GRAA	Minimal administrative costs to ensure approval and publication.	None	None	This measure is not implemented and is recommended for implementation.
(former 2003 NCP Measure OM-6) <b>Measure PM-6:</b> Update airport information in the <i>Airport Facilities Directory</i> <b>Continuation</b>	GRAA	Minimal administrative costs to ensure approval and publication.	None	None	Measure implemented and recommended to continue
<b>Measure PM-7:</b> Initiate Community Roundtable or Noise Abatement Committee <b>New Measure</b>	GRAA	Minimal administrative costs to attend meetings and to document meetings and distribute agendas/other material. .	Minimal time to attend meetings	None	This is a new measure

Source: Landrum &amp; Brown analysis, 2023.



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### NOISE COMPATIBILITY PROGRAM MEASURE: NA-1

**Description:** Maintain existing noise abatement procedures per Tower Order of June 15, 1984.

**Background and Intent:** This previously approved measure is currently implemented. Measure NA-1 recommended maintaining existing noise abatement procedures per a Tower Order of June 15, 1984. This order states that touch and go operations (when aircraft traffic land and depart without stopping or exiting the runway for the purposes of pilot training) or traffic pattern activity (the flow prescribed for landing, or takeoff, in this case used for the purposes of pilot training) on Runways 1/19 shall be directed to turn so as to keep aircraft west of the airport. Aircraft over 12,500 pounds shall be directed to climb to 2,500 feet MSL (1,750 feet above field elevation) whenever traffic permits. Aircraft making circling approaches shall be kept west of the airport and shall not be permitted to make passes over the airport. For late night training, as winds permit, full stop landings should be made on Runway 1 and takeoffs should be made on Runway 19.

The original intent of this measure was to abate the effects of nighttime aircraft noise and overflight that would occur during airline pilot training between the hours of 10:00 p.m. to 7:00 a.m.

**Relationship to 2003 NCP:** Measure NA-1 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP.

**2023 NCP Action:** Measure NA-1 is to be withdrawn. Intent of measure is now included in the modified Measure NA-14.

**Land Use Compatibility Improvement:** Measure NA-1 is to be withdrawn. Intent of measure is now included in the modified Measure NA-14.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The withdraw of this measure is not expected to adversely affect any other programs or measures.



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## NOISE COMPATIBILITY PROGRAM MEASURE: NA-2

**Description:** Measure previously revoked: Aircraft in excess of 12,500 pounds departing Runway 25 should be directed to turn 20 degrees to the right or left as soon as practicable after takeoff. Withdrawal of this measure was approved in the 1994 NCP.

**Background and Intent:** This measure was previously approved in the 1990 NCP and subsequently withdrawn in the 1994 NCP. Measure NA-2 recommended that departure turns off Runway 25 in excess of 12,500 pounds make a 20-degree turn either left or right as soon as practicable after takeoff. The procedure applied to all jets and almost all multi-engine turboprop and piston aircraft operating at RFD.

The measure was intended to ensure that departures by large aircraft would not overfly the Woodcrest Estates subdivision and other residential development immediately north of Woodcrest Estates across the Rock River. This measure was withdrawn in favor of other, more effective measures (NA-7, NA-8, NA-12 and NA-13).

**Relationship to 2003 NCP:** N/A

**Status:** N/A

**2023 NCP Action:** N/A

**Land Use Compatibility Improvement:** N/A. However, land use compatibility would be achieved in this area with the implementation of recommended Measures NA-7, NA-8, NA-12, and NA-13.

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



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### NOISE COMPATIBILITY PROGRAM MEASURE: NA-3

**Description:** All aircraft departing on Runway 7 should be fanned along three departure tracks: Left, Right, and Center.

**Background and Intent:** This previously approved measure is currently implemented on a voluntary basis. Measure NA-3 recommends that all aircraft departing on Runway 7 be fanned along three departure tracks: Left, Right, and Center (see Exhibit 4-2, Runway 7 Departure Flight Corridors). The aircraft are routed due east on the center track, to the southwest on the track turning to the right, and to the northwest on the track turning to the left.

The intent of this measure is to reduce noise along the centerline and reduce overflights of the communities west of the airport.

**Relationship to 2003 NCP:** Measure NA-3 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-3 is to be continued.

**Land Use Compatibility Improvement:** Reduces aircraft noise impacts along the extended centerline of Runway 7 and reduces frequency of overflights over residential land uses to the east of the airport.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

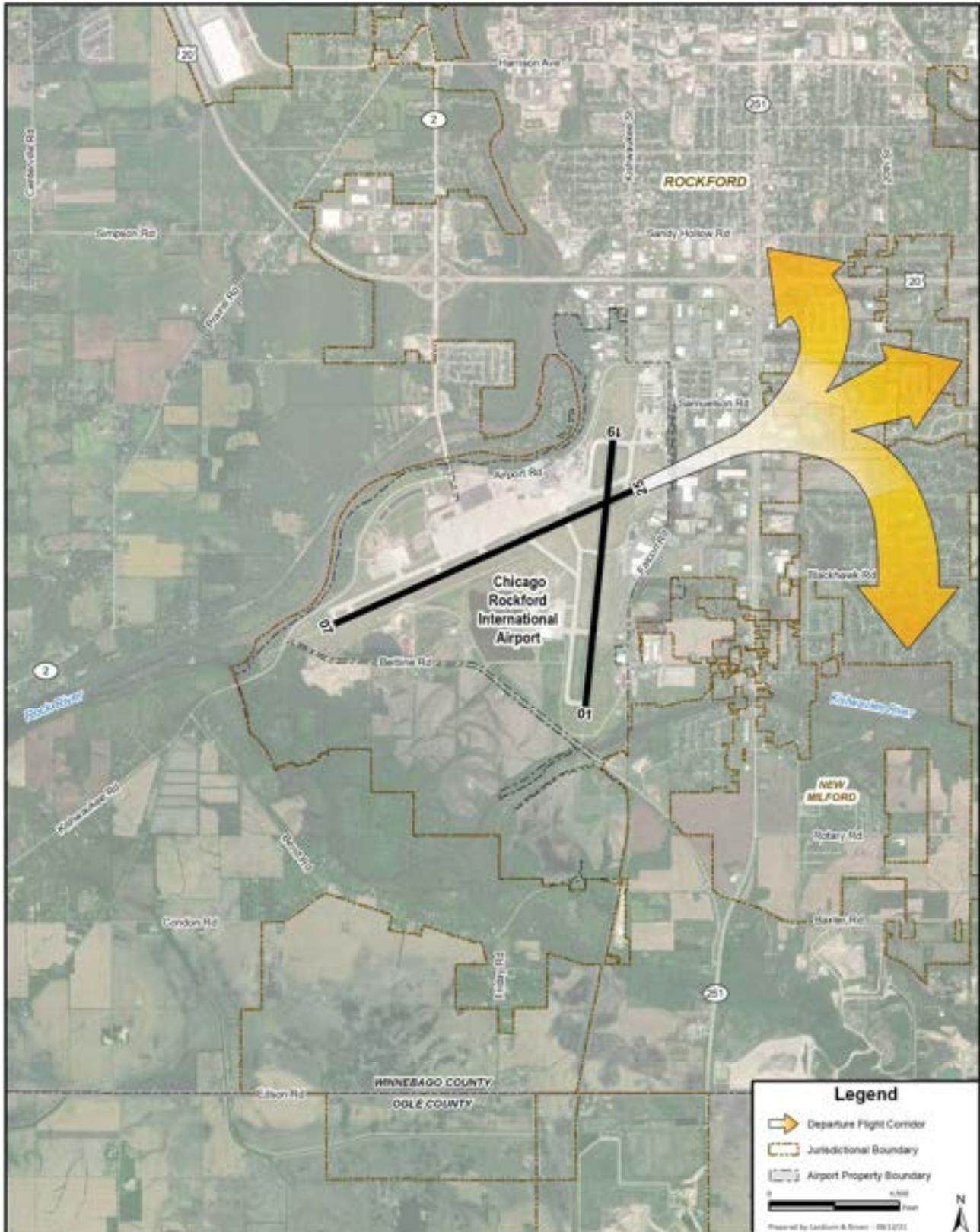
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT 4-2 | RUNWAY 7 DEPARTURE FLIGHT CORRIDORS



Source: Landrum & Brown analysis, 2023



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: NA-4

**Description:** Direct pilots of C-130s to turn as tightly as practicable when training on Runway 19.

**Background and Intent:** Measure NA-4 recommends that pilots of C-130 aircraft practicing short-field landings and takeoffs (using a short amount of runway length) on Runway 19 be directed to turn as soon and as tightly as practicable after takeoff. The aircraft should remain as close to the airport as possible when flying through the pattern, provided aircraft maintain pattern altitude of 2,500 feet MSL per existing Tower Order.

This intent of this measure is to direct aircraft traffic to the northwest and away from residential areas southwest of the airport, including the Woodcrest Estates subdivision and the area north of the Rock River near Woodcrest Estates. In addition, the floodplain northwest and adjacent to the airport is a broad, noise-compatible area, and it would be desirable for the C-130s to remain over this area to the extent practical.

**Relationship to 2003 NCP:** Measure NA-4 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP as conditions allow.

**2023 NCP Action:** Measure NA-4 is to be withdrawn. Intent of measure is now included in the modified Measure NA-14.

**Land Use Compatibility Improvement:** N/A. However, land use compatibility would be achieved in this area with the implementation of recommended modified Measure NA-14.

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: NA-5

**Description:** Measure previously revoked: Direct pilots of air carrier jets, when training on Runway 1, to begin turning to downwind leg after 4 DME from localizer and establishing the downwind leg at 5 DME. Withdrawal of this measure was approved in the 1994 NCP.

**Background and Intent:** This measure was previously approved in the 1990 NCP and subsequently withdrawn in the 1994 NCP. Measure NA-5 directed pilots of air carrier jets, when training on Runway 1, to begin turning to the downwind leg after 5 DME from the localizer.

This measure was intended to establish a training pattern, which would avoid residential areas between two and three miles west of the airport by moving the pattern further to the west. In order to avoid undue inconvenience to air carriers, aircraft would turn to the southeast directly west of the south end of Runway 1/19. This would then reestablish the downwind leg one to two miles west of the extended runway centerline. This measure was revoked on the basis that the recommended traffic pattern would result in repeated transfers of aircraft between local airport traffic control (ATC) and center ATC. This measure was withdrawn in favor of another more effective measure, Measure NA-15.

**Relationship to 2003 NCP:** N/A

**Status:** N/A

**2023 NCP Action:** N/A

**Land Use Compatibility Improvement:** N/A. However, land use compatibility would be achieved in this area with the implementation of recommended Measure NA-15.

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: NA-6

**Description:** Revoke the establishment of an informal preferential runway use plan, weather and operating requirements permitting, as follows for aircraft weighing more than 12,500 pounds, using a five knot tailwind and 15-knot crosswind component for runway assignment. Measure NA-6 has been replaced by NA-10.

**Background and Intent:** This measure was previously approved in the 1994 NCP, but expired in 1997. Measure NA-6 recommended an informal preferential runway use program to delineate the preferred runway use and order of runway selection. The order stated that, weather and operating conditions permitting, aircraft weighing more than 12,500 pounds, use a five-knot tailwind and 15-knot crosswind component for runway assignment.

The intent of this measure was to reduce noise impacts. This measure was replaced by Measure NA-10 when Runway 7/25 was extended to the current length of 10,000 feet in 1997, changing the preferred arrival and departure runway during daytime hours from Runway 19 to Runway 25, the longest runway. Therefore, Measure NA-6 should be withdrawn from the 2003 NCP.

**Relationship to 2003 NCP:** N/A

**Status:** N/A

**2023 NCP Action:** N/A

**Land Use Compatibility Improvement:** N/A. However, land use compatibility would be achieved in this area with the implementation of recommended Measure NA-10.

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: NA-7

**Description:** During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a right turn after departure, to turn right on course to navigational fix or heading as soon as practicable.

**Background and Intent:** This measure, as approved in the 2003 NCP, required the ATCT to issue instructions to pilots when departing Runway 25 in order to minimize overflight of residential land use (Woodcrest Estates) along the extended runway centerline (see Exhibit 4-3, Runway 25 Right Turn Departure Flight Corridors). The recommended modification to the previously approved Measure NA-7 would change the ATCT instructions for Runway 25 departures from the two fixes, Dubuque (DBQ) or Nodine (ODI) to turn right as soon as practicable.

While the approved instruction is that nighttime aircraft weighing in excess of 12,500 pounds to turn right to the (DBQ) or Nodine (ODI) fixes. Because the pilot instructions to a specific fix may change over time due to airspace changes, it is recommended that this previously approved measure be modified.

Modified Measure NA-7 is a companion to modified Measure NA-12, which provides for departure turns from Runway 25 for daytime operations. To allow for performance and destination differences between the cargo carriers, which operate at RFD during the nighttime hours, and the general aviation traffic, which operates at RFD during the daytime hours, this measure should be retained for nighttime use.

The intent of Measure NA-7, as modified in this 2023 NCP, would continue to minimize overflight of Woodcrest Estates by large aircraft departing Runway 25. Therefore, this measure should be modified and continued as noted for nighttime use.

**Relationship to 2003 NCP:** Measure NA-7 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-7 is to be continued with modification.

**Land Use Compatibility Improvement:** Direct aircraft to overfly the generally more compatible land uses northwest of the airport. Residential land uses on the extended centerline of Runway 25 would experience fewer aircraft overflights than if departures were conducted straight out.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

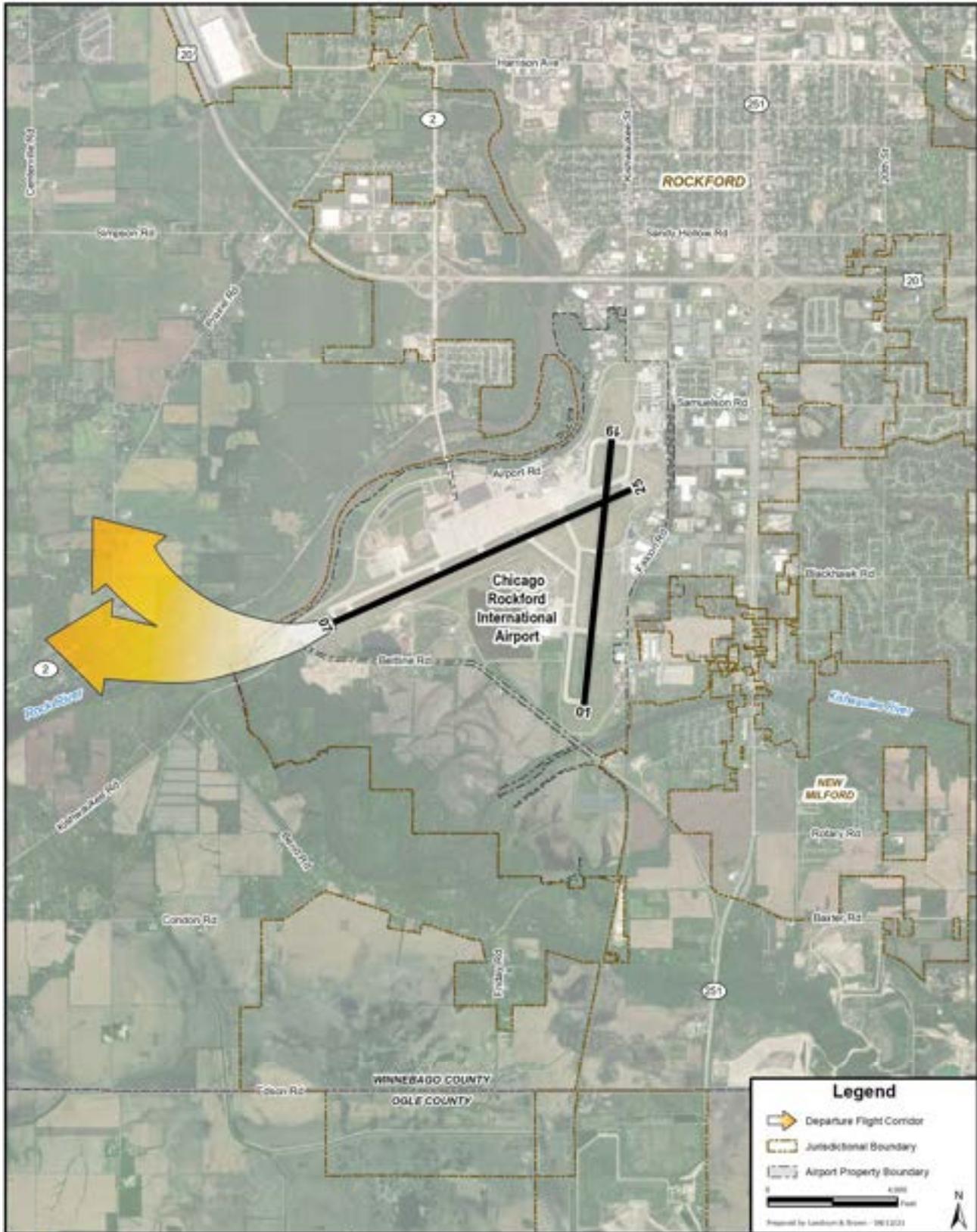
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT 4-3 | RUNWAY 25 RIGHT TURN DEPARTURE FLIGHT CORRIDORS



Source: Landrum & Brown analysis, 2023



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: NA-8

**Description:** During daytime hours (7:00 a.m. to 10:00 p.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a left turn after departure, to turn left on course to navigational fix or heading as soon as practicable.

**Background and Intent:** This measure, as approved in the 2003 NCP, recommends that all daytime aircraft departures to the southwest and west from Runway 25 use this procedure to avoid overflying existing residential land uses along the extended centerline of Runway 25 (see Exhibit 4-4, Runway 25 Left Turn Departure Flight Corridors). The ATCT would direct traffic to turn on course toward navigational fixes as soon as practicable.

This previously approved measure is currently implemented on a voluntary basis. As modified, this measure recommends that all daytime aircraft departures to the southwest and west from Runway 25 use this procedure to avoid overflying existing residential land uses along the extended centerline of Runway 25. The ATCT would direct traffic to turn on course toward navigational fix or heading as soon as practicable.

Modified Measure NA-8 is a companion to modified Measure NA-13, which provides for departure turns to the southwest from Runway 25 for nighttime operations. To allow for performance and destination differences between the cargo carriers, which operate at RFD during nighttime hours, and the general aviation traffic, which operates at RFD during the daytime hours, this measure should be retained for daytime use. Therefore, this measure should be retained and modified as noted.

The intent of Measure NA-8, as modified in this 2023 NCP, would continue to minimize overflight of Woodcrest Estates by large aircraft departing Runway 25. Therefore, this measure should be modified and continued as noted for daytime use.

**Relationship to 2003 NCP:** Measure NA-8 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-8 is to be continued with modification.

**Land Use Compatibility Improvement:** Reduces aircraft noise impacts along the extended centerline of Runway 25 and reduces frequency of overflights over residential land uses to the west of the airport.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

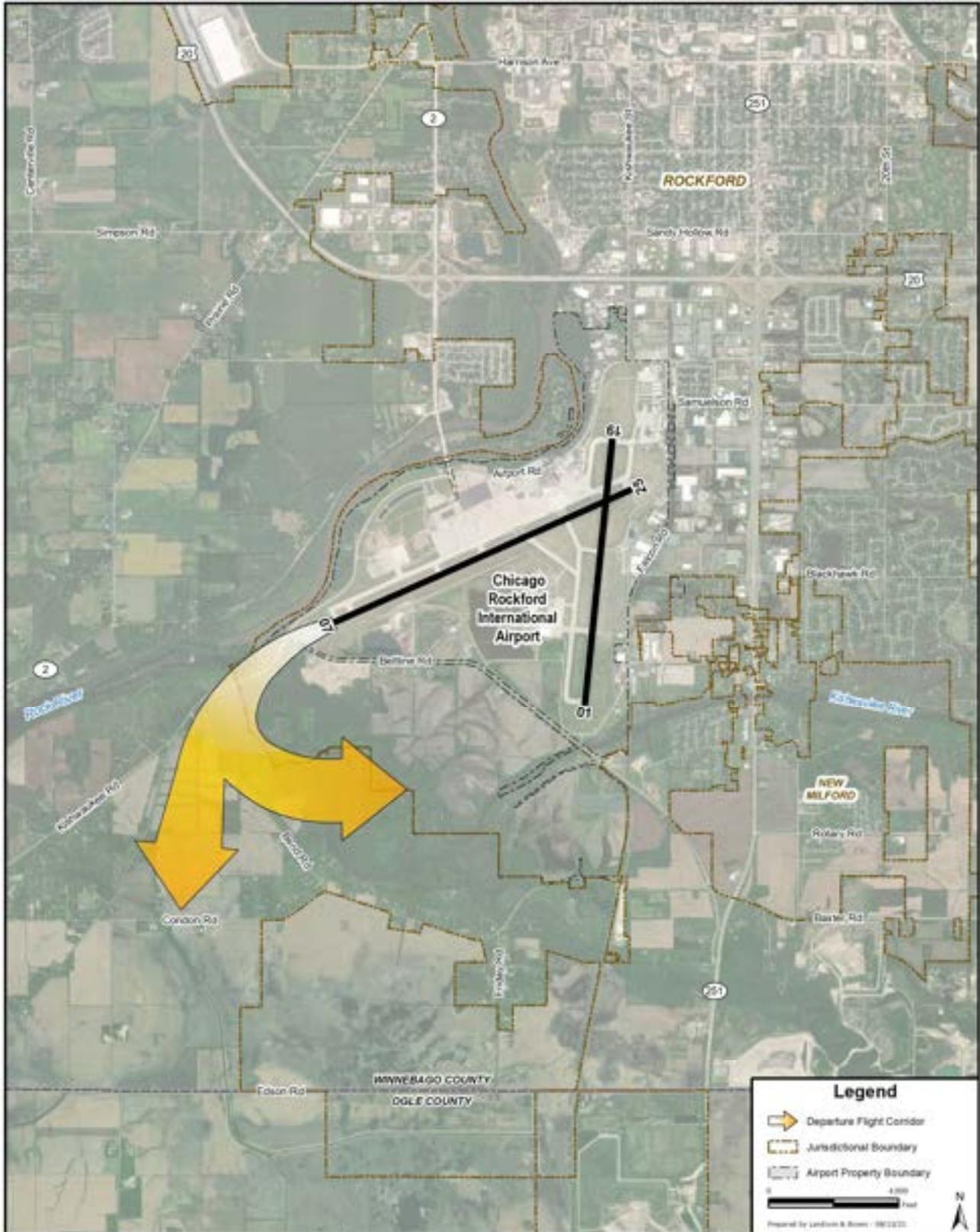
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT 4-4 | RUNWAY 25 LEFT TURN DEPARTURE FLIGHT CORRIDORS



Source: Landrum & Brown analysis, 2023



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: NA-9

**Description:** During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 19 having departure courses requiring a left turn based on destination to maintain runway heading until reaching 3,000 feet MSL before turning on course to heading or navigational fix.

**Background and Intent:** This measure, as approved in the 2003 NCP, directed all jet aircraft weighing more than 12,500 pounds maintain runway heading until reaching 3,000 feet MSL before turning on course (see Exhibit 4-5, Runway 19 Left Turn Departure Flight Corridors). The proposed modification to this measure would remove the course headings and direct aircraft requiring a left turn to maintain runway heading until reaching 3,000 feet MSL before turning on course to heading or navigational fix, as soon as practicable.

Maintaining runway heading to 3,000 feet MSL (rather than 2,000 or 2,500 feet MSL as assessed in the alternatives analysis) would provide the most operational benefit because 3,000 feet MSL is a standard noise abatement altitude used by ATCT controllers. Therefore, it would simplify controller instructions to the pilot during peak traffic periods.

The intent of Measure NA-9, as modified in this 2023 NCP, would continue to minimize overflight of residential areas to the southeast of the Airport and along the Kishwaukee River, by large aircraft departing Runway 19. Therefore, this measure should be modified as noted.

**Relationship to 2003 NCP:** Measure NA-9 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-9 is to be continued.

**Land Use Compatibility Improvement:** Utilizes the Forest Preserve to the southeast of the airport and other generally compatible areas south of the airport. Residential land use to the east of the airport would experience a decrease in overflights and less overall noise exposure.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

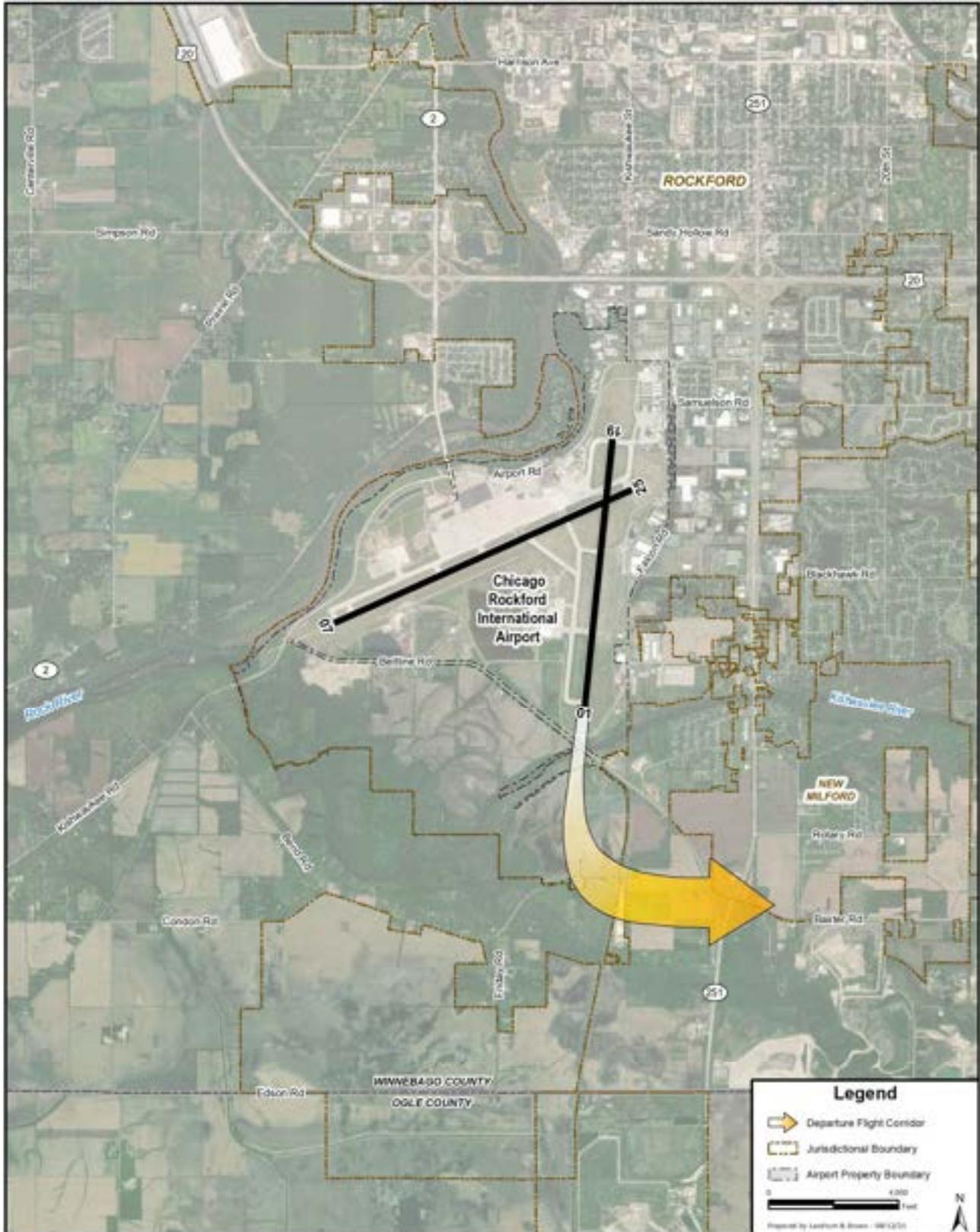
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

EXHIBIT 4-5 | RUNWAY 19 NIGHTTIME LEFT TURN DEPARTURE FLIGHT CORRIDORS



Source: Landrum & Brown analysis, 2023



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: NA-10

**Description:** Recommends an informal runway use program to delineate the preferred runway use and order of runway selection to reduce aircraft noise impacts.

**Background and Intent:** Measure NA-10, as approved in the 1994 and 2003 NCP, recommended an informal runway use program to delineate the preferred runway use and order of runway selection to reduce aircraft noise impacts. The recommended runway use program is outlined below:

#### All Departures

Runway 19 preferred for all departures.

Runway 19 preferred for all departures.

Runway 25 would be used for departures when use of Runway 19 could not be used due to wind, weather, or operational necessity.

Runway 1 would be used for departures when both Runway 19 and Runway 25 could not be used due to wind, weather, or operational necessity.

#### Daytime Arrivals

The runway that would maximize traffic flow would be used for arrivals.

#### Nighttime Arrivals

Runway 1 preferred for all arrivals.

Runway 25 would be used for arrivals when use of Runway 1 could not be used due to wind, weather, or operational necessity.

This measure would retain all other elements of the approved program; Runway 7 is being used as the second preferred arrival runway because it is equipped with ILS and arrivals on both Runway 1 and Runway 7, during peak arrival times, are the most operationally efficient. The ATCT would use this preferred runway use program when weather, safety, or operational conditions are favorable. The intent of this measure is to result in a large proportion of departures being made to the south or west of the airport taking advantage of the most compatible land uses.

**Relationship to 2003 NCP:** Measure NA-10 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-10 is to be continued.

**Land Use Compatibility Improvement:** Directs aircraft to overfly land uses south of the airport that are generally compatible with aircraft noise.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: NA-11

**Description:** For all aircraft requiring more than 8,000 feet certified takeoff length, Runway 25 preferred.

**Background and Intent:** This previously approved measure recommends that all aircraft requiring more than 8,000 feet certified take-off length use Runway 25. Measure NA-11 was implemented after Runway 7/25 was extended by 3,500 feet to its current length of 10,000 feet. Occasionally heavily-loaded large aircraft may not be able to safely take off on an 8,000-foot runway (Runway 1/19 is 8,199 feet long). When these circumstances preclude the use of Runway 19, the preferred runway for takeoff, Runway 25 should be used. The intent of this measure was to establish Runway 25 as the preferred runway for all aircraft requiring more than 8,000 feet certified take-off length.

**Relationship to 2003 NCP:** Measure NA-11 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-11 is to be continued.

**Land Use Compatibility Improvement:** Routes departure traffic over the second most compatible land use corridor, which is northwest of the airport.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: NA-12

**Description:** During daytime hours (7:00 a.m. to 10:00 p.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a right turn after departure, to turn right on course to navigational fix or heading as soon as practicable.

**Background and Intent:** This measure, as approved in the 2003 NCP, required the ATCT to issue instructions to pilots when departing Runway 25 in order to minimize overflight of residential land use (Woodcrest Estates) along the extended runway centerline (see Exhibit 4-3, Runway 25 Right Turn Departure Flight Corridors). The recommended modification to the previously approved Measure NA-12 would change the ATCT instructions for Runway 25 departures from the two fixes, Dubuque (DBQ) or Nodine (ODI) to turn right as soon as practicable. While the approved instruction is that nighttime aircraft weighing in excess of 12,500 pounds to turn right to the (DBQ) or Nodine (ODI) fixes. Because the pilot instructions to a specific fix may change over time due to airspace changes, it is recommended that this previously approved measure be modified. Modified Measure NA-12 is a companion to modified Measure NA-7, which provides for departure turns from Runway 25 for nighttime operations. To allow for performance and destination differences between the cargo carriers, which operate at RFD during the nighttime hours, and the general aviation traffic, which operates at RFD during the daytime hours, this measure should be retained for daytime use. The intent of Measure NA-12, as modified in this 2023 NCP, would continue to minimize overflight of Woodcrest Estates by large aircraft departing Runway 25. Therefore, this measure should be modified and continued as noted for daytime use.

**Relationship to 2003 NCP:** Measure NA-12 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-12 is to be continued with modification.

**Land Use Compatibility Improvement:** Direct aircraft to overfly the generally more compatible land uses northwest of the airport. Residential land uses on the extended centerline of Runway 25 would experience fewer aircraft overflights than if departures were conducted straight out.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: NA-13

**Description:** During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a left turn after departure, to turn left on course to navigational fix or heading as soon as practicable.

**Background and Intent:** This measure, as approved in the 2003 NCP, recommends that all nighttime aircraft departures to the southwest and west from Runway 25 use this procedure to avoid overflying existing residential land uses along the extended centerline of Runway 25 (see Exhibit 4-4, Runway 25 Left Turn Departure Flight Corridors). The ATCT would direct traffic to turn on course toward navigational fixes as soon as practicable.

This previously approved measure is currently implemented on a voluntary basis. As modified, this measure recommends that all nighttime aircraft departures to the southwest and west from Runway 25 use this procedure to avoid overflying existing residential land uses along the extended centerline of Runway 25. The ATCT would direct traffic to turn on course toward navigational fix or heading as soon as practicable.

Modified Measure NA-13 is a companion to modified Measure NA-8, which provides for departure turns to the southwest from Runway 25 for daytime operations. To allow for performance and destination differences between the cargo carriers, which operate at RFD during nighttime hours, and the general aviation traffic, which operates at RFD during the daytime hours, this measure should be retained for daytime use.

The intent of Measure NA-13, as modified in this 2023 NCP, would continue to minimize overflight of Woodcrest Estates by large aircraft departing Runway 25. Therefore, this measure should be modified and continued as noted for nighttime use.

**Relationship to 2003 NCP:** Measure NA-8 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-8 is to be continued with modification.

**Land Use Compatibility Improvement:** Reduces aircraft noise impacts along the extended centerline of Runway 25 and reduces frequency of overflights over residential land uses to the west of the airport.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: NA-14

**Description:** All aircraft conduct touch and go and low approach training activity on the south and west side of the airport, when traffic permitting.

**Background and Intent:** This previously approved measure required aircraft weighing more than 12,500 pounds conduct touch and go and low approach training activity on the south side of the airport when using Runways 7 or 25.

The 3,500-foot extension of Runway 7/25 in 1997, which extended this runway to 10,000 feet, provided the opportunity for more southwesterly traffic flows, thus resulting in more frequent pattern traffic north or south of the airport. This measure was intended to minimize the effects of aircraft training overflights to the more densely populated land uses to the north and east of the airport and thus reduce the potential for noise complaints to occur.

As modified Measure NA-14 will require all aircraft to conduct touch and go and low approach training activity to the south and west of the Airport, when traffic permitting. This measure as modified will also replace measure NA-1 and Measure NA-4, that required C-130 and smaller general aviation aircraft to perform training activities to the south and west of the airport, when traffic permitting.

**Relationship to 2003 NCP:** Measure NA-12 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-12 is to be continued with modification.

**Land Use Compatibility Improvement:** Reduces touch and go and low approach operations from flying over more heavily populated areas to the north and east of the airport.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA, Pilots

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: NA-15

**Description:** During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 1, maintain runway heading until reaching 3,000 feet MSL before turning on course to heading or navigational fix.

**Background and Intent:** This measure requires all nighttime departures of aircraft weighing more than 12,500 pounds to maintain runway heading until reaching 3,000 feet MSL before turning on course (see Exhibit 4-6, Runway 1 Departure Flight Corridor). This measure places the aircraft at a location and altitude where the turn on course would occur beyond the extent of the future 2028 NEM/NCP 65 DNL noise contour and it would therefore minimize aircraft overflight of residential land uses on Blackhawk Island.

This measure is intended to minimize overflight of residential land uses to the west of the airport on Blackhawk Island. Maintaining runway heading to 3,000 feet MSL would provide an operational benefit because 3,000 feet MSL is a standard noise abatement altitude used by ATCT controllers. Therefore, it simplifies controller instructions to the pilot during peak traffic periods.

**Relationship to 2003 NCP:** Measure NA-15 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-15 is to be continued.

**Land Use Compatibility Improvement:** Directs aircraft over generally compatible land use to the northwest of the airport.

**Responsible Implementing Parties:** ATCT, Airlines, GRAA

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

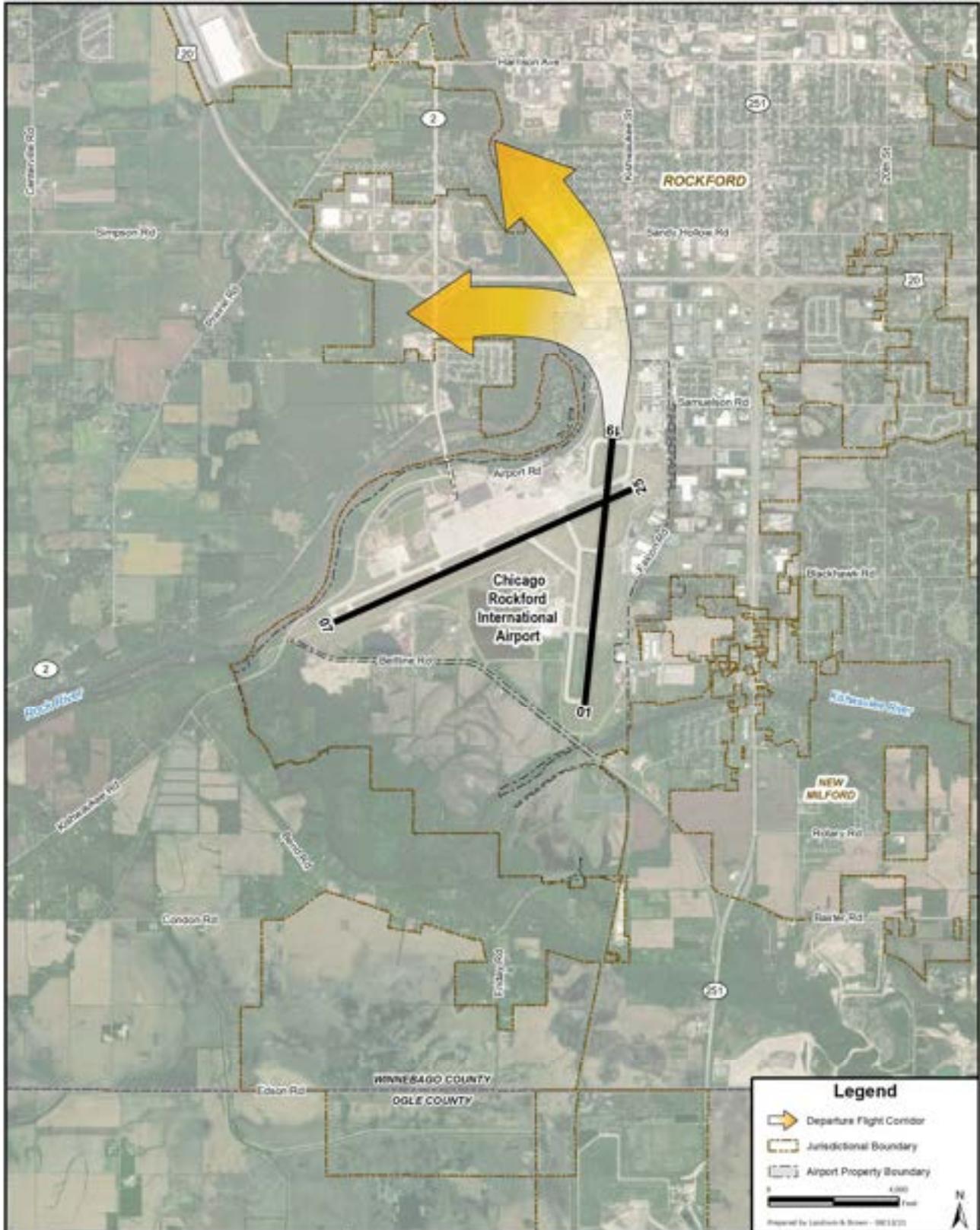
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

EXHIBIT 4-6 | RUNWAY 1 NIGHTTIME DEPARTURE TURN FLIGHT CORRIDORS



Source: Landrum & Brown analysis, 2023



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: NA-16

**Description:** Encourage the use of noise attenuating construction standards for all new on-airport structures/facilities and use those structures as noise barriers/buffers to adjacent off-airport land uses.

**Background and Intent:** This measure would encourage GRAA to consider noise reduction benefits derived from the design, location, and positioning of structures and facilities to use as barriers to residential land uses adjacent to the airport. The structure height, type of materials, shape, and placement on the airport could reduce ground noise for the communities nearest the airport.

**Relationship to 2003 NCP:** Measure NA-16 was approved as voluntary in the 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP, as conditions allow.

**2023 NCP Action:** Measure NA-16 is to be continued.

**Land Use Compatibility Improvement:** Noise attenuating construction standards can reduce noise levels by up to 5-10 dB depending on the design and location of the structure. This measure would enhance the good planning practices of the GRAA for future airport planning and the design of on-airfield development, which is sensitive to adjacent residential land uses.

**Responsible Implementing Parties:** GRAA, potential developers

**Implementation Steps, Costs, and Schedule:** Cost is entirely dependent upon the design of the structure and the effect that the modification for use as a passive noise barrier would have on the operational efficiency of its use. Costs for considering the measure in building design are inconsequential.

**Effects on Other Programs/Measures:** The continuation of this measure is not expected to adversely affect any other programs or measures.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: LU-1

**Description:** Measure previously revoked: Rezoning of land south of US Route 20 Bypass and west of 20th Street from agricultural to medium-density multi-family by the city of Rockford and Winnebago County. Withdrawal of this measure was approved in the 1994 NCP.

**Background and Intent:** The original intent of Measure LU-1 was to preclude highly noise-sensitive single-family residential development in an area of future marginal noise impact by encouraging multi-family development. Measure LU-1 was disapproved for the purpose of FAR Part 150 in the 1994 NCP because it did not conform to the statutory and regulatory criteria of reducing or preventing non-compatible land uses within the area covered by the noise exposure map (NEM) (it was outside of the 65 DNL noise contour). This area is currently located outside the 60 DNL noise contour. The land is currently zoned R1, single-family residential.

**Relationship to 2003 NCP:** N/A

**Status:** N/A

**2023 NCP Action:** N/A

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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## NOISE COMPATIBILITY PROGRAM MEASURE: LU-2

**Description:** Adopt noise overlay zoning prohibiting development of selected noise-sensitive land uses within the 60-65 DNL noise contour, high occupancy uses in the “double-clear zone” area, and residential uses in the 65+ DNL noise contour of the 2028 NCP NEM within the “double-clear zone” area of the City of Rockford and Winnebago County.

**Background and Intent:** Previously approved Measure LU-2 recommended the adoption of noise overlay zoning using the 2000 NCP noise contour; however, neither the city of Rockford nor Winnebago County have adopted noise overlay zoning. This measure would be modified to use the 2028 NCP NEM to implement this measure (see **Exhibit 4-7**).

GRAA should encourage the City of Rockford and Winnebago County to adopt noise overlay zoning because both jurisdictions would lie within the 2028 NCP NEM 60 DNL noise contour. It is recommended that three overlay districts be established. All three of these districts were approved in the 2003 NCP and are shown in **Exhibit 4-7**. The most restrictive zone should follow an area 5,000 feet long and 2,500 feet wide, centered on the runway and beginning 200 feet from the physical end of the runway.<sup>1</sup> This area is also known as the “double-clear zone” area and is not related to a noise contour. The outer boundaries of the other two overlay districts should be based on the 60 DNL and 65 DNL noise contours of the 2028 NCP NEM. To provide flexibility in the administration and enforcement of a noise overlay zone, the City of Rockford and Winnebago County should work with GRAA to define the overlay zones using legal boundaries, such as roadways.

Within the AC-1 zone, corresponding to the 2028 NCP NEM 60-65 DNL noise contour, the zoning ordinance would prohibit mobile homes, hospitals, nursing homes, amphitheatres, resorts, and group camps, as shown in the table.

Within the AC-2 zone, corresponding to the 2028 NCP NEM 65+ DNL noise contour, the ordinance would prohibit all non-transient residences that are also located in the “double-clear zone” area of Zone AC-3, as well as uses prohibited in the AC-1 zone. Sound insulation would be required for new residential units built within the 2028 NCP NEM 65 DNL noise contour, as described in **Table 4-3, Land Use Compatibility Standards for Greater Rockford Airport – Airport Noise Overlay Zones**.

Within the AC-3 zone, corresponding to the “double-clear zone” area, the AC-1 and AC-2 prohibitions would also apply. In addition, schools, and all forms of residential land use, both transient and non-transient, would be prohibited. The standards in the AC-3 zone are intended to avoid the development of uses that typically involve large numbers of occupants, in addition to avoiding noise-sensitive uses. Currently, there are no residences within the AC-3 zone.

The noise compatibility standards of the zoning ordinance would exceed the Part 150 guidelines in that hospitals, nursing homes, and other medical facilities inside the 2028 NCP NEM 60 DNL noise contour would be prohibited. The prohibition of mobile homes, amphitheatres, resorts, and group camps compares with the Part 150 guidelines for land use within the 65 DNL noise contour. Part 150 does not prohibit residences in the 65 DNL noise contour, but recommends other uses or, as a last resort, sound attenuation of residences.

It is also recommended that the noise overlay zoning provisions incorporate a discretionary review process (as discussed in Measure LU-5) whereby the GRAA staff would be notified of any land use development proposals within the overlay zone that require discretionary review or approval by the zoning boards of appeals, the planning commission, the county board, or the city council.

The intent of this measure is to establish special standards within a noise-impacted area to help mitigate the effects of aircraft noise. These standards supplement the underlying zoning classifications and would apply only to new development.

<sup>1</sup> FAA Memorandum, Action: Land Acquisition – eligible Runway Protection, Object Free Area, and Approach and Transitional Zones, dated April 30, 1991.



## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

**Relationship to 2003 NCP:** Measure LU-2 was approved in the 2003 NCP.

**Status:** Measure LU-2 was not implemented

**2023 NCP Action:** Measure LU-2 is to be continued with modification to include the 2028 NCP NEM.

**Land Use Compatibility Improvement:** Prevents new future incompatible development in the 60-65 DNL noise contour, 65+ DNL noise contour, and in the double-clear zone of each runway end.

**Responsible Implementing Parties:** City of Rockford and Winnebago County.

### **Implementation Steps, Costs, and Schedule:**

**Steps:** The GRAA should work with the city of Rockford Planning Division and Winnebago County Planning and Economic Development to request that the Rockford City Council and the Winnebago County Board adopt a noise overlay zoning ordinance as a measure to improve land use compatibility in the airport environs. When comprehensive plans are next updated for each jurisdiction those plans should include the updated 2028 NCP NEM 60+ DNL noise contour.

**Costs:** None to GRAA. Minimal administrative costs would accrue to the city and county.

**Schedule:** Implementation could begin immediately.

**Effects on Other Programs/Measures:** The continuation of this measure as modified is not expected to adversely affect any other mitigation programs or measures and it will enhance the compatibility of land uses surrounding the airport. This measure should be implemented in conjunction with Measures LU-4, LU-5, LU-13, and LU-14 because all of these measures pertain to local zoning ordinances and land use planning.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

**TABLE 4-3 | LAND USE COMPATIBILITY STANDARDS FOR AIRPORT NOISE OVERLAY ZONES**

SLUCM NO.	Land Use Name	OVERLAY ZONING DISTRICTS		
		AC-1 60-65 DNL	AC-2 65+ DNL	AC-3 (approach areas)
<b>10</b>	<b>Residential</b>			
11	Household units	Y	Y <sup>1,2</sup>	N
11.11	Single units - detached	Y	Y <sup>1,2</sup>	N
11.12	Single units - semi-detached	Y	Y <sup>1,2</sup>	N
11.13	Single units - attached row	Y	Y <sup>1,2</sup>	N
11.21	Two units - side-by-side	Y	Y <sup>1,2</sup>	N
11.22	Two units - over-under	Y	Y <sup>1,2</sup>	N
11.31	Apartments - walk-up	Y	Y <sup>1,2</sup>	N
11.32	Apartments - elevator	Y	Y <sup>1,2</sup>	N
12	Group quarters	Y	Y <sup>1,2</sup>	N
13	Residential hotels	Y	Y <sup>1,2</sup>	N
14	Mobile home parks	N	Y <sup>1,3</sup>	N
15	Transient lodgings, hotels, motels	Y	Y <sup>1,4</sup>	N
16	Other residential	Y	Y <sup>1,2</sup>	N
<b>20</b>	<b>Manufacturing</b>			
21	Food and kindred products	Y	Y	Y
22	Textile mill products	Y	Y	Y
23	Apparel and other finished products made from fabrics, leather and similar materials	Y	Y	Y
24	Lumber and wood products (except furniture)	Y	Y	Y
25	Furniture and fixtures	Y	Y	Y
26	Paper and allied products	Y	Y	Y
27	Printing, publishing, and allied industries	Y	Y	Y
28	Chemicals and allied products	Y	Y	Y
29	Petroleum refining and related industries	Y	Y	Y
<b>30</b>	<b>Manufacturing (continued)</b>			
31	Rubber and miscellaneous plastic	Y	Y	Y
32	Stone, clay and glass products	Y	Y	Y
33	Primary metal industries	Y	Y	Y
34	Fabricated and metal products	Y	Y	Y
35	Fabricated, scientific, and controlling instruments; photographic and optical goods; watches, and clocks	Y	Y	Y
39	Miscellaneous manufacturing	Y	Y	Y
<b>40</b>	<b>Transportation, communication, and utilities</b>			
41	Rail transportation	Y	Y	Y
42	Motor vehicle transportation	Y	Y	Y
43	Aircraft transportation	Y	Y	Y
44	Marine craft transportation	Y	Y	Y
45	Highway and street right-of-way	Y	Y	Y
46	Automobile parking	Y	Y	Y
47	Communication	Y	Y	Y
48	Utilities	Y	Y	Y
49	Other transportation, communication and utilities	Y	Y	Y



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

**TABLE 4-3 | LAND USE COMPATIBILITY STANDARDS FOR AIRPORT NOISE OVERLAY ZONES**  
(CONTINUED)

SLUCM NO.	Land Use Name	OVERLAY ZONING DISTRICTS		
		AC-1 60-65 DNL	AC-2 65+ DNL	AC-3 (approach areas)
<b>50</b>	<b>Trade</b>			
51	Wholesale trade	Y	Y	Y
52	Retail trade - building materials, hardware and farm equipment	Y	Y	Y
53	Retail trade - general merchandise	Y	Y	Y
54	Retail trade - food	Y	Y	Y
55	Retail trade - auto	Y	Y	Y
56	Retail trade - apparel and accessories	Y	Y	Y
57	Retail trade - furniture home furnishings	Y	Y	Y
58	Retail trade - eating and drinking	Y	Y	Y
59	Other retail trade	Y	Y	Y
<b>60</b>	<b>Services</b>			
61	Finance, insurance and real estate services	Y	Y	Y
62	Personal services	Y	Y	Y
62.4	Cemeteries	Y	Y	Y
63	Business services	Y	Y	Y
64	Repair services	Y	Y	Y
65	Professional services	Y	Y	Y
65.1	Hospitals, nursing homes	N	N	N
65.1	Other medical facilities	Y	N	N
66	Contract construction services	Y	Y	Y
67	Governmental services	Y	Y	Y
68	Educational services	Y	N	N
69	Miscellaneous services	Y	Y	Y
<b>70</b>	<b>Cultural, entertainment, and recreational</b>			
71	Cultural activities (including churches)	Y	N	N
71.2	Nature exhibits	Y	Y <sup>4</sup>	Y
72	Public assembly	Y	Y	N
72.1	Auditoriums, concert halls <sup>1</sup>	Y	N	N
72.11	Outdoor music shells, amphitheaters	N	N	N
72.2	Outdoor sports arenas, spectator sports	Y	Y	N
73	Amusements	Y	Y	N
74	Recreational activities (including golf courses, riding stables, water recreation)	Y	Y <sup>4</sup>	Y
75	Resorts and group camps	N	N	N
76	Parks	Y	Y	Y
79	Other cultural, entertainment and recreation	Y	Y <sup>4</sup>	Y

SLUCM Standard Land Use Coding Manual, U.S. Urban Renewal Administration and Bureau of Public Roads, 1965.

Y (Yes) Land use and related structures are permitted.

N (No) Land use and related structures are not comparable and shall be prohibited.

1 Not permitted if also in Zone AC-3.

2 Sound attenuation measures to achieve a noise level reduction of 25 dB (outdoor to indoor) are required.

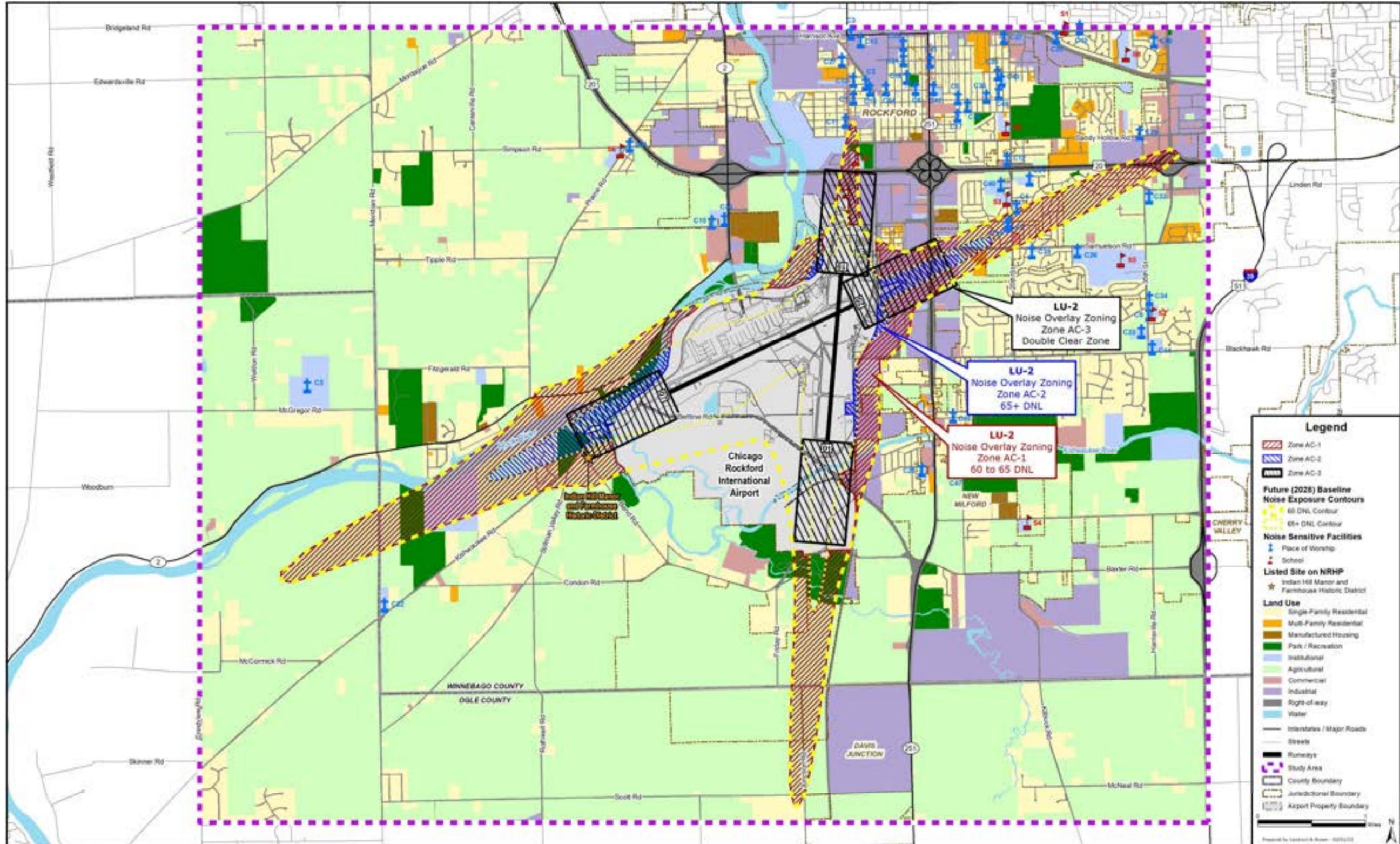
3 Measures to achieve NLR of 30 must be incorporated into the design and construction of mobile homes.

4 Measures to achieve NLR of 25 must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, sleeping areas, and other noise-sensitive areas.

Source: Adapted from Guidelines For Considering Noise In Land Use Planning and Control, Federal Interagency Committee on Urban Noise, June 1980.



EXHIBIT 4-7 | AIRPORT NOISE OVERLAY ZONES



Source: Landrum & Brown analysis, 2023



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: LU-3

**Description:** Measure previously revoked: Amend comprehensive plans to show planned industrial or commercial uses at interchanges of US 20 Bypass and South Main Street – city of Rockford and Winnebago County. Withdrawal of this measure was approved in the 1994 NCP.

**Background and Intent:** Measure LU-3 was disapproved by FAA in the 1990 NCP because the measure did not conform to the statutory and regulatory criteria of reducing or preventing non-compatible land uses within the area covered by the NEM (area was beyond the 65 DNL noise contour). Measure LU-3 was withdrawn in the 1994 NCP. The area referenced in this measure is located outside of the 2008 NEM/NCP 60 DNL noise contour.

**Relationship to 2003 NCP:** N/A

**Status:** N/A

**2023 NCP Action:** N/A

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: LU-4

**Description:** Amend local comprehensive plans by adopting the updated 2028 NCP NEM noise contours as their noise compatibility elements in the plans – City of Rockford and the Counties of Ogle and Winnebago.

**Background and Intent:** Previously approved Measure LU-4 recommends amending local comprehensive plans by adopting the updated 2023 NCP as the noise compatibility element in those documents. It is recommended that the City of Rockford, Winnebago County, and Ogle County implement this measure. The GRAA should encourage the City of Rockford, Winnebago County, and Ogle County to incorporate the 2028 NCP NEM 60 DNL and 65 DNL noise contours and the 2023 NCP into the next update of local comprehensive plans.

A comprehensive plan establishes goals, objectives, and policies for the future development of a community. Comprehensive plans reflect the values of the community and serve as a guide for decision-making. These plans usually include specific recommendations and policies that are used to guide future land use decisions and capital investment strategies in the community. Because a community's goals and priorities may change over time, comprehensive plans should be periodically reviewed and updated.

The activities that occur in one community may directly or indirectly impact neighboring jurisdictions. This is particularly true with airports, where the operations often impact areas beyond the boundaries of the host community. The intent of this measure is that a community's comprehensive plan should identify to what extent these activities may impact its jurisdiction and residents. Based on the findings, objectives and policies should be defined in the plan to assure compatibility with airport operations and implement strategies to avoid or mitigate aircraft noise impacts to residents.

**Relationship to 2003 NCP:** Measure LU-4 was initially approved in the 1990 NCP and subsequently approved for continuation in the 1994 NCP and the 2003 NCP.

**Status:** This measure is partially implemented. Ogle and Winnebago Counties and the City of Rockford have referenced the previous RFD NCPs in comprehensive planning documents historically.

**2023 NCP Action:** Measure LU-4 is to be continued with modification to use the 2028 NEM and 2023 NCP.

**Land Use Compatibility Improvement:** Provides awareness to local planners and the community of potential aircraft noise impacts and overflights. Provides information to planners and community leaders as decisions are being made about land use and future development. Provides the opportunity for GRAA to work with local planners to ensure compatible development.

**Responsible Implementing Parties:** City of Rockford, Winnebago County, Ogle County.



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### **Implementation Steps, Costs, and Schedule:**

**Steps:** The GRAA should forward the adopted NCP and updated 2028 NCP NEM noise contours to the City of Rockford, Winnebago County, and Ogle County, requesting that the updated NCP and NEM be approved as the airport noise compatibility element of the City of Rockford, Winnebago County, and Ogle County comprehensive plans. The next comprehensive plan update for each of the jurisdictions should include the 2028 NCP NEM 60+ DNL noise contour and or reference to the RFD 2023 NCP.

**Costs:** None to GRAA. Minimal administrative costs would accrue to the City of Rockford, Winnebago County, and Ogle County.

**Schedule:** Because this is a continuation of an approved land use management measure, implementation could begin immediately.

**Effects on Other Programs/Measures:** The implementation of this measure is not expected to adversely affect any other mitigation programs or measures and it will enhance the compatibility of land uses surrounding the airport. The implementation of this measure would ensure the effectiveness of Measures LU-2, LU-5, LU-13, and LU-14 because all of these measures pertain to local zoning ordinances and land use planning.



## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: LU-5

**Description:** Adopt guidelines for discretionary review of development projects for the City of Rockford, Counties of Ogle and Winnebago, and the GRAA.

**Background and Intent:** Measure LU-5 recommends discretionary review of development projects for the City of Rockford, Winnebago County, and Ogle County. This would provide GRAA staff an opportunity to review and comment on applications for variance, conditional use, rezoning, and subdivision plan approval. This special notification requirement is not intended to apply to simple applications for building and zoning permits and occupancy certificates. Modifications to Measure LU-5 are recommended to include the 2028 NCP NEM 60+ DNL noise contours.

The noise overlay zones defined in Measure LU-2 could be used as a reference for the City of Rockford, Winnebago County, and Ogle County planners to decide whether or not a proposed development would be located in an area subject to aircraft noise or overflights. If the proposed development would be located in such an area, the planners should include GRAA in the review process. The intent of this measure is to prevent future development of incompatible land uses.

**Relationship to 2003 NCP:** Measure LU-5 was initially approved in the 1990 NCP and subsequently approved for continuation in the 1994 and 2003 NCP.

**Status:** Measure LU-5 was not implemented.

**2023 NCP Action:** Measure LU-5 is to be continued and modified to include 2028 NCP NEM and 2023 NCP.

**Land Use Compatibility Improvement:** May prevent future development of incompatible land use within the 2028 NCP NEM 60+ DNL noise contour.

**Responsible Implementing Parties:** City of Rockford, Winnebago County, Ogle County, GRAA.

#### Implementation Steps, Costs, and Schedule:

This measure was implemented and subsequently modified in the 2003 NCP to include the GRAA.

**Steps:** The GRAA should encourage the city of Rockford, Winnebago County, and Ogle County to coordinate with the GRAA on development projects that would occur within the updated 2028 NCP NEM 60+ DNL noise contour. When comprehensive plans are next updated for each jurisdiction those plans should include the 2028 NCP NEM 60 DNL and 65 DNL noise contours to aid in identifying those areas, which should be included in the discretionary review process.

**Costs:** Minimal administrative costs would accrue to the GRAA. Minimal administrative costs would accrue to the City of Rockford, Winnebago County, and Ogle County.

**Schedule:** The GRAA should officially request that the city and counties establish this policy after it has approved the NCP.

**Effects on Other Programs/Measures:** The continuation of this measure as modified is not expected to adversely affect any other mitigation programs or measures and it will enhance the compatibility of land uses surrounding the airport. This measure should be implemented in conjunction with Measures LU-2, LU-4, LU-13, and LU-14 because all of these measures pertain to local zoning ordinances and land use planning.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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## NOISE COMPATIBILITY PROGRAM MEASURE: LU-6

**Description:** Measure previously revoked: Acquire homes off the approach end of Runway 19 – city of Rockford and the GRAA. Withdrawal of this measure was approved in the 1994 NCP.

**Background and Intent:** Measure LU-6 was initially approved in the 1990 NCP and subsequently withdrawn in the 1994 NCP because the measure was completed before the 1994 NCP was approved by the FAA. This measure consisted of the purchase of 12 single-family residences north of the airport and south of Research Parkway, located in the 65 DNL noise contour.

The intent of this measure was to remove incompatible land uses from the 65 DNL noise contour.

**Relationship to 2003 NCP:** N/A

**Status:** N/A

**2023 NCP Action:** N/A

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: LU-7

**Description:** Measure previously revoked: Encourage Forest Preserve District to consider acquisition of land adjacent to the existing Forest Preserves south of the airport. Withdrawal of this measure was approved in the 1994 NCP.

**Background and Intent:** Measure LU-7 was approved by the FAA as a local prerogative. It recommended that the GRAA encourage the Forest Preserve District to consider the expansion of the three existing forest preserves on the south side of the airport. Since the formulation of this recommended measure, the GRAA embarked on a major airport expansion program. As part of that effort, GRAA was in the process of acquiring large tracts of property south and southwest of the airport, between the present facility and the Kishwaukee River during the 1994 NCP. In view of the possibilities for simultaneously preserving land of high natural value and providing a noise buffer, this measure was recommended to be revoked and substituted by Measure LU-10 in the 1994 NCP.

**Relationship to 2003 NCP:** N/A

**Status:** N/A

**2023 NCP Action:** N/A

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

### Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: LU-8

**Description:** Voluntary acquisition of single-family residences on Blackhawk Island in the 2008 NEM/NCP 65 DNL noise contour.

**Background and Intent:** This previously approved measure recommended that the GRAA “acquire homes and land on Blackhawk Island, relocate residents, redevelop as a park.” Five single-family residences and 16 vacant parcels in the 2000 (future) NCP were acquired after the FAA issued a ROA on the 1994 Part 150 Study. Measure LU-8 would be modified to remove the language concerning the acquisition of vacant land zoned for residential use in the 65 DNL noise contour and redevelopment of the property as a park. Measure LU-8, in the 2003 NCP, recommends only the voluntary acquisition of existing single-family residences on Blackhawk Island in the 2008 NEM 65 DNL noise contour. The homeowners of these residences would be relocated pursuant to 49 CFR Part 24, Uniform Relocation Assistance and Real Property Acquisition Regulations For Federal and Federally Assisted Programs, and FAA Order 5100.37A, Land Acquisition and Relocation Assistance for Airport Projects.

Fifteen single-family residences were located in the 2008 NEM 65 DNL noise contour. Therefore, as modified, Measure LU-8 will continue the voluntary acquisition program for single-family residences in the 65 DNL noise contour. The homeowners would be relocated to a residence not significantly impacted by aircraft noise if they chose to participate in the program. The GRAA would request that Winnebago County change the zoning on all acquired property from residential to a zoning district that is compatible with airport operations.

**Relationship to 2003 NCP:** Measure LU 8 was initially approved in the 1990 NCP and was subsequently approved for revision in the 1994 and 2003 NCP.

**Status:** Measure LU-8 was implemented.

**2023 NCP Action:** Measure LU-8 was implemented. No further FAA action is required.

**Land Use Compatibility Improvement:** Participation in a voluntary acquisition program removed approximately 15 single-family residences and its residents from Blackhawk Island that were impacted by the 2008 NEM 65 DNL noise contour. The zoning on the property has been changed from residential to a zoning district compatible with airport operations.

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

## Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: LU-9

**Description:** Redevelop airport-owned land parcels located along Kishwaukee Street south of Research Parkway

**Background and Intent:** This previously approved measure recommended that the GRAA redevelop airport-owned properties along Kishwaukee Street south of Research Parkway (see Exhibit 4-8). The intent of this measure is to redevelop existing vacant, airport-owned land into revenue-generating uses that are compatible with aircraft operations. This measure has not been implemented, but it is still a viable option for compatible land use.

**Relationship to 2003 NCP:** Measure LU-9 was initially approved in the 1994 NCP and subsequently continued in the 2003 NCP.

**Status:** Measure LU-9 was not implemented.

**2023 NCP Action:** Measure LU-9 is to be continued.

**Land Use Compatibility Improvement:** Allows parcels to be consolidated, resold, and developed with uses compatible with aircraft operations. Ensures land use compatibility near an airport, while at the same time, promoting economic development.

**Responsible Implementing Parties:** GRAA

#### Implementation Steps, Costs, and Schedule:

**Steps:** The GRAA should seek a tenant and a developer for this site. GRAA should take steps to ensure that the proposed use of the property is compatible with aircraft noise.

**Costs:** The implementation of Measure LU-9 would result in a net gain to the FAA and GRAA, due to the redevelopment of the property. Currently, GRAA is not obtaining revenue from this property. If the property were redeveloped and offered building space, GRAA could lease out the property and generate revenue, resulting in a net gain.

**Schedule:** Because this measure is a continuation of an already approved land use management measure, implementation could begin immediately.

**Effects on Other Programs/Measures:** The implementation of this measure is not expected to adversely affect any other mitigation programs or measures and it will enhance the compatibility of land uses surrounding the airport.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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## NOISE COMPATIBILITY PROGRAM MEASURE: LU-10

**Description:** Measure previously revoked: Revoke consideration of transfer of GRAA land of high natural value along the Kishwaukee River to the Forest Preserve or park district to be maintained as a natural area and airport noise buffer.

**Background and Intent:** Measure LU-10 from the 1994 NCP recommended that GRAA consider the transfer of the management of GRAA land of high natural value along the Kishwaukee River to the Forest Preserve or park district to be maintained as a natural area and airport noise buffer.

At the time the 1994 NCP was developed and approved, the Winnebago County Forest Preserve District had expressed strong interest in assuming responsibility for this land to preserve wildlife habitat. In addition, because portions of this land area are forested, wetland, and/or riparian, and are within the Floodway for the Kishwaukee River, the land cannot be used for aviation, commercial, or industrial use. However, no further discussions had occurred for several years, nor have any been initiated by the Forest Preserve or park district, regarding a potential land transfer.

The mitigation of potential impacts resulting from airport development projects nationwide has become more stringent since the FAA issued the ROA on the 1994 NCP. If the management of this land were transferred to a park district, it could be subject to future environmental analysis and potential Section 303(c)<sup>2</sup> impacts, should future airport development projects be proposed. Also, if the GRAA retains ownership of this land, it could be used to mitigate future potential wetland and floodplain impacts that could result from airport development projects. Thus, given the current environmental regulatory climate, it is in the best interest of the GRAA to retain management and ownership of this land. In addition, by withdrawing this measure from the 2003 NCP and not transferring the management of this land, the Winnebago County Forest Preserve District would not incur additional operating costs.

The intent of this measure was to transfer ownership of land that could not be used for aviation, commercial, or industrial use to the Forest Preserve District.

**Relationship to 2003 NCP:** This measure was withdrawn from the 2003 NCP.

**Status:** N/A

**2023 NCP Action:** N/A

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A

<sup>2</sup> Federal statute Title 49 USC 303(c) was previously known as Section 4(f) of the Department of Transportation Act of 1966. The Department of Transportation Act of 1966 was one of the earliest and most significant pieces of transportation legislation relative to environmental protection. Under this Act, it is stated that: "The Secretary shall not approve any program or project which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance as determined by the Federal, state, or local officials having jurisdiction thereof, or any land from an historic structure of national, state, or local significance as so determined by such officials unless: there is no feasible and prudent alternative to the use of such land; and, the project includes all possible planning to minimize harm to the land resulting from such use."



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: LU-11

**Description:** Acquire development and overflight rights via purchase of land use and avigation easement over undeveloped parcel in Runway 7L approach area on south side of Kishwaukee River.

**Background and Intent:** Measure LU-11 applied to a 20-acre parcel of land located between Woodcrest Estates and the Kishwaukee River, and between Kishwaukee Road and the Rock River. Its use was open land, with a small cabin for private recreational use.

This area was primarily located within the 60 DNL noise contour of the proposed 2000 NCP and was zoned to permit low-density residential development, which would be marginally compatible with the future noise exposure levels. The proposed Noise Overlay Zone in Measure LU-2 of the 1994 NCP would not have prohibited residential development in the 65 DNL noise contour. If the contour were to increase in size, a land use control problem would still exist because overlay zoning, which prohibits residential development, must be accompanied by an underlying zone that does not have residences as its principal use. Because this property was not suitable for agricultural, commercial, or industrial uses, it was not likely that the Noise Overlay Zone could protect the airport from future incompatible development of this property.

Outright acquisition of the property by the GRAA would not be required, because the property has no aviation value. Additionally, the present owner did not desire to sell the property. Therefore, an interest in the land, which protected the GRAA from a charge of inverse condemnation and ensured that the land was used for noise-compatible purposes, appeared to fulfill the needs of the GRAA and the current owner if the 65 DNL noise contour were to lengthen to the southwest.

Purchase of a land use and avigation easement over the property by the GRAA would permit the owner and heirs to use the property as it has been used for many years while simultaneously guaranteeing to the GRAA that the property will not be developed for incompatible land use. The property owner did sell a land use and avigation easement to the GRAA.

**Relationship to 2003 NCP:** N/A

**Status:** Measure LU-11 implemented

**2023 NCP Action:** Measure LU-11 was implemented. No further FAA action is required.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: LU-12

**Description:** Offer options of voluntary sale to GRAA or sound insulation to owner of one (single-family) residence south of the airport in the 65 DNL contour of the 1993 NCP.

**Background and Intent:** One single-family residence, located south of Baxter Road, beneath the centerline of Runway 19 departures was temporarily exposed to noise levels above 65 DNL noise contour in the 1994 NCP. This condition was to only occur in the period after the establishment of the UPS hub, but was to end after the extension of Runway 7/25. The homeowner chose to participate in voluntary acquisition.

**Relationship to 2003 NCP:** N/A

**Status:** N/A

**2023 NCP Action:** Measure LU-12 was implemented. No further FAA action is required.

**Land Use Compatibility Improvement:** N/A

**Responsible Implementing Parties:** N/A

**Implementation Steps, Costs, and Schedule:** N/A

**Effects on Other Programs/Measures:** N/A



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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## NOISE COMPATIBILITY PROGRAM MEASURE: LU-13

**Description:** Encourage the City of Rockford and Winnebago County to require plat notes on new subdivision plats and to record the notes on deeds for new subdivisions within the Airport Noise Overlay Zones AC-1 and AC-2.

**Background and Intent:** Measure LU-13 would encourage the city of Rockford and Winnebago County to require plat notes on new subdivision plats and to record the notes on deeds for new subdivisions within Airport Overlay Districts AC-1 and AC-2, which would be based on the 2028 NCP NEM 60-65 and 65+ DNL noise contours as described in Measure LU-2. The intent of this measure is to disclose to a prospective buyer that a plat is located in an area where aviation activity occurs.

Subdivision regulations apply where a parcel is proposed to be subdivided into two or more building lots or tracts. Regulations are established to ensure the orderly and efficient layout and use of land, proper alignment and design of streets, the location and adequacy of public utilities, the availability of open space, and the protection of environmentally-sensitive areas. Subdivision regulations can be used to enhance noise-compatible land development by requiring developers to plat and develop land to minimize noise impacts or reduce the noise sensitivity of new construction.

Establishing certain requirements to include airport compatibility (i.e., the disclosure of aircraft noise exposure and noise levels) as part of the subdivision plat approval process is a strategy that can be implemented by communities. The inclusion of plat notes on subdivided parcels is an administrative responsibility of each jurisdiction that can be achieved with little or no additional cost to the community. Its success as a method of disclosure may be limited because many homebuyers may not review the approved plat map prior to purchasing the property. A more effective mechanism would be to require that the plat note also be recorded on the individual plot plans and recorded on the property deed of all newly subdivided parcels. An example of the language to include as a plat note and in the deed is as follows:

*“This parcel is located in an area where aviation activity occurs. Such activity may include, but is not limited to, aircraft overflights at all times of the day and night, noise, vibration and other associated activities. A study describing this impact in detail is available for inspection at the city of Rockford Planning Division and Winnebago County Planning and Economic Development offices or at the offices of the Greater Rockford Airport Authority.”*

**Relationship to 2003 NCP:** This measure was originally approved in the 2003 NCP.

**Status:** This measure has not been implemented.

**2023 NCP Action:** Measure LU-13 is to be continued with modification to include the 2028 NCP NEM 60+ DNL noise contours.

**Land Use Compatibility Improvement:** This measure would not improve land use compatibility per se, but it would promote disclosure to prospective homebuyers of the airport noise situation in the area.

**Responsible Implementing Parties:** City of Rockford and Winnebago County.



## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### **Implementation Steps, Costs, and Schedule:**

With the publication and FAA Record of Approval of the 2023 NCP Update, this information will be conveyed to Winnebago County, the City of Rockford, the Village of New Milford, and the Village of Davis Junction for implementation at their discretion.

Steps: The GRAA should request that the city of Rockford and Winnebago County amend the subdivision regulations after the 2023 NCP is approved. The city and county could adopt the amendments through local ordinances after review by local officials.

Costs: This measure would be funded by the operating budgets of the city of Rockford and Winnebago County. It would involve minimal administrative expenses to the city and county.

Schedule: The GRAA should request that the city of Rockford and Winnebago County amend the subdivision regulations after the 2023 NCP approval to include the areas within the 2028 NCP NEM 60+ DNL noise contour. Several months are expected to be necessary for review and refinement of the amendment by the city and the county.

**Effects on Other Programs/Measures:** The implementation of this measure is not expected to adversely affect any other mitigation programs or measures.



## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: LU-14

**Description:** Encourage Winnebago County, the City of Rockford, the Village of New Milford, and the Village of Davis Junction not to allow an increase in the residential density in the Agricultural Priority (AG) or Rural Residential (RA-RR) zoning districts (Winnebago County) in the 2028 NCP NEM 60+ DNL noise contour.

**Background and Intent:** The Winnebago County AG zoning district allows 0.3 dwelling units per acre, while the RA-RR zoning district allows 1.7 dwelling units per acre. Both of these zoning districts are within the 2028 NCP NEM 60+ DNL noise contour.

In order to minimize the potential number of people exposed to aircraft noise in the future, GRAA should encourage Winnebago County, and the planning departments of city of Rockford, Village of New Milford and the Village of Davis Junction, which are within one and one-half miles of these two county zoning districts, not to permit zoning changes that would allow a higher density of residential development on parcels within the 2028 NCP NEM 60+ DNL noise contour. This measure should be implemented along with Measure LU-2 to ensure that if new residential development does occur within the 2028 NEM 65+ DNL noise contour it is compatible with aircraft noise.

The intent of this measure is to discourage the encroachment of incompatible land uses toward areas experiencing aircraft noise.

**Relationship to 2003 NCP:** This measure was originally approved in the 2003 NCP.

**Status:** This measure has been implemented.

**2023 NCP Action:** Measure LU-14 is to be continued with modification to include the 2028 NCP NEM 60+ DNL noise contours.

**Land Use Compatibility Improvement:** Minimizes the future number of residences that could be built within the 2028 NCP NEM 60+ DNL noise contour.

**Responsible Implementing Parties:** City of Rockford, Winnebago County, Village of New Milford, Village of Davis Junction, GRAA.



## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### **Implementation Steps, Costs, and Schedule:**

With the publication and FAA Record of Approval of the 2003 NCP Update on November 3, 2003, this information was conveyed to Winnebago County, the City of Rockford, the Village of New Milford, and the Village of Davis Junction for implementation at their discretion. To date the residential density has not been increased in the AG or the RA-RR zoning districts.

Steps: The GRAA should formally encourage Winnebago County, the city of Rockford, the Village of New Milford, and the Village of Davis Junction not to increase the residential density in the AG or RA-RR zoning districts, particularly within the 2028 NCP NEM 60+ DNL noise contour. This formal request could be in the form of a letter from GRAA to Winnebago County Planning and Economic Development, City of Rockford Department of Community Development, Village of New Milford, and Village of Davis Junction.

Costs: None

Schedule: This measure could be implemented immediately.

**Effects on Other Programs/Measures:** The continuation of this measure as modified is not expected to adversely affect any other mitigation programs or measures and it will enhance the compatibility of land uses surrounding the airport. This measure should be implemented in conjunction with Measures LU-2, LU-4, LU-5, and LU-13 because all of these measures pertain to local zoning ordinances and land use planning.



## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: LU-15

**Description:** Offer Residential Sound-Insulation Program for single- and multi-family homes within the 2028 NCP NEM 65+ DNL noise contours and in the defined block rounding areas outside of the 2028 NCP NEM 65 DNL noise contour.

**Background and Intent:** Due to increased cargo operations, especially at night, the noise exposure contours developed for this Part 150 Study update are larger than the noise exposure contours developed for the previous Part 150 Study Update.

This measure includes sound-insulation for eligible single- and multi-family residences within the Noise Mitigation Program Area (NMPA) #1 and #2. The NMPA #1 and #2 were established as part of the 2023 NCP.

The NMPA #1 will include 61 single- and multi-family units located within the 2028 NEM 65+ DNL. NMPA #2 will include 87 single- and multi-family properties located within the block rounding area, as defined, outside of the 65 DNL. The NMPAs were designed based on the 2028 NCP NEM noise contour and local geographical features such as property boundaries, jurisdictional boundaries and roadways (see **Section 4.2.2** and **Exhibit 4-9**, **Exhibit 4-10** and **Exhibit 4-11**).

**Relationship to 2003 NCP:** Measure LU-15 is a new measure.

**Status:** This is a new measure.

**2023 NCP Action:** Measure LU-15 is a new measure.

**Land Use Compatibility Improvement:** This measure converts incompatible single- and multi-family housing units into compatible uses.

**Responsible Implementing Parties:** GRAA

#### Implementation Steps, Costs, and Schedule:

FAA Requested Action: FAA funding will be requested to implement this program.

Steps: This measure should be implemented for eligible housing units within the recommended NMPA #1 and #2 (see **Section 4.2.2** and **Exhibit 4-9**, **Exhibit 4-10** and **Exhibit 4-11**).

Costs: Estimated construction cost to sound insulate units is approximately \$50,000 per unit with an additional 25% (\$12,500 per unit) for administrative costs. These costs will vary significantly depending on construction, age, and condition of individual residences. Total cost (assuming 100% participation) is approximately \$9,250,000 if all 148 properties participate, but will vary depending on the number of participating properties. It is likely some property owners will decline participation, some will not meet interior eligibility criteria, and others will not be eligible due to the age of the property. Specific review of each unit has not been undertaken.

Schedule: This measure could be implemented following receipt of the FAA Record of Approval and based on the availability of funding.

**Effects on Other Programs/Measures:** This measure is not expected to impact other measures or existing programs. However, homeowners located within the NMPA #1 and #2 may have an option to select an avigation easement as an alternate mitigation option. In addition, properties undergoing sound-insulation would have an avigation easement placed on the property and attached to the deed.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

## Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: LU-16

**Description:** Offer Avigation Easements to owner-occupied single-family homes within NMPA #1 if sound-insulation is declined.

**Background and Intent:** This measure will offer a cash payment in exchange for the avigation easement in the event owners decline sound-insulation. The avigation easement would be placed on the property and would be attached to the deed for all future owners. It ultimately deems the property compatible land use.

**Relationship to 2003 NCP:** Measure LU-16 is a new measure.

**Status:** N/A. This is a new measure.

**2023 NCP Action:** Measure LU-16 is a new measure.

**Land Use Compatibility Improvement:** This measure converts incompatible single- and multi-family housing units into compatible uses.

**Responsible Implementing Parties:** GRAA.

#### Implementation Steps, Costs, and Schedule:

**FAA Requested Action:** FAA funding will be requested to implement this program.

**Steps:** This measure should continue for eligible housing units within the 2028 NCP NEM 65+ DNL (see **Section 4.2.1** and **Exhibit 4-9**).

**Costs:** Total costs would be dependent on the number of units that choose to participate and the Fair Market Value (FMV) for each unit, among other expenses.

The cost of the avigation easement is set based on a percentage of the FMV for each unit. The easement almost always does not exceed \$3,000 per unit.

For the single- and multi-family homes the avigation easement cost is estimated at \$183,000. However, that cost is based on all 61 residential units participating as they would have to decline sound-insulation.

**Schedule:** This measure could be implemented following receipt of the FAA Record of Approval and based on the availability of funding.

**Effects on Other Programs/Measures:** This measure is not expected to impact other programs or measures. However, the owners of the single- or multi-family residential units would have to decline sound-insulation. They would be offered an avigation easement that would be placed on the property and attached to the deed.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

## Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: LU-17

**Description:** Adopt Improved Building Codes.

**Background and Intent:** This measure would update the existing building codes to ensure that any new or remodeled residential construction would meet or exceed FAA criteria for sound-insulation.

**Relationship to 2003 NCP:** Measure LU-17 is a new measure.

**Status:** N/A. This is a new measure.

**2023 NCP Action:** Measure LU-17 is a new measure.

**Land Use Compatibility Improvement:** This measure has the potential to prevent the construction of incompatible structures and to reduce interior noise levels for new development or the remodeling of residential property. It would ensure that materials for doors, windows, and insulation are installed to a certain standard to upgrade noise reduction capabilities in order to meet or exceed FAA's interior sound level reduction standards. By meeting the FAA interior noise reduction standards the property would be considered compatible.

**Responsible Implementing Parties:** GRAA.

#### **Implementation Steps, Costs, and Schedule:**

FAA Requested Action: FAA funding will be requested to implement this program.

#### Steps:

- Secure FAA funding.
- Contract with local agency to assist with the development of new building codes and to coordinate with the local jurisdictions.
- Request that all local jurisdictions incorporate the new building codes into their current land use planning documents.

Costs: The total cost of implementation would include contracting with a local agency to assist with the development of the new building codes and the coordination with local jurisdictions. While the local jurisdictions will have some minor administrative costs, most of the cost would be for the development of the new building codes. Total cost is estimated at approximately \$50,000.

Schedule: This measure could be implemented following receipt of the FAA Record of Approval and based on the availability of funding.

**Effects on Other Programs/Measures:** This measure is not expected to impact other programs or measures.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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## NOISE COMPATIBILITY PROGRAM MEASURE: LU-18

**Description:** Develop a Voluntary Fair Disclosure Program

**Background and Intent:** Will disclose through regulations on the seller or their representatives at the time of sale that an existing property could be subjected to aircraft noise. Potential buyers will be made aware before they purchase the property that it is in an area that has the probability of receiving noise from aircraft.

**Relationship to 2003 NCP:** Measure LU-18 is a new measure.

**Status:** N/A. This is a new measure.

**2023 NCP Action:** Measure LU-18 is a new measure.

**Land Use Compatibility Improvement:** This measure has the potential to alert news purchasers of residential property that they are moving into an area that could be subjected to noise from aircraft.

**Responsible Implementing Parties:** GRAA, Local realtors, City of Rockford, and Winnebago County.

**Implementation Steps, Costs, and Schedule:**

FAA Requested Action: FAA approval of new measure.

Steps:

- Have the local realtors work together to develop language for the disclosure program and to coordinate with the local jurisdictions.
- Request that all local jurisdictions incorporate the new disclosure program into their current land use planning documents.

Costs: Minimal cost for the local agencies developing the program language and coordinating with jurisdictions. Total cost is estimated at approximately \$50,000.

Schedule: This measure could be implemented following receipt of the FAA Record of Approval and based on the availability of funding.

**Effects on Other Programs/Measures:** This measure is not expected to impact other programs or measures.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: PM-1 (formerly OM-1)

**Description:** Noise Compatibility Plan (NCP) Implementation Compliance.

**Background and Intent:** This previously approved measure provides for monitoring compliance with the recommended Noise Compatibility Plan (NCP). The GRAA staff should periodically check with the ATCT regarding operational compliance with the noise abatement part of the NCP, as well as with business users, and air carriers.

The intent of this measure is to foster the implementation of land use planning measures that are to be implemented by local planning agencies as part of the land use part of the NCP. Therefore, GRAA staff should formally request that local planning officials implement each specific land use planning measures recommended in the updated NCP. Follow-up and technical assistance should be provided to the extent required. Typically, it is the lack of direct involvement by airport sponsors that accounts for Part 150 land use planning recommendations not being implemented. This measure would disclose any future incompatible land uses that may occur as the result of changes in airport facilities or operations.

**Relationship to 2003 NCP:** Measure PM-1 was approved for continuation in 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP.

**2023 NCP Action:** Measure PM-1 is to be continued.

**Responsible Implementing Parties:** GRAA

**Implementation Steps, Costs, and Schedule:**

FAA Requested Action: FAA approval of continued measure.

Steps: The GRAA would adopt the 2023 NCP and the FAA would issue an Record of Acceptance. GRAA staff would then formally request that local planning officials implement each specific land use management measure recommended in the updated NCP. Periodically, GRAA staff will check with the ATCT to ensure operational compliance with the updated NCP.

Costs: Minimal administrative costs.

Schedule: Because this is a continuation of an approved measure, implementation could continue.

**Effects on Other Programs/Measures:** This measure is not expected to impact other programs or measures.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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## NOISE COMPATIBILITY PROGRAM MEASURE: PM-2 (formerly OM-2)

**Description:** Continue Noise Complaint Response System.

**Background and Intent:** The airport staff should continue to receive noise complaints on an as-required basis. Due to the low level of noise complaints, a formal system is not required. However, a more formal system of complaint logging should be used by the airport staff. Data can be categorized, and the information used as a basis for future noise abatement committee meetings.

**Relationship to 2003 NCP:** Measure PM-2 was approved for continuation in 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP.

**2023 NCP Action:** Measure PM-2 is to be continued.

**Responsible Implementing Parties:** GRAA

**Implementation Steps, Costs, and Schedule:**  
FAA Requested Action: FAA approval of continued measure.  
Steps: The airport staff can develop a simple form to be used to record the information received by the community.  
Costs: Minimal administrative costs for the airport.  
Schedule: Because this is a continuation of an approved measure, implementation could continue.

**Effects on Other Programs/Measures:** This measure is not expected to impact other programs or measures.



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## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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### NOISE COMPATIBILITY PROGRAM MEASURE: PM-3 (formerly OM-3)

**Description:** Perform Regular Updates to the Noise Exposure Maps (NEMs) and Review of Noise Compatibility Program (NCP).

**Background and Intent:** The NEMs should be updated every five years or when there are significant changes in operating levels and patterns in accordance with the FAA's guidelines for determining what constitutes a potentially significant increase in operations (1.5 decibel (dB) DNL increase in the area impacted by 65+ DNL). The NCP should be updated every five years, or as necessary, to reflect any broader changes in the nature of aircraft noise surrounding the Airport. Should any on-airport development, such as runway extensions or significant modifications to ground facilities, enlarge the area of incompatible use exposed to aircraft noise above 65 DNL, the NCP should be updated prior to the implementation of those improvements. A full update may not be required, but rather, a targeted assessment of the changes occasioned by specific development projects may suffice to bring the NCP to conformity and to qualify additional areas for NCP programs, if appropriate.

**Relationship to 2003 NCP:** Measure PM-3 was approved for continuation in 2003 NCP.

**Status:** Measure was implemented as approved in the 2003 NCP.

**2023 NCP Action:** Measure PM-3 is to be continued.

**Responsible Implementing Parties:** GRAA

#### Implementation Steps, Costs, and Schedule:

FAA Requested Action: FAA approval of continued measure.

#### Steps:

- Evaluate the need of NEM or NCP update based on conditions.
- If appropriate, retain a qualified planning consultant to conduct the update(s).
- Complete and publish the results, modifying or expanding NCP programmatic boundaries as appropriate at the time of update.

Costs: It is estimated that the NEM update could be accomplished for approximately \$350,000 to \$400,000. An NEM/NCP could be updated at an estimated cost of \$650,000 to \$700,000 (assuming only a minimal review of existing abatement measures is necessary). Both updates are eligible for funding through FAA AIP grant monies at 80 percent FAA participation.

Schedule: NEM update in 2028, with NCP update as needed based on operational changes or airfield changes that affect aircraft operations.

**Effects on Other Programs/Measures:** Reviews all other programs and measures to assure their incorporation into the description of the noise condition at the airport.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

## Greater Rockford Airport Authority

### NOISE COMPATIBILITY PROGRAM MEASURE: PM-4 (formerly OM-4)

**Description:** Establish a Pilot/Community Awareness Program.

**Background and Intent:** A Pilot/Community Awareness Program would provide information to air carriers, ATC personnel, and local communities.

Information about the noise abatement measures would be published in the form of posters and/or flyers for pilots and would also be given to the airlines and fixed-based operators (FBOs) to display in locations where pilots would pick up the materials. A brochure would be created for interested citizens and local officials to summarize the NCP measures. A summary of the NCP could be placed on the GRAA website as another means of providing information to the public.

The intent of this measure is to demonstrate to the community that the GRAA is being pro-active in addressing the concerns of local communities. This program would also provide another forum for the GRAA to share information and educate the airlines, airport tenants, and the community about the NCP.

**Relationship to 2003 NCP:** Measure PM-4 was approved for continuation in 2003 NCP.

**Status:** Measure was not implemented

**2023 NCP Action:** Measure PM-4 is to be continued.

**Responsible Implementing Parties:** GRAA

#### Implementation Steps, Costs, and Schedule:

FAA Requested Action: FAA approval of continued measure

Steps: The GRAA would adopt the 2023 NCP and the FAA would issue an ROA. Posters and flyers would be published for pilots and would be provided to the airlines and fixed-based operators (FBOs) to display in locations where pilots would pick up the materials. A brochure summarizing the NCP would be mailed to interested citizens and local officials.

Costs: Cost to GRAA of developing, printing, and distributing materials would be approximately \$10,000 - \$20,000

Schedule: This measure could be implemented following receipt of the FAA ROA, approximately 2023 - 2024. Subject to GRAA and FAA funding availability.

**Effects on Other Programs/Measures:** The implementation of this measure is not expected to adversely affect any other programs or measures.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM MEASURE: PM-5 (formerly OM-5)

**Description:** Publication of Instrument Departure Procedures for Runways 1, 19, and 25.

**Background and Intent:** An instrument departure procedure (DP) is an ATC coded procedure developed to simplify the communication of pilot instructions between the ATCT and the pilot from departure to the transition to enroute airspace.

In order to assure that the noise abatement procedures recommended for Runways 1, 19, and 25 are properly implemented and executed, the GRAA staff should publish the DPs for Runways 1, 19, and 25. DPs are published in textual and graphic form in the *IFR Take-Off Minimums and Departure Procedures Section, Section C*, of the Terminal Procedures Publications that are published by the FAA National Aeronautical Charting Office. The DPs for RFD should be published graphically and named. The procedure name would be listed in Section C of the Terminal Procedures Publications by airport name and runway.

This intent of this measure is to simplify the communication of pilot instructions between the ATC and the pilot from departure to the transition to enroute airspace and assures that the noise abatement procedures recommended for Runways 1, 19 and 25 are property implemented and executed.

**Relationship to 2003 NCP:** PM-5 was approved in the 2003 NCP.

**Status:** Measure was not implemented

**2023 NCP Action:** Measure PM-5 is to be continued.

**Responsible Implementing Parties:** GRAA

**Implementation Steps, Costs, and Schedule:**  
*FAA Requested Action:* FAA approval of continued measure.  
*Steps:* The GRAA would adopt the 2023 NCP and the FAA would issue an ROA.  
*Costs:* Internal GRAA administrative costs to ensure approval and publication.  
*Schedule:* This measure could be implemented following receipt of the FAA ROA, approximately 2023-2024.

**Effects on Other Programs/Measures:** The implementation of this measure is not expected to adversely affect any other programs or measures.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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## NOISE COMPATIBILITY PROGRAM MEASURE: PM-6 (formerly OM-6)

**Description:** Update airport information in the *Airport Facilities Directory*.

**Background and Intent:** The *Airport Facilities Directory* contains airport-specific information including the airport identifier, the location of the nearest town or navigational aid, the number of runways, threshold crossing heights, and air traffic pattern altitudes.

The intent of this measure is to update information concerning RFD in the *Airport Facilities Directory* to include a notice of the approved noise abatement procedures and to update the air traffic pattern altitudes used at RFD.

**Relationship to 2003 NCP:** This is a continuation of an existing measure.

**Status:** Measure was implemented as approved in the 2003 NCP.

**2023 NCP Action:** Measure PM-6 is to be continued.

**Responsible Implementing Parties:** GRAA

**Implementation Steps, Costs, and Schedule:**

FAA Requested Action: FAA approval of continued measure.

Steps: The GRAA would adopt the 2023 NCP and the FAA would issue an ROA.

Costs: Internal GRAA administrative costs to ensure approval and publication.

Schedule: This measure could be implemented following receipt of the FAA ROA, approximately 2023-2024.

**Effects on Other Programs/Measures:** The implementation of this measure is not expected to adversely affect any other programs or measures.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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## NOISE COMPATIBILITY PROGRAM MEASURE: PM-7

**Description:** Initiate Community Roundtable or Noise Abatement Committee.

**Background and Intent:** The airport staff should develop a noise abatement committee that brings together airport staff, FAA ATC personal, airline representatives, FBOs, officials of local governmental entities, and also representatives from impacted neighborhoods to review and discuss noise issues on at least a quarterly basis. The noise complaint logging, described in Measure PM-2 above, can be used as a basis for the discussion.

**Relationship to 2003 NCP:** This is a new measure.

**Status:** N/A. This is a new measure.

**2023 NCP Action:** Measure PM-7 is a new measure.

**Responsible Implementing Parties:** GRAA

**Implementation Steps, Costs, and Schedule:**

FAA Requested Action: FAA approval of new measure.

Steps: The airport staff can develop a list of interested parties to participate in the committee.

Costs: Minimal time for the airport and other parties to attend the meetings, plus some minimal administrative costs to document meeting minutes, distribute agendas and other material.

Schedule: This measure could be implemented following receipt of the FAA ROA, approximately 2023-2024.

**Effects on Other Programs/Measures:** The implementation of this measure is not expected to adversely affect any other programs or measures.



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## 4.2.2 Recommended Noise Mitigation Program Area

This section describes the recommended Noise Mitigation Program Area (NMPA) included in the RFD 2023 NCP. The NMPA encompasses two (2) general areas. **Exhibit 4-8, Recommended Noise Mitigation Program Area (NMPA)** illustrates the recommended NMPA and the Future (2028) NCP NEM contours. NMPA #1 was divided into two (2) areas within the 65 DNL noise contour. In order to assist in understanding the block rounding boundaries outside the 65 DNL noise contour, NMPA #2 was divided into four (4) areas for the purpose of this explanation. The area to the southwest of the airport within the 65 DNL is considered NMPA #1a and the area to the southwest outside the 65 DNL is considered NMPA #2a. **Exhibit 4-9, Noise Mitigation Program Area (NMPA) - West** shows only the NMPA #1a and #2a boundary, as well as geographical features that the boundary was based upon and impacted structures within the boundary. The area to the northeast of the airport inside the 65 DNL is considered NMPA #1b and the area to the northeast of the airport outside the 65 DNL is considered NMPA #2b, #2c, and #2d. **Exhibit 4-10, Noise Mitigation Program Area (NMPA) - East** shows the four (4) areas that make up the NMPA #1b and #2 b, c, & d boundaries as well as the geographical features the boundaries were based upon and the residential structures impacted within each area.

In order to define the boundaries, a broader description of these areas are described below:

- **NMPA #1** – This is defined as the area highlighted in blue and within the 65+ DNL contours. This area includes 41 single-family residential units and 20 multi-family residential units that are identified in **Exhibit 4-9** and **Exhibit 4-10** with green dots. The 61 residential units would have an avigation easement attached to the deed in exchange for participation in the sound-insulation program. In addition, if the owner of the residential units decline sound insulation, owner-occupied properties would be offered an avigation easement that would be placed on the property and attached to the deed. The description of the mitigation areas within the 65+ DNL (NMPA #1) are explained below.
- **NMPA #2** – This is defined as the area highlighted in an orange cross-hatched pattern outside of the 65 DNL noise contours. This area includes 51 single-family residential units and 36 multi-family residential units that are identified in **Exhibit 4-9** and **Exhibit 4-10** with orange dots. The 87 residential units would have an avigation easement attached to the deed in exchange for participation in the sound-insulation program. The description of the block rounding areas (NMPA #2) is also explained below.

**NMPA #1a:** Includes the properties within the 65 DNL noise contour to the southwest of the airport within the Woodcrest Estates subdivision including all the homes on Deerwood Trail, Westwood Road, and Meadowood Lane, along with some of the homes on Woodcrest Parkway, Horizon Terrace, and Horizon Drive.

**NMPA #1b:** Includes the properties within the 65 DNL noise contour to the northeast of the airport along Samuelson Road, within the Valley Pines subdivision on Revelation Lane, and within the Monarch Acres subdivision on Radnor Drive.

**NMPA #2a:** Includes the properties outside the 65 DNL noise contour to the southwest of the airport within the Woodcrest Estates subdivision including some of the homes on Woodcrest Parkway, Horizon Terrace, and Horizon Drive out to Kishwaukee Road.

**NMPA #2b:** Includes the properties outside the 65 DNL noise contour to the northeast of the airport on Samuelson Road between the Frontage Road and Revelation Lane.

**NMPA #2c:** Includes the properties outside the 65 DNL noise contour to the northeast of the airport within the Valley Pines subdivision on Revelation Lane and Valley Pines Drive.



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**NMPA #2d:** Includes the properties outside the 65 DNL noise contour to the northeast of the airport in the Monarch Acres subdivision on Radnor Drive, Carlisle Drive, Chesterfield Avenue, Wellington Road, and 20th Street.

The NMPAs are based on the Future (2028) NCP NEM contours developed for this NCP update. Per FAA Order 5100.38D, noise mitigation may undertake block rounding to “...include parcels continuous to the project area .....” to include a reasonable additional number of otherwise ineligible parcels contiguous to the project area, if necessary to achieve equity in the neighborhood.<sup>3</sup> The requirements for block rounding are defined in the “*AIP Handbook, Change 1, dated September 26, 2019, Appendix R. Noise Compatibility Planning/Projects, Section R-9, Block Rounding, Table R-2, Block Rounding Requirements*”. All of the property identified both inside (NMPA #1) and outside (NMPA #2) the DNL 65 noise contour are subject to the new FAA eligibility requirements. In addition, all properties must have been built prior to October 1, 1998 to be eligible. The final eligibility determination based on the build date will be made following approval of the program and once the program is underway. **Table 4-4, NMPA Properties Considered for Sound-Insulation**, presents the summary of the single-family and multi-family properties being considered for mitigation within each of the NMPA boundaries.

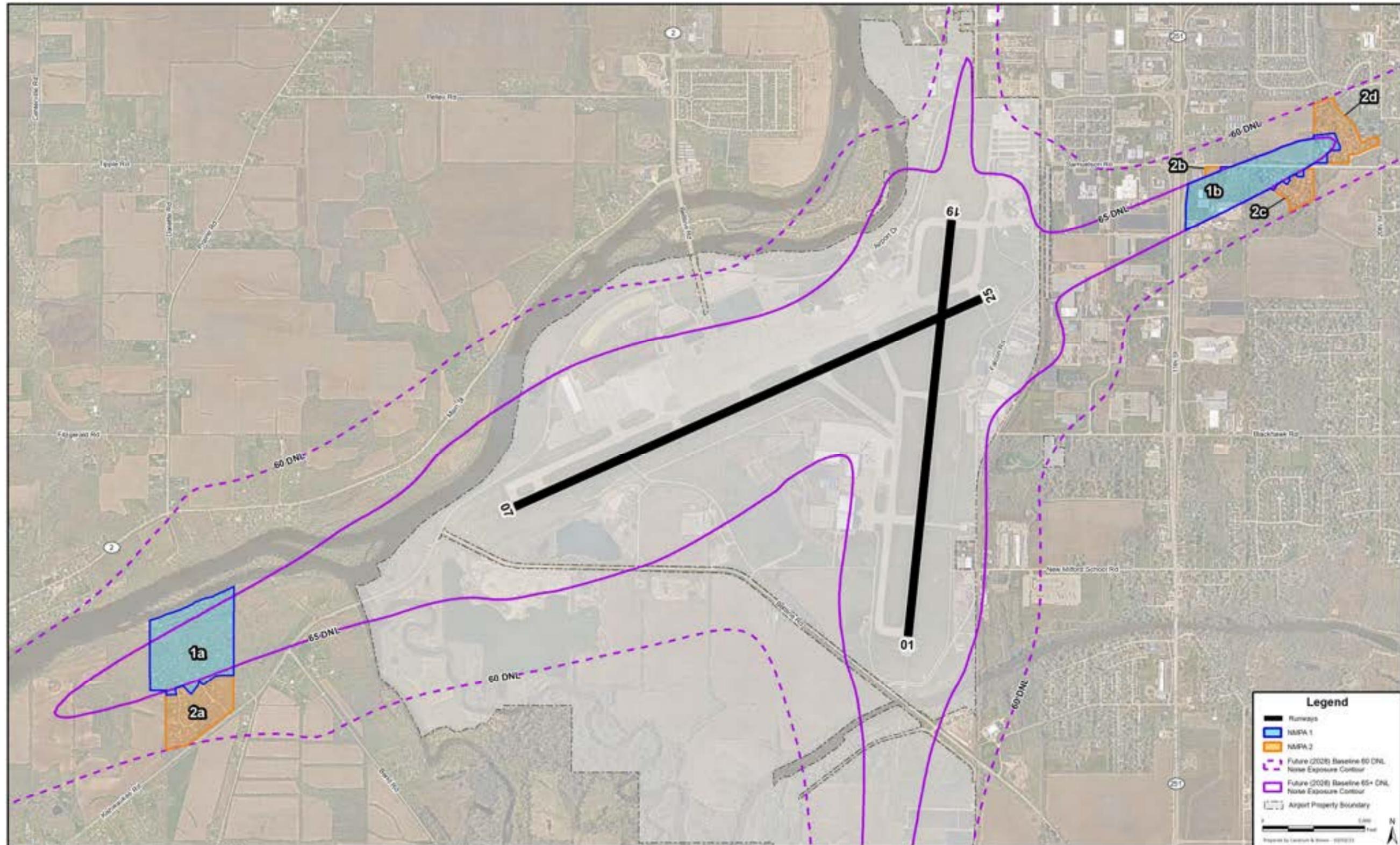
**TABLE 4-4 | NMPA PROPERTIES CONSIDERED FOR SOUND-INSULATION**

Noise Mitigation Program Area (NMPA)	Single-Family Units	Multi-Family Units	Total Units
#1a	30	0	30
#1b	11	20	31
#2a	20	0	20
#2b	4	0	4
#2c	0	36	36
#2d	27	0	27
<b>Total</b>	<b>92</b>	<b>56</b>	<b>148</b>

<sup>3</sup> U.S. Department of Transportation, Federal Aviation Administration, Order 5100.38D, Airport Improvement Program Handbook, Appendix R, Noise Compatibility Planning/Projects, September 30, 2014.



EXHIBIT 4-8 | RECOMMENDED NOISE MITIGATION PROGRAM AREAS (NMPA)



Source: Landrum & Brown analysis, 2023.



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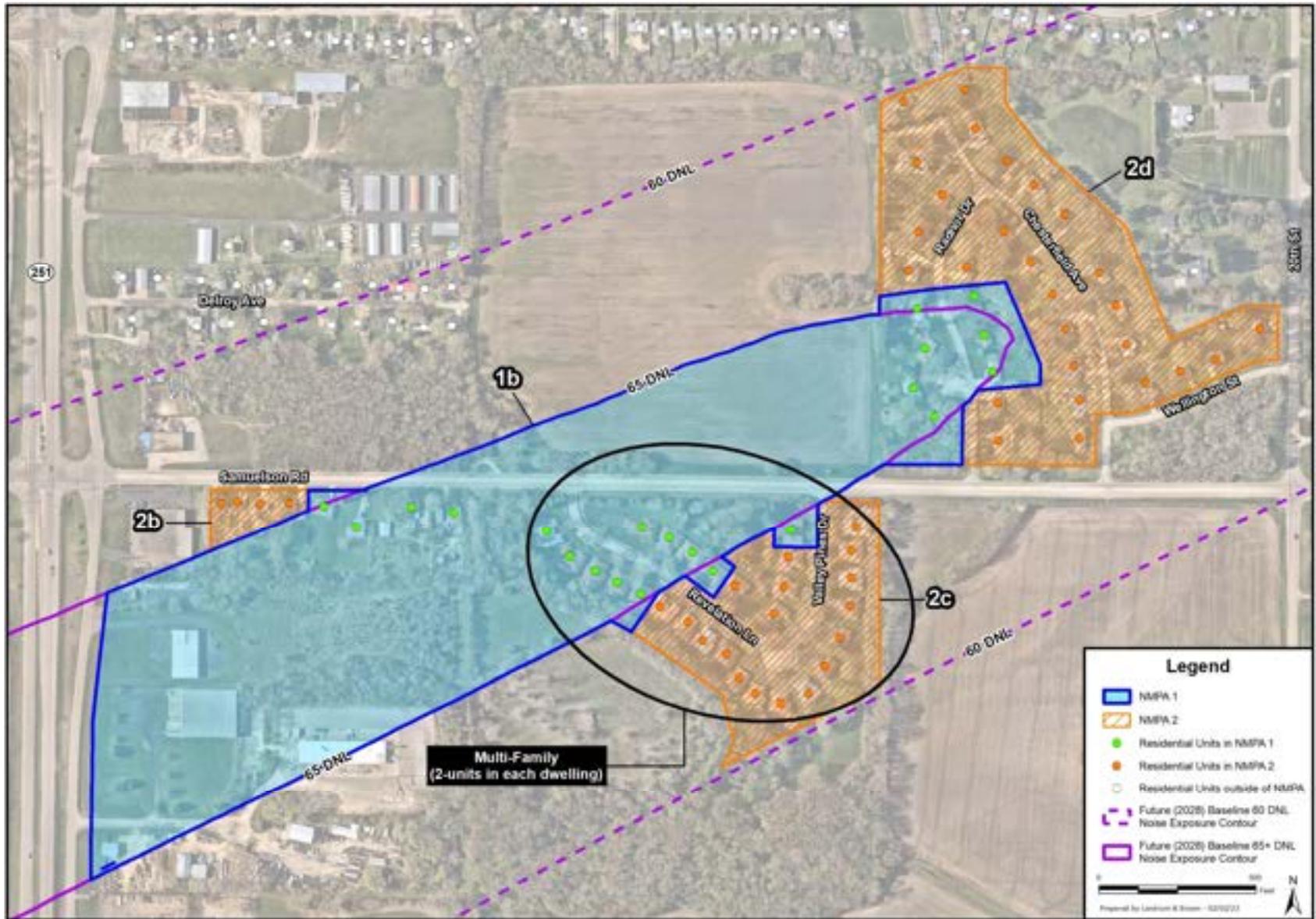


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## EXHIBIT 4-10 | NOISE MITIGATION PROGRAM AREA (NMPA) - EAST



Source: Landrum & Brown analysis, 2023.



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### 4.2.3 Recommended Land Use Management Plan

**Exhibit 4-11, *Land Use Management Plan*** illustrates the complete Land Use Mitigation measures recommended for the RFD 2023 NCP. The map illustrates LU-2, LU-4, LU-5, LU-9, LU-13, LU-14, LU-15, LU-16, LU-17, LU-18. Combined these measures constitute the Land Use Management Plan for the RFD 2023 NCP.



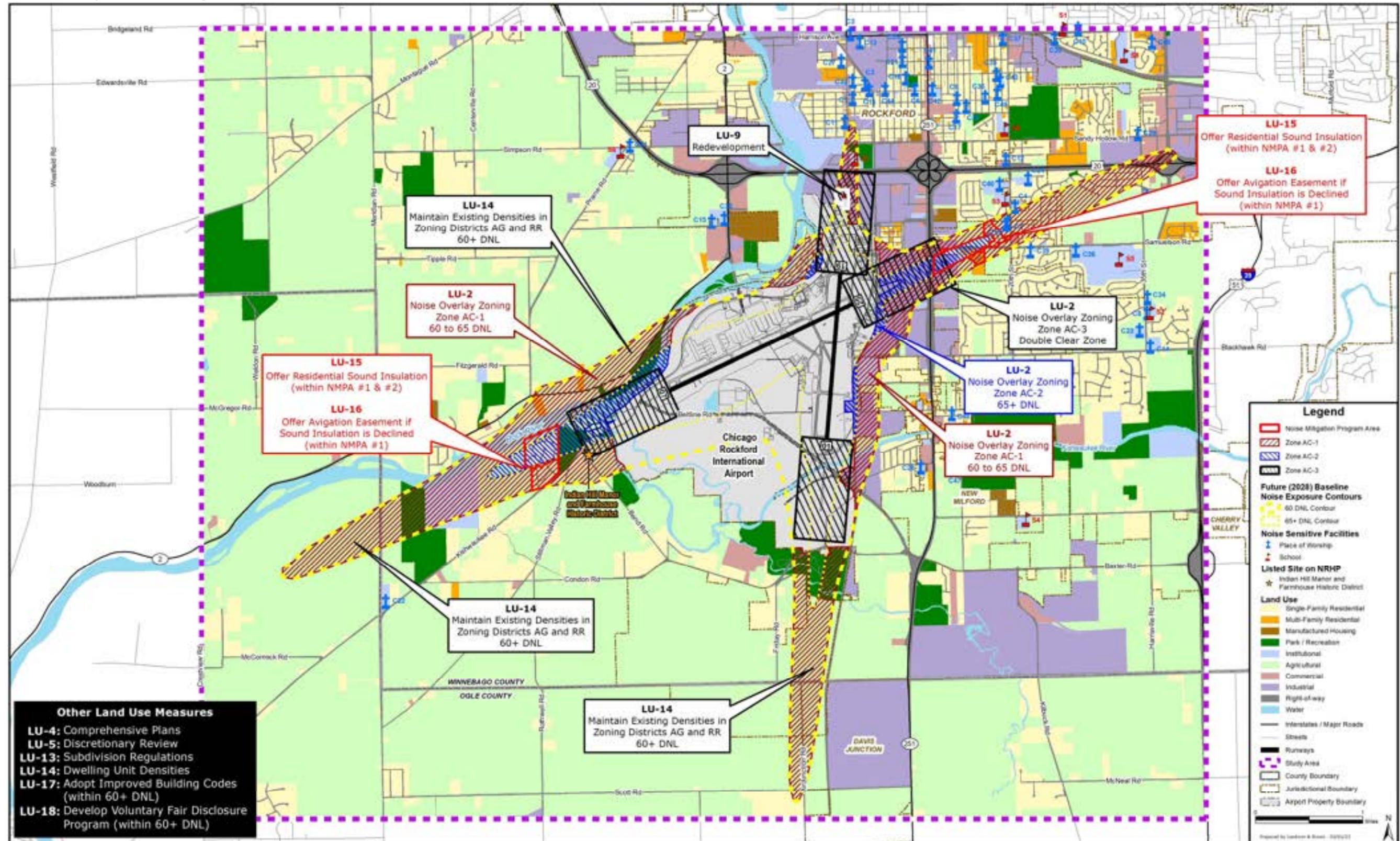
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EXHIBIT 4-11 | Land Use Management Plan



**Other Land Use Measures**

- LU-4: Comprehensive Plans
- LU-5: Discretionary Review
- LU-13: Subdivision Regulations
- LU-14: Dwelling Unit Densities
- LU-17: Adopt Improved Building Codes (within 60+ DNL)
- LU-18: Develop Voluntary Fair Disclosure Program (within 60+ DNL)

Source: Landrum & Brown analysis, 2023



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## » 4.3 Noise Compatibility Program Costs

The airport, supplemented by funding from the FAA, would incur the vast majority of the direct costs associated with the implementation of the recommended RFD 2023 NCP measures. The majority of the costs are associated with either sound-insulation, or aviation easements of eligible housing units within the recommended NMPA boundaries. **Table 4-1** above provided the number of housing units located within the DNL 65+ dB noise exposure contour of the Future (2028) NCP NEM contours. Furthermore, the airport has committed to mitigate eligible housing units in the vicinity of the Future (2028) NCP NEM DNL 65 dB noise exposure contours that are within the block rounding areas identified as NMPA #2 (a, b, c, & d), subject to final eligibility determination.

Costs for completion of the program have been estimated in 2023 dollars and are presented in **Table 4-5, Noise Compatibility Program Implementation Costs**. The total estimated cost for all NCP recommendations, is approximately \$10,000,000 plus additional operational, maintenance, and administrative costs. Note that this cost includes the residential sound-insulation program, easement acquisition, and other measures. This cost estimate assumes 100 percent participation in the program by eligible property owners. These cost estimates are based on the consultant team's preliminary assessment and are subject to change once the measures are further evaluated prior to implementation. The airport-funded mitigation actions recommended for implementation may be eligible for Federal matching funds amounting to approximately 80 percent of the total program cost, as funding becomes available.



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**TABLE 4-5 | NOISE COMPATIBILITY PROGRAM IMPLEMENTATION COSTS**

MEASURE ID	TYPE OF MEASURE	DIRECT COST (TOTAL)	DIRECT COST TO FAA (80% SHARE)	DIRECT COST TO AIRPORT (20% SHARE)	DIRECT COST TO LOCAL GOVERNMENT	DIRECT COST TO USERS
<b>ABATEMENT MEASURES</b>						
No abatement measures recommended for inclusion in the NCP						
<b>SUBTOTAL</b>		--	--	--	--	--
<b>MITIGATION MEASURES (CORRECTIVE)</b>						
LU-15	Offer Residential Sound Insulation to 53 Residential Units within the 65 DNL Noise Contour (NMPA 1a & 1b) and 95 Residential Units outside the 65 DNL Noise Contour (NMPA 2a, 2b, 2c, & 2d)	\$9,250,000	\$7,400,000	\$1,850,000	None	None
LU-16	Offer Avigation Easements to Owner-Occupied Single- and Multi-Family Homes within NMPA #1 if Sound-Insulation is Declined	\$183,000	\$146,400	\$36,600	None	None
<b>SUBTOTAL <sup>(1)</sup></b>		<b>\$9,433,000</b>	<b>\$7,546,400</b>	<b>\$1,886,600</b>	<b>Minimal administrative costs; plus loss of tax base</b>	<b>None</b>



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**TABLE 4-5 | NOISE COMPATIBILITY PROGRAM IMPLEMENTATION COSTS (CONTINUED)**

MEASURE ID	TYPE OF MEASURE	DIRECT COST (TOTAL)	DIRECT COST TO FAA (80% SHARE)	DIRECT COST TO AIRPORT (20% SHARE)	DIRECT COST TO LOCAL GOVERNMENT	DIRECT COST TO USERS
<b>MITIGATION MEASURES (PREVENTATIVE)</b>						
LU-2	Adopt Noise Overlay Zoning	Minimal	None	None	Minimal	None
LU-4	Amend Local Comprehensive Plans	Minimal	None	None	Minimal	None
LU-5	Adopt Guidelines for Discretionary Review of Development Projects	Minimal	None	None	Minimal	None
LU-13	Encourage the City of Rockford and Winnebago County to Require Plat Notes on New Subdivision Plats	Minimal	None	None	Minimal	None
LU-14	Encourage Winnebago County, the City of Rockford, and the Villages of New Milford and Davis Junction Not to Allow an Increase in the Residential Density in the AG or RR Zoning Districts	Minimal	None	None	Minimal	None
LU-17	Adopt Improved Building Codes	\$50,000	\$0	\$50,000	Minimal	None
LU-18	Develop a Voluntary Fair Disclosure Program	\$50,000	\$0	\$50,000	Minimal	None
<b>SUBTOTAL</b>		<b>\$100,000</b>	<b>\$0</b>	<b>\$100,000</b>	<b>Minimal administrative costs; plus loss of tax base</b>	<b>None</b>



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TABLE 4-5 NOISE COMPATIBILITY PROGRAM IMPLEMENTATION COSTS (CONTINUED)

MEASURE ID	TYPE OF MEASURE	DIRECT COST (TOTAL)	DIRECT COST TO FAA (80% SHARE)	DIRECT COST TO AIRPORT (20% SHARE)	DIRECT COST TO LOCAL GOVERNMENT	DIRECT COST TO USERS
<b>PROGRAM MANAGEMENT MEASURES</b>						
PM-1	Noise Compatibility (NCP) Implementation Compliance	Minimal Administrative Costs	None	None	None	None
PM-2	Noise Complaint Response System & Computer Database	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
PM-3	Perform Regular Updates to the NEMs and Review of NCP	NEM Update: \$350,000 to \$400,000 NEM/NCP Update: \$650,000 to \$750,000	NEM Update: \$280,000 to \$320,000 NEM/NCP Update: \$520,000 to \$600,000	NEM Update: \$70,000 to \$80,000 NEM/NCP Update: \$130,000 to \$150,000	None	None
PM-4	Establish a Pilot/Community Awareness Program	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
PM-5	Publication of Instrument Departure Procedures	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
PM-6	Update Airport Information in the Airport Facilities Directory	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
PM-7	Initiate Community Roundtable or Noise Abatement Committee	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
<b>SUBTOTAL</b>		<b>\$350,000 to \$750,000</b>	<b>\$280,000 to \$600,000</b>	<b>\$70,000 to \$150,000</b>	<b>None</b>	<b>None</b>
<b>ALL NOISE COMPATIBILITY PROGRAM MEASURES</b>						
<b>TOTAL</b>		<b>\$10,283,000 to \$9,883,000</b>	<b>\$8,146,400 to \$7,826,400</b>	<b>\$2,136,600 to \$2,056,600</b>	<b>Minimal</b>	<b>Minimal</b>

Notes: (1) Total cost for land use mitigation measures is the maximum possible mitigation cost and assumes 100 percent participation in program by eligible property owners. Property owners participating would also have to ensure they meet both the eligibility requirements for interior noise levels and the year the property was built. In addition, some property owners may choose one measure over another which would reduce overall costs. All costs are in 2023 dollars

Source: Landrum & Brown analysis, 2023, and based on comparable mitigation programs at other U.S. airports.



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## » 4.4 Noise Compatibility Program Implementation

As shown in **Table 4-5**, no new Noise Abatement measures are recommended to be included in the NCP. However several previously approved measures have been modified an/or recommended to continue to remain consistent with current operating conditions and controller instructions. Noise Abatement measures NA-7, NA-8, NA-9, NA-12, NA-13, NA-14 are recommended to continue with modification and will require FAA re-approval as voluntary noise abatement measures.

The implementation of the existing Land Use Mitigation measures LU-2, LU-4, LU-5, LU-13, LU-14 will require FAA re-approval to become part of the NCP as the measures are recommended to be continued with modification to include the Future (2028) NCP NEM. New Land Use Mitigation measures LU-15, LU-16, LU-17 and LU-18 will also require FAA approval to become part of the NCP.

Recommended Program Management measures PM-1 through PM-6 are being continued with slight modifications. New Program Management measure PM-7 can be implemented at the discretion of the airport. However, this measure will require FAA approval in order to be eligible for Federal funding.

It is anticipated that the FAA will issue a Record of Approval (ROA) for all twenty seven (27) of the Noise Abatement, Land Use Mitigation and Program Management measures recommended in the RFD 2023 NCP.



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## Appendix A



# FAA Policies, Guidance, and Regulations



# Appendix A

## FAA Policies, Guidance, and Regulations

### » A.1 Federal Laws and Policies and Research Related to Noise

This appendix presents information regarding noise and land use criteria that may be useful in the evaluation of noise impacts. With respect to airports, the Federal Aviation Administration (FAA) has a long history of publishing noise and land use assessment criteria. These laws and regulations provide the basis for local development of airport noise compatibility plans, analyses of airport impacts, and the enactment of noise compatibility policies. Other agencies, including the United States Environmental Protection Agency (USEPA) and the Department of Defense (DOD), have developed noise and land use criteria. A summary of some of the more pertinent regulations and guidelines is presented in the following paragraphs.

#### A.1.1 Noise Control Act

Congress passed the Noise Control Act (42 U.S.C. § 4901 et seq.) in 1972, which established a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. This act set forth the foundation for conducting research and setting guidelines to restrict noise pollution.

#### A.1.2 U.S. Environmental Protection Agency Noise Assessment Guidelines

In response to the Noise Control Act, the USEPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. This document identifies safe levels of environmental noise exposure without consideration for economic cost for achieving these levels. In this document, 55 decibel (dB) day-night average sound level (DNL) is identified as the requisite level with an adequate margin of safety for residential and recreational uses. This document does not constitute USEPA regulations or standards; rather, it is intended to “provide state and local governments as well as the Federal government and the private sector with an informational point of departure for the purpose of decision-making.”

#### A.1.3 Federal Aviation Noise Abatement Policy

On November 18, 1976, the U.S. Department of Transportation and FAA jointly issued the Federal Aviation Noise Abatement Policy. This policy recognized aircraft noise as a major constraint on the further development of commercial aviation and established key responsibilities for addressing aircraft noise. The policy stated that the Federal Government has the authority and responsibility to regulate noise at the source by designing and managing flight procedures to limit the impact of aircraft noise on local communities; and by providing funding to airports for noise abatement planning.

#### A.1.4 Aviation Safety and Noise Abatement Act of 1979

The Aviation Safety and Noise Abatement Act of 1979 (ASNA), which is codified as 49 U.S.C. § 47501-47510, set forth the foundation for the airport noise compatibility planning program outlined in 14 Code of Federal Regulations (CFR) Part 150 (see Section A.1.8). This act established the requirements for conducting noise compatibility planning. In addition, the act provided assistance to airport operators in applying for funding to undertake such planning.



### A.1.5 Airport Noise and Capacity Act of 1990

The Airport Noise and Capacity Act of 1990 (ANCA) established two broad directives for the FAA: 1) to establish a method by which to review airport noise and access/use restrictions imposed by airport proprietors, and 2) to institute a program to phase-out Stage 2 aircraft over 75,000 lbs. by December 31, 1999, as defined by 14 CFR Part 36 (see Section A.1.6). To implement ANCA, the FAA amended 14 CFR Part 91 (see Section A.1.7) and issued 14 CFR Part 161 (see Section A.1.9).

### A.1.6 14 CFR Part 36

Title 14, Part 36, of the CFR sets forth noise levels that are permitted for aircraft of various weights, engine number, and date of certification. Originally released in 1974 as a result of Congress' modification of the Federal Aviation Act of 1958 through the Noise Control Act of 1972, aircraft were divided into three classes: Stage 1, Stage 2, Stage 3, based on the amount of noise they produced at three specific noise measurement locations during certification testing. In addition, Stage 4 (adopted in 2005) and Stage 5 (adopted in 2017) are also described below.

**Stage 1** – Includes the oldest and loudest aircraft, typically of the first generation of jets, designed before 1974, and having measured noise levels that exceed the standards set for the other classes of aircraft. This group included many of the first generation of jet aircraft used in passenger and cargo service, including the B-707, early B-727 and B-737 aircraft, and early DC-8s. Under 14 CFR Part 91, all such aircraft weighing more than 75,000 pounds were removed from the U.S. operating fleet by 1985, unless modified to meet Stage 2 noise standards.

**Stage 2** – Includes aircraft that were type certified before November 15, 1975 that met noise levels defined by the FAA at takeoff, sideline, and approach measurement locations. The permissible amount of noise increased with the weight of the aircraft above 75,000 pounds and the number of engines. This category included many of the second-generation jet aircraft such as the B-727, B-737-200, and DC-9 that were extensively used in passenger and cargo service. Under 14 CFR Part 91, all such aircraft weighing more than 75,000 pounds were removed from the U.S. operating fleet by 2000, unless modified to meet Stage 3 noise standards. As of December 31, 2015, this requirement was extended to all aircraft with a maximum weight of 75,000 pounds or less operating in the contiguous United States.

**Stage 3** – Includes aircraft that meet more stringent noise level requirements at takeoff, sideline, and approach measurement locations for their weight and engine number. This category includes a large percentage of business jet aircraft and all aircraft in passenger and cargo service that weigh more than 75,000 pounds.

**Stage 4** – In July 2005, the FAA, through notice in the Federal Register, adopted by Final Rule for Stage 4 Aircraft Noise Standards. This includes all jet and transport-category airplanes with a maximum take-off weight of 12,500 pounds or more for which application of a new type design is submitted on or after January 1, 2006. The FAA's final Part 36 Stage 4 noise levels are a cumulative 10 EPNdB (effective perceived noise level in decibels) less than the current Stage 3 limits. These limits are based on the work of the International Civil Aviation Organization (ICAO), in which the FAA and the International Business Aviation Council are active members.

**Stage 5** – In November 2017, the FAA, through a notice in the *Federal Register*, adopted by Final Rule Stage 5 Aircraft Noise Standards which includes all jet and transport-category airplanes with a maximum take-off weight of 121,254 pounds or more for which application of a new type design is submitted on or after December 31, 2017; or with maximum certificated takeoff weight of less than 121,254 pounds on or after December 31, 2020. This change will set a lower noise limit for newly certificated airplanes and match the noise certification standards for aircraft certified under international standards.



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#### A.1.7 14 CFR Part 91

Title 14, Part 91 of the CFR as applied to noise, established schedules for phasing louder equipment out of the operating fleet of aircraft weighing according to Part 36 stage limits. The schedules called for all Stage 1 aircraft over 75,000 pounds to be removed from commercial fleets by 1982, with the exception of two engine aircraft in small city service, which were allowed to continue in service until 1985.

The schedule for the retirement of Stage 2 aircraft required the removal of all such aircraft over 75,000 pounds by the end of 1999, with interim retirement dates of 1994, 1996, and 1998 for the removal of portions of the Stage 2 fleet.

On July 2, 2013, the FAA issued a Final Rule which prohibits the operation in the contiguous United States of jet airplanes weighing 75,000 pounds or less that do not meet Stage 3 noise levels after December 31, 2015.<sup>1</sup>

The ICAO Committee on Aviation Environmental Protection continues to debate the merits of adopting a more stringent standard for new aircraft type designs. No action has been taken as of 2023, to establish a phase-out schedule for Stage 3 aircraft in the United States.

#### A.1.8 14 CFR Part 150

Title 14, Part 150 of the CFR sets forth the standards under which a Part 150 Noise Compatibility Study is conducted. Notably, the preparation of a Noise Compatibility Program (NCP) under 14 CFR Part 150 is a voluntary action by an airport proprietor. The process of preparing the plan is intended to open/enhance lines of communication between the airport, its neighbors, and users. It is the only mechanism to provide for the mitigation of aircraft noise impacts on noise-sensitive surrounding areas that is not directly tied to airfield development or airspace utilization conducted subject to the rules for preparation of an Environmental Impact Statement (EIS) or Environmental Assessment (EA).

The Part 150 Program allows airport operators to voluntarily submit noise exposure maps (NEMs) and NCPs to the FAA for review and approval. An NCP sets forth the measures that an airport operator “has taken” or “has proposed” for the reduction of existing incompatible land uses and the prevention of additional incompatible land uses within the area covered by NEMs.

#### A.1.9 14 CFR Part 161

Title 14, Part 161 of the CFR was published in 1991, subsequent to passage of the ANCA. That act established the requirement and schedule for the phase-out of Stage 2 aircraft over 75,000 pounds. In return for that action, Congress severely restricted the ability of local communities to impose actions that would restrict aircraft access to any airport. Different levels of requirements were established for voluntary restrictions, restrictions on Stage 2 aircraft, and restrictions on Stage 3 aircraft. These requirements are applicable to all aircraft except propeller-driven aircraft weighing less than 12,500 pounds, supersonic aircraft, and Stage 1 aircraft.

##### A.1.9.1 Restrictive Agreements

Subpart B of 14 CFR Part 161 sets forth requirements for the implementation of noise or access restriction on the operation of Stage 3 aircraft under an agreement between airport operators and all affected airport users. Before going into effect, notice of these proposed agreements must be published in local newspapers of area wide circulation, posted prominently at the airport, and sent directly to all regular airport users; the FAA; Federal, state, and local agencies with land use control authority; community groups and business organizations; and any aircraft operators that are known to be interested in providing service to the airport (new entrants). After this notification

<sup>1</sup> Federal Aviation Administration, Final Rule: Adoption of Statutory Prohibition on the Operation of Jets Weighing 75,000 Pounds or Less That Are Not Stage 3 Noise Compliant, Federal Register Volume 78, Number 127 (Tuesday, July 2, 2013).



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period, the agreement can be implemented if all current users and any new entrants proposing to serve the airport within 180 days sign on to the proposed restriction.

#### A.1.9.2 Stage 3 Restrictions

Subpart D of 14 CFR Part 161 establishes the requirements that an airport operator must follow in order to implement a noise or access restriction on Stage 3 aircraft, including a study and formal application package. The required Part 161 study must demonstrate “by substantial evidence that the statutory conditions are met.” These six conditions, specified in ANCA and codified in 14 CFR Part 161 are:

- Condition 1: The restriction is reasonable, non-arbitrary, and non-discriminatory.
- Condition 2: The restriction does not create an undue burden on interstate or foreign commerce.
- Condition 3: The proposed restriction maintains safe and efficient use of the navigable airspace.
- Condition 4: The proposed restriction does not conflict with any existing Federal statute or regulation.
- Condition 5: The applicant has provided adequate opportunity for public comment on the proposed restriction.
- Condition 6: The proposed restriction does not create an undue burden on the national aviation system.<sup>2</sup>

The applicant must also prepare an EA or documentation supporting a categorical exclusion.<sup>3</sup>

After submission by an airport operator of a complete Part 161 application package, the FAA has 30 days to review it for completeness. Notice of the proposed restriction must be published by the FAA in the *Federal Register*. After reviewing the application and public comments, the FAA must issue a decision approving or disapproving the proposed restriction within 180 days after receipt of a complete application. This decision is a final decision of the FAA Administrator for purposes of judicial review.<sup>4</sup>

#### A.1.9.3 Consequences of Failing to Comply with Part 161

Subpart F of 14 CFR Part 161 describes the consequences of an airport operator’s failure to comply with Part 161. The sanction provided for in Subpart F is the termination of the airport’s eligibility to receive airport grant funds and to collect Passenger Facility Charges (PFCs).<sup>5</sup> Most of Subpart F describes the process for notifying airport operators of apparent violations, dispute resolution, and implementation of the required sanctions.

### A.1.10 Federal Interagency Committee on Noise

Federal Interagency Committee on Noise (FICON) was formed in 1990 to review specific elements of the assessment of airport noise impacts and to make recommendations regarding potential improvements. The FICON review focused primarily on the manner in which noise impacts are determined, including:

- Whether aircraft noise impacts are fundamentally different from other transportation noise impacts;
- The manner in which noise impacts are described;
- The extent of impacts outside of DNL 65 dB that should be reviewed in a National Environmental Policy Act (NEPA) document;
- The range of FAA-controlled mitigation options (noise abatement and flight track procedures) analyzed; and
- The relationship of the 14 CFR Part 150 process to the NEPA process; including ramifications to the NEPA process if they are separate, and exploration of the means by which the two processes can be handled to maximize benefits.

<sup>2</sup> 14 CFR Part 161, Sec. 161.305(e).

<sup>3</sup> 14 CRF Part 161, Sec. 161.305(c).

<sup>4</sup> 14 CFR Part 161, Sec. 161.313(b)(2).

<sup>5</sup> 14 CFR Part 161, Sec. 161.501-505.



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FICON determined that there are no new descriptors or metrics of sufficient scientific standing to substitute for the present DNL cumulative noise exposure metric. The methodology employing DNL as the noise exposure metric and appropriate dose-response relationships to determine noise impact is considered the proper one for civil and military aviation scenarios in the general vicinity of airports.

In 1992 FICON recommended continued use of DNL as the principle means of assessing noise impacts and encouraged agency discretion in the use of supplemental noise analysis. The Committee also recommended continued research on the impact of aircraft noise, and recommended that “a standing federal interagency committee should be established to assist agencies in providing adequate forums for discussion of public and private sector proposals, identifying needed research, and in encouraging the conduct of research and development in these areas.”

#### **Federal Interagency Committee on Aviation Noise (FICAN)**

The FICAN was formed in 1993 to fulfill the FICON recommendation. The following Federal agencies concerned with aviation noise, including those with policy roles, are represented on the Committee:

- Department of Defense
  - U.S. Air Force
  - U.S. Army
  - U.S. Navy
- Department of Interior
  - National Park Service
- Department of Transportation
  - Federal Aviation Administration
- Environmental Protection Agency
- National Aeronautics and Space Administration (NASA)
- Department of Housing and Urban Development

#### **A.1.11 Federal Requirements to use DNL in Environmental Noise Studies**

DNL is the standard metric used for environmental noise analysis in the United States. This practice originated with the USEPA’s effort to comply with the Noise Control Act of 1972. The USEPA designated a task group to “consider the characterization of the impact of airport community noise and develop a community noise exposure measure.”<sup>6</sup> The task group recommended using the DNL metric. The USEPA accepted the recommendation in 1974, based on the following considerations:

1. The measure is applicable to the evaluation of pervasive, long-term noise in various defined areas and under various conditions over long periods of time.
2. The measure correlates well with known effects of the noise environment on individuals and the public.
3. The measure is simple, practical, and accurate.
4. Measurement equipment is commercially available.
5. The metric at a given location is predictable, within an acceptable tolerance, from knowledge of the physical events producing the noise.<sup>7</sup>

<sup>6</sup> Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety. U.S. Environmental Protection Agency, Office of Noise Abatement and Control. 1974, P. A-10.

<sup>7</sup> Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety. U.S. Environmental Protection Agency, Office of Noise Abatement and Control. 1974, Pp. A-1–A-23.



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The Schultz Curve, which is depicted in **Exhibit A-1, *Schultz Curve***, was first published by T.J. Schultz in *Synthesis of Social Surveys on Noise Annoyance* in 1978. The curve relates specific DNL levels to the percent of people in a community whom those noise levels highly annoy. The Curve provided a widely-accepted dose-response relationship between cumulative environmental noise and annoyance. Like other federal agencies that have established federal land use guidelines for noise, FAA used the Schultz Curve, when it designated the DNL 65 dB contour as the cumulative noise exposure level above which residential land uses are not compatible without mitigation. At DNL 65 dB, the Schultz Curve predicts that approximately 12.5 percent of the population will be highly annoyed.

Soon thereafter, the Department of Housing and Urban Development (HUD), DOD, and the Veterans Administration adopted the use of the DNL.

At about the same time, the Acoustical Society of America developed a standard (ANSI S3.23-1980) which established DNL as the preferred metric for outdoor environments. This standard was reevaluated in 1990 and they reached the same conclusions regarding the use of DNL (ANSI S12.40-1990).

In 1980, the Federal Interagency Committee on Urban Noise (FICUN) met to consolidate Federal guidance on incorporating noise considerations in local land use planning. The committee selected DNL as the best noise metric for the purpose, thus endorsing the USEPA's earlier work and making it applicable to all Federal agencies.<sup>8</sup>

In response to the requirements of the ASNA Act of 1979 and the recommendations of FICUN and USEPA, the FAA established DNL in 1981 as the single metric for use in airport noise and land use compatibility planning. This decision was incorporated into the final rule implementing ASNA, 14 CFR Part 150, in 1985. Part 150 established the DNL as the noise metric for determining the exposure of individuals to aircraft noise and identified residential land uses as being normally compatible with noise levels below DNL 65 dB.

In the early 1990s, Congress authorized the creation of a new interagency committee to study airport noise issues. The FICON was formed with membership from the USEPA, the FAA, the U.S. Air Force, the U.S. Navy, HUD, the Department of Veterans Affairs, and others. FICON concluded in its 1992 report that Federal agencies should “continue the use of the DNL metric as the principal means for describing long term noise exposure of civil and military aircraft operations.”<sup>9</sup> FICON further concluded that there were no new sound descriptors of sufficient scientific standing to substitute for the DNL cumulative noise exposure metric.”<sup>10</sup>

<sup>8</sup> *Guidelines for Considering Noise in Land Use Planning and Control*. Federal Interagency Committee on Urban Noise (FICUN). 1980.

<sup>9</sup> *Federal Agency Review of Selected Airport Noise Analysis Issues*. Federal Interagency Committee on Noise (FICON). August 1992, Pp. 3-1.

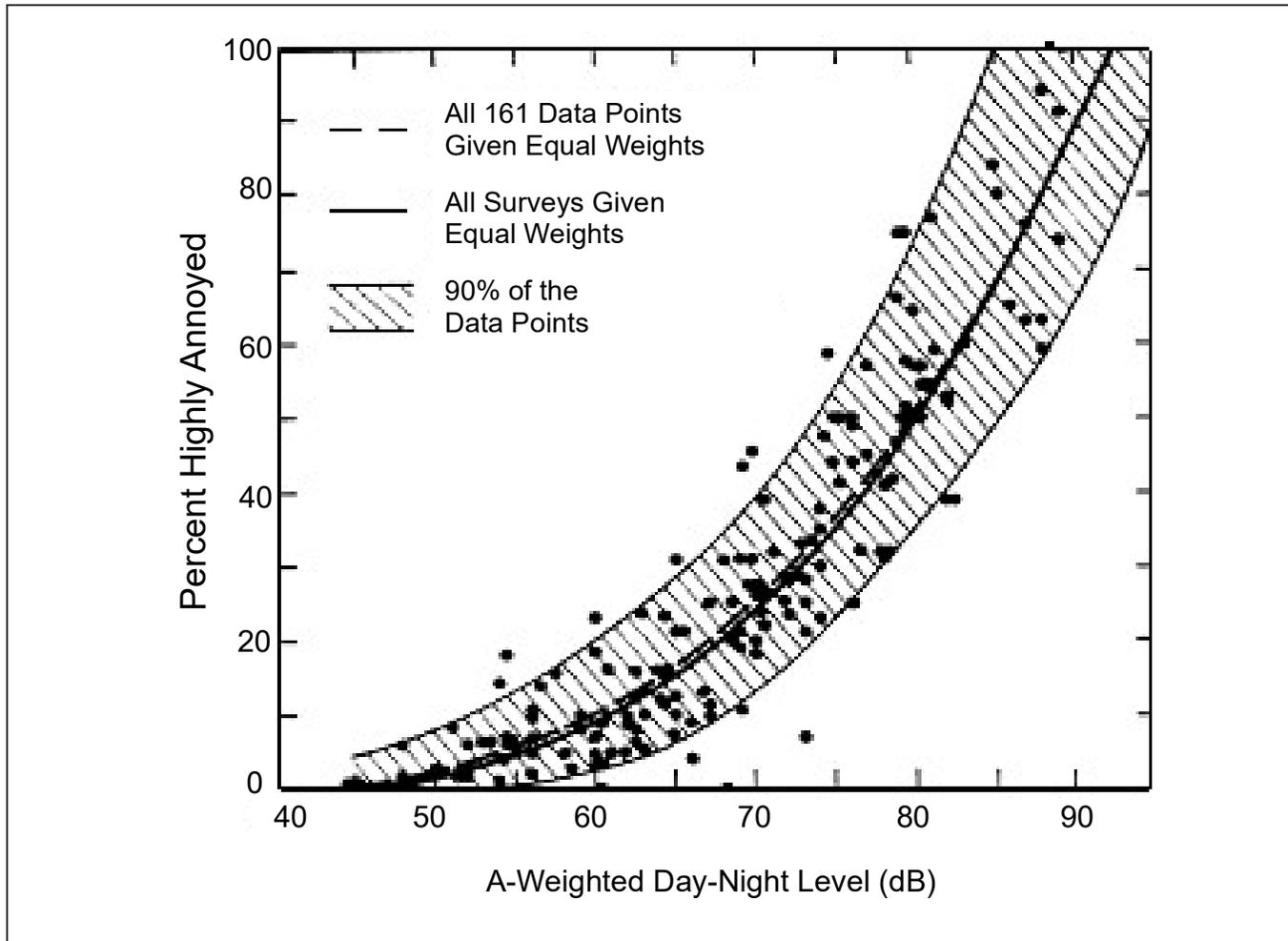
<sup>10</sup> *Federal Agency Review of Selected Airport Noise Analysis Issues, Technical Report, Volume 2*. Federal Interagency Committee on Noise (Technical). August 1992, Pp. 2-3.



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## EXHIBIT A-1 | SCHULTZ CURVE



In 1993, the FAA issued its *Report to Congress on Effects of Airport Noise*. Regarding DNL, the FAA stated, “Overall, the best measure of the social, economic, and health effects of airport noise on communities is the DNL.”<sup>11</sup> According to this report, DNL 65 dB “...as a criterion of significance, and of the land use compatibility guidelines in Part 150 is reasonable.”<sup>12</sup> In April 2020, the FAA issued a report to Congress in accordance with section 188 in the 2018 FAA Reauthorization Act which stated that the DNL metric is the metric to be used for FAA decision-making.<sup>13</sup> The report further noted that other supplemental metrics could be used for informational purposes. Information regarding supplemental metrics can be found in **Appendix C, Noise Modeling Methodology**.

<sup>11</sup> *Report to Congress on Effects of Airport Noise*. Federal Aviation Administration. 1993, P. 1.

<sup>12</sup> *Report to Congress on Effects of Airport Noise*. Federal Aviation Administration. 1993, P. 13.

<sup>13</sup> *Report to Congress, FAA Reauthorization Act of 2018 (Pub. L. 115-254), Section 188 and Sec 173*. Federal Aviation Administration, 2020.



## » A.2 Federal Laws and Policies Related to Noise/Land Use Compatibility

The FAA adopted land use compatibility guidelines relating types of land use to airport sound levels in 1985. These guidelines were promulgated in 14 CFR Part 150. These guidelines, reproduced here as **Table A-1, Land Use Compatibility Guidelines – 14 CFR Part 150**, show the compatibility parameters for residential, public (schools, churches, nursing homes, hospitals, libraries), commercial, manufacturing and production, and recreational land uses.

The Part 150 guidelines are the basis for defining areas potentially eligible for Federal funding through the Airport Improvement Program (AIP). The *Airport Improvement Handbook* states, “Noise compatibility projects usually must be located in areas where noise measured in DNL is 65 dB or greater.”<sup>14</sup> Federal funding is available at noise levels below 65 DNL if the airport operator (Sponsor) determines that incompatible land uses exist below 65 DNL and the FAA concurs with the Sponsor’s determination.

As shown in **Table A-1**, all land uses within areas below 65 DNL are considered to be compatible with airport operations. Residential land uses are generally incompatible with noise levels above 65 DNL. In some areas, residential land use may be permitted in the 65 to 70 DNL with appropriate sound insulation measures implemented. This is done at the discretion of local communities. Schools and other public use facilities located between 65 and 75 DNL are generally incompatible without sound insulation. Above 75 DNL, schools, hospitals, nursing homes, and churches are considered incompatible land uses. The information presented in Table 4-1 is meant to act as a guideline. According to 14 CFR Part 150, “Adjustments or modifications of the descriptions of the land-use categories may be desirable after consideration of specific local conditions.”<sup>15</sup>

<sup>14</sup> FAA Order 5300.38C, Chapter 7, paragraph 706.

<sup>15</sup> 14 CFR Part 150, Part B Noise Exposure Map Development, Section A150.101 Noise contours and land usages, paragraph (c).



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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**TABLE A-1 | LAND USE COMPATIBILITY GUIDELINES – 14 CFR PART 150**

Yearly Day-Night Average Sound Level (DNL) in Decibels						
Land Use	Below 65	65-70	70-75	75-80	80-85	Over 85
<b>RESIDENTIAL</b>						
Residential, other than mobile homes and transient lodgings	Y	N <sup>1</sup>	N <sup>1</sup>	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N <sup>1</sup>	N <sup>1</sup>	N <sup>1</sup>	N	N
<b>PUBLIC USE</b>						
Schools, hospitals, 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 <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N <sup>4</sup>
Parking	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
<b>COMMERCIAL USE</b>						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale & retail - building materials, hardware, & farm equipment	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
Retail trade, general	Y	Y	25	30	N	N
Utilities	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
Communication	Y	Y	25	30	N	N
<b>MANUFACTURING AND PRODUCTION</b>						
Manufacturing, general	Y	Y	Y <sup>2</sup>	Y <sup>3</sup>	Y <sup>4</sup>	N
Photographic and optical	Y	Y	25	30	N	N
Agriculture (except livestock) and forestry	Y	Y <sup>6</sup>	Y <sup>7</sup>	Y <sup>8</sup>	Y <sup>8</sup>	Y <sup>8</sup>
Livestock farming and breeding	Y	Y <sup>6</sup>	Y <sup>7</sup>	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
<b>RECREATIONAL</b>						
Outdoor sports arenas and spectator sports	Y	Y	Y <sup>5</sup>	N <sup>5</sup>	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

The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable 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.

#### Key to Table A-1

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, 35 Land use and related structures generally compatible; measures to achieve a NLR of 25, 30, or 35 dB must be incorporated into design and construction of structure.



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Notes for Table A-1

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 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as five, 10, or 15 dB 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 dB 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 dB 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 dB 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 a NLR of 25 dB.
7. Residential buildings require a NLR of 30 dB.
8. Residential buildings not permitted.

Source: 14 CFR Part 150 Airport Noise Compatibility Planning, Appendix A, Table 1.

### A.2.1 FAA Final Policy on Part 150 Noise Mitigation Measures

The FAA issued a final policy to establish a distinction between remedial and preventive noise mitigation measures proposed by airport operators and submitted for approval by the FAA under noise compatibility planning regulations. In the notice of final policy<sup>16</sup> effective October 1, 1998, the FAA stated the following:

- As of October 1, 1998, the FAA will approve under 14 CFR Part 150 only remedial noise mitigation measures for existing incompatible development and only preventative noise mitigation measures in areas of potential new incompatible development.
- The FAA will not approve remedial noise mitigation measures for new incompatible development that occurs in the vicinity of airports.
- The use of AIP funds will be affected to the extent that such used depends on approval under Part 150.

The Airport Noise Compatibility Planning Program (14 CFR Part 150) was established under the ASNA. The Part 150 program allows airport operators to submit Noise Exposure Maps (NEMs) and Noise Compatibility Programs (NCPs) to the FAA voluntarily. According to the ASNA, an NCP sets forth the measures that an airport operator has taken or has proposed for the reduction of existing incompatible land uses and the prevention of additional incompatible land uses within the area covered by NEMs.

The ASNA embodies strong concepts of local initiative and flexibility. The submission of NEMs and NCPs is left to the discretion of local airport operators. Airport operators also may choose to submit NEMs without preparing and submitting an NCP. The types of measures that airport operators may include in an NCP are not limited by the ASNA, allowing airport operators substantial latitude to submit a broad array of measures—including innovative measures—that respond to local needs and circumstances.

The criteria for approval or disapproval of measures submitted in a Part 150 program are set forth in the ASNA. The ASNA directs the Federal approval of an NCP, except for measures relating to flight procedures: (1) if the program measures do not create an undue burden on interstate or foreign commerce; (2) if the program measures are reasonably consistent with the goal of reducing existing incompatible land uses and preventing the introduction of additional incompatible land uses; and (3) if the program provides for its revision if necessitated by the submission of a revised NEM. Failure to approve or disapprove an NCP within 180 days, except for measures relating to flight procedures, is deemed to be an approval under the ASNA.

<sup>16</sup> FAA Notice of Final Policy, October 1, 1998.



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Finally, the ASNA sets forth criteria under which grants may be made to carry out noise compatibility projects, consistent with ASNA's overall deference to local initiative and flexibility.

The FAA is authorized, but not obligated, to fund projects via the AIP to carry out measures in an NCP that are not disapproved by the FAA. Such projects also may be funded with local PFCs revenue upon the FAA's approval of an application filed by a public agency that owns or operates a commercial service airport, although the use of PFC revenue for such projects does not require an approved NCP under Part 150.

In establishing the airport noise compatibility planning program, which became embodied in 14 CFR Part 150, the ASNA did not change the legal authority of state and local governments to control the uses of land within their jurisdictions. Public controls on the use of land are commonly exercised by zoning. Zoning is a power reserved to the states under the U.S. Constitution. It is an exercise of the police powers of the states that designates the uses permitted on each parcel of land. This power is usually delegated in states enabling legislation to local levels of government.

Many local land use control authorities (cities, counties, etc.) have not adopted zoning ordinances or other controls to prevent incompatible development (primarily residential) within the noise impact areas of airports. An airport noise impact area, identified within noise contours on an NEM, may extend over a number of different local jurisdictions that individually control land uses.

While airport operators have included measures in NCPs submitted under Part 150 to prevent the development of new incompatible land uses through zoning and other controls under the authorities of appropriate local jurisdictions, success in implementing these measures has been mixed.

One or more of the factors hindering effective land use controls may be of sufficient importance to preclude some jurisdictions from following through on the land use recommendations of an airport's Part 150 NCP. When either an airport sponsor's or a non-airport sponsor's jurisdiction allows additional incompatible development within the airport noise impact area. This can, in turn, result in noise problems for the airport operator in the form of inverse condemnation or noise nuisance lawsuits, public opposition to proposals by the airport operator to expand the airport's capacity, and local political pressure for airport operational and capacity limitations to reduce noise. Some airport operators have taken the position that they will not provide any financial assistance to mitigate aviation noise for new incompatible development. Other airport operators have determined that it is a practical necessity for them to include at least some new residential areas within their noise assistance programs to mitigate noise impacts that they were unable to prevent in the first place. Over a relatively short period of time, the distinctions blur between what is "new" and what is "existing" residential development with respect to airport noise issues.

Airport operators currently may include new incompatible land uses, as well as existing incompatible land uses, within their Part 150 NCPs and recommend that remedial noise mitigation measures--usually either property acquisition or noise insulation--be applied to both situations. These measures have been considered to qualify for approval by the FAA under 49 U.S.C. § 47504 and 14 CFR Part 150. The Part 150 approval enables noise mitigation measures to be considered for Federal funding under the AIP, although it does not guarantee that Federal funds will be provided.

### **Final Policy**

Therefore, as of October 1, 1998, the FAA will approve remedial noise mitigation measures under Part 150 only for incompatible development which exists as of that date. Incompatible development that potentially may occur on or after October 1, 1998, may only be addressed in Part 150 programs with preventative noise mitigation measures. This policy will affect the use of AIP funds to the extent that such funding is dependent on approval under 14 CFR Part 150.

Approval of remedial noise mitigation measures for bypassed lots or additions to existing structures within noise impacted neighborhoods, additions to existing noise impacted schools or other community facilities required by



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demographic changes within their service areas, and formerly noise compatible uses that have been rendered incompatible as a result of airport expansion or changes in airport operations, and other reasonable exceptions to this policy on similar grounds must be justified by airport operators in submittals to the FAA and will be considered by the FAA on a case-by-case basis. This policy does not affect AIP funding for noise mitigation projects that do not require Part 150 approval, that can be funded with PFC revenue, or that are included in FAA-approved environmental documents for airport development.

### A.2.2 FAA Airport Improvement Program Handbook

Airport Improvement Program (AIP) Handbook<sup>17</sup> provides guidance and sets forth policy and procedures used in the administration of the AIP. Appendix R, *Noise Compatibility Planning/Projects*, provides guidance and eligibility requirements for airport noise mitigation programs. The following sections provide the general steps for determining eligibility for mitigation under AIP guidelines.

#### A.2.2.1 General Eligibility Requirements

**Table A-1, Land Use Compatibility Guidelines – 14 CFR Part 150**, defines the requirements for determining when various land uses are noncompatible with aircraft noise, and therefore potentially eligible for AIP funding. The DNL 65 dB noise contour is the noise level at or above which certain land uses are not considered to be compatible (49 U.S.C. § 47502, as defined in Table A-1). The converse is also true – because DNL 65 dB is the Federal threshold for considering certain land uses as compatible, noise-sensitive land uses located outside of the DNL 65 dB noise contour are not considered to be impacted by airport related noise. They are not eligible for mitigation funding unless a lower local standard is formally adopted.

#### A.2.2.2 Interior Noise Level Requirements

The 45 dB standard has been adopted by the FAA for interior noise. This is based on 46 Federal Register 8316 (January 26, 1981), which established the interim rule for 14 CFR part 150 and included specific requirements regarding interior noise level. This was further clarified in 1992 by the FICON findings of 45 dB to be the interior noise level that will accommodate indoor conversations or sleep. A noise-impacted noncompatible structure must be experiencing existing interior noise levels that are 45 dB or greater with the windows closed to be considered eligible. For residences, the calculation of interior noise level must be based on the average noise level of only the habitable rooms (e.g. living, sleeping, and kitchen areas). For schools, the interior noise level during school hours should be calculated for determination of eligibility. Eligibility for noise insulation is limited to classrooms, libraries, fixed seat auditoriums, and educators' offices.

#### A.2.2.3 Block Rounding

Block rounding refers to expanding the noise mitigation program area beyond the limits of the 65 DNL noise contour to a logical breakpoint (such as a neighborhood boundary, significant arterial surface street, highway, river, other physical or natural barrier or feature). The FAA will review a request for block rounding under a noise mitigation program (or environmental study). If approved under block rounding, the property must meet the interior noise level requirements described in **Section A.2.2.2**.

<sup>17</sup> U.S. Department of Transportation, Federal Aviation Administration, Order 5100.38D, Change 1, February 26, 2019.



#### *A.2.2.4 Neighborhood Equity*

A sponsor may consider the use of neighborhood equity when residences in the eligible noise contour threshold that do not meet the interior noise level requirements are scattered among residences that do meet the interior noise level criteria. If the sponsor proposes to use neighborhood equity provisions, the FAA has the option to approve this request under the following circumstances.

- The residence must be in the eligible noise contour threshold.
- The sponsor must develop a separate neighborhood equity package limited to improvements such as caulking, weather stripping, installation of storm doors or ventilation packages. The FAA must not approve the use of the standard noise insulation package for neighborhood equity residences.
- Per FAA policy, approval should not exceed more than 10% of the residences in the neighborhood, or 20 residences in a phase of the noise insulation program, whichever is less.
- In extremely rare cases, the FAA may determine that the program will benefit by providing noise equity packages to more than the 10% or 20 residence limit.
- The sponsor must provide the FAA, Airports District Office (ADO) with a complete list of the specific residences (by address) that are proposed for neighborhood equity.
- The sponsor must provide the ADO with detailed information comparing the cost of the proposed neighborhood equity package with the cost of a standard noise insulation package.
- The ADO must review and approve or disapprove the sponsor's proposed neighborhood equity package. In their determination, the ADO must ensure that the use of the minimal neighborhood equity packages on non-eligible residences is required to allow successful completion of the overall noise insulation program in the neighborhood, thus allowing these residences to be noise insulated within the guidelines of AIP eligibility. The ADO must document the determination and place a copy of the determination in the grant file.

#### *A.2.2.5 Pre- and Post-Testing Criteria for Noise Insulation Projects*

The AIP Handbook sets forth requirements for testing potentially eligible structures to determine if the interior noise level requirements are met. This guidance includes requirements for testing methodology, equipment, and the determination of an adequate sample size, which could impact program startup and implementation costs and funding reimbursement.



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### *A.2.2.6 Disposal of Excess/Unneeded AIP Funded Land*

Section 5-68 of the AIP Handbook sets forth requirements for disposal of land acquired under an airport NCP, commonly referred to as “noise land.” 49 U.S.C. § 47107(c)(2) requires a sponsor to promptly dispose of AIP funded land when the land is no longer needed for airport purposes. In this specific case, airport purpose includes land needed for an existing or future aeronautical purpose (including runway protection zone) or land that serves as a noise buffer. If it is determined that the land is no longer needed for these purposes, the airport sponsor has the choice of either selling or keeping the land for non-airport purposes. In either case, the airport sponsor must use the Federal share of the fair market value on projects in the following order of precedence:

1. Reinvestment in an approved noise compatibility project.
2. Reinvestment in an approved project that is eligible for funding under 49 U.S.C. § 47117(e).
3. Reinvestment in all other approved airport development projects at the airport.
4. Transfer to a sponsor of another public airport for a noise compatibility project at the other airport.
5. Repay the proceeds as directed by the FAA Office of Finance and Management.

### **A.2.3 Program Guidance Letters**

Program Guidance Letters are issued to update or clarify elements of the AIP Handbook. One current Program Guidance Letter (PGL), related to changes outlined in the FAA Reauthorization Act of 2018 dealing with noise and environmental issues is R-PGL 19-06.

#### *A.2.3.1 Reauthorization Program Guidance Letter (R-PGL) 19-06*

This Reauthorization Program Guidance Letter (R-PGL) 19-06 explains and implements provisions in the FAA Reauthorization Act of 2018 (the 2018 Act) (P.L.115-254) that impact environmental and noise programs.

Section 49 U.S.C. § 47503(b) requires airport operators with noise exposure maps to submit a revised map if a change, which is not reflected in either the existing conditions map or forecast map currently on file with the FAA, in the operation of the airport:

1. Establishes a substantial new noncompatible use; or
2. Would significantly reduce noise over existing noncompatible uses.

Section 174 amends 49 U.S.C. § 47503(b) by requiring submission of an updated noise exposure map only if the relevant change occurs during:

1. The forecast period of the applicable noise exposure map; or
2. The implementation period of the airport operator’s noise compatibility program.

This provision applies only to airport sponsors that have a noise exposure map on file with the FAA.



## Appendix B



# Forecast



## Appendix B Forecast

A forecast of aviation activity was prepared for the purpose of developing noise exposure contours for projected future conditions for this Part 150 Noise Compatibility Study (Part 150 Study). The forecast was based upon the *2018 Forecast Working Paper (FWP)*<sup>1</sup> and subsequent *FWP 2021 Sensitivity Analysis Memo*<sup>2</sup> update to account for impacts due to the COVID-19 health emergency. This forecast was used to project activity levels through 2028 and was submitted to the Federal Aviation Administration (FAA) for approval. The FAA approved this forecast in August of 2021. This forecast was used to develop input data representative of future conditions, which was used to prepare the noise exposure contours for the Future (2028) Baseline condition.

This appendix was prepared to provide overview of the forecast development of Future (2028) aviation characteristics and operating levels based upon the FWP, to support the requirements of the Part 150 planning process for Chicago Rockford International Airport (RFD or Airport). The year 2017 was used as the base year for forecast purposes. The key benchmark year for the forecast is 2028, which corresponds to the 5-year projection from the date of submittal, per Part 150 guidelines.

The aviation forecast provided operational totals for the following types of activity at RFD:

- Cargo (Updated based on the *2021 FWP Sensitivity Analyses Memo*)
- Commercial
- General Aviation
- Military

### » B.1 Forecast Working Paper

The FWP 2021 Sensitivity Analysis Memo is presented in **Exhibit B-1, 2021 Forecast Working Paper Sensitivity Analysis**. **Table B-1, Forecast Working Paper 2028 Operations** details the number of operations per operator category and aircraft type for the calendar year 2028 represented in the update to the working paper.

<sup>1</sup> Development of Northwest Cargo Apron & Midfield Development Program, Forecast Summary, September 2018, Crawford Murphy & Tilly.

<sup>2</sup> Chicago Rockford International (RFD) – 2018 Forecast Working Paper (FWP) Sensitivity Analysis, July 2021, Crawford Murphy & Tilly.



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### EXHIBIT B-1 | 2021 FORECAST WORKING PAPER SENSITIVITY ANALYSIS



#### MEMORANDUM

TO: Zachary D. Oakley, AAE, ACE – Chicago Rockford International Airport  
 FROM: Andy Bodine, PE, CM – Crawford, Murphy & Tilly, Inc.  
 DATE: July 16, 2021  
 SUBJECT: Chicago Rockford International (RFD) – 2018 Forecast Working Paper (FWP) Sensitivity Analysis

#### Memo Purpose

Based on a recent FAR Part 150 Status Meeting call, RFD received direction from the FAA (Amy Hanson) that the forecasts of aeronautical operations created for the Midfield EA needed to be updated for use in the AEDT model. Amy noted the operations need to be reviewed considering COVID and new additional entrants. It is anticipated that an amalgam of 2019/2020 numbers and noting early 2021 trends be the basis of a new 2020 base year and a forecasted 2026 Sixth year.

#### Background

The Chicago Rockford International Airport is a non-hub commercial service airport that accommodates service by commercial airline operators, military, cargo, general aviation, and corporate needs of northern Illinois, southern Wisconsin and the Chicago Metropolitan Area. As a part of the Airport's overall development plan, the addition of new cargo operations and carriers are anticipated that will require pertinent airside and landside facilities. In response to these needs, RFD undertook a planning and environmental clearance effort in 2018 to support the development of the Northwest Cargo Apron area and the "Midfield" which is located south of Runway 7/25 and west of Runway 1/19 on property owned by the Airport.

As described in the Memo Purpose section, the findings of the planning efforts are being evaluated following the impacts of COVID to the aviation industry. For the purposes of this sensitivity analysis, it is assumed that the original forecasts for General Aviation (GA), Commercial Service or Military operations are conservative and therefore no analysis is being completed for these sectors. A forecast of activity will be extended to 2026 using the original forecasting methods. This memo will focus on evaluation, analysis, and extension of the forecast for cargo operations. The cargo aviation sector saw a shift in supply chains as belly cargo was effectively eliminated due to the downturn in commercial service. Integrators and suppliers were forced to shift business to dedicated cargo aircraft in order to maintain existing supply chains.

#### Cargo Sensitivity Analysis

The 2018 Forecast Working Paper (FWP) assessed the findings of the 2013 Forecast Update and provided multiple forecast scenarios based on industry trends and historic activity. These planning levels most closely resembled a "no-build" scenario. This means that they are representative of the anticipated operations and landed weight if the airport did not build required infrastructure to accommodate interested parties. Additionally, a "user-driven build" scenario representative of the anticipated operations and landed weight if the infrastructure referenced in the Background section was ultimately constructed, was considered. Table I was presented in the 2018 FWP to summarize the landed weight and operations at RFD. The "user-driven build" scenario was selected as the preferred scenario.



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**Table 1: 2018 FWP Landed Weight and Operations Summary**

	HISTORIC				FORECAST			
	2016		2017		2018		2023	
	Tonnage	Ops.	Tonnage	Ops.	Tonnage	Ops.	Tonnage	Ops.
<b>Average</b>	461,478	6,757	690,827	10,065	1,068,551	15,774	1,318,915	19,470
<b>User-Driven</b>	461,478	6,757	690,827	10,065	1,068,551	15,774	1,731,925	25,296
<b>Manufacturer's Forecast</b>	461,478	6,757	690,827	10,065	718,460	10,468	840,497	12,276

Note: In the 2018 FWP, 2018 tonnage and operations were projected based on January through September data.

Source: FAA Cargo Enplanement Data, RFD Airport Activity Statistics, CMT Analysis

Updated IFR flight data has been downloaded and analyzed in order to understand current operational trends and how they may differentiate from previous forecasting efforts. A summary of the differences can be seen in the **Table 2** below.

**Table 2: IFR Data Comparison**

	HISTORIC				FORECAST				
	2018	2019	2020	2021*	2022	2023	2024	2025	2026
<b>Annual Cargo Operations</b>	15,545	17,259	20,091	20,493	-	-	-	-	-
<b>2018 FWP Forecasted Operations</b>	15,774	16,452	17,160	19,872	22,584	25,296	26,384	27,518	28,702
<b>Δ</b>	-229	807	2,931	621	-	-	-	-	-

Source: FAA Cargo Enplanement Data, RFD Airport Activity Statistics, TRADPAk (1/1/2018 through 5/31/2021), CMT Analysis

As shown in the table above, there was a significant jump in cargo operations in 2020. This can be explained through shifts in cargo transport during the COVID-19 pandemic. Many cargo routes that previously relied on belly cargo delivery were forced to modify delivery through the use of dedicated freighters. This resulted in significantly higher operations in 2020 than originally anticipated, but based on 2021 trends, it appears operational levels are beginning to balance. Following a period of projected significant growth in years 2022 and 2023 following the construction of the midfield area and other associated improvements, the forecasted growth rate for cargo operations in 2024, 2025, and 2026 returns to a modest 4.3% CAGR.

To verify whether or not the aircraft share and fleet mix are still aligned with the original forecast assumptions, cargo aircraft operations were analyzed for 2020 and 2021. A comparison of the 2018 FWP aircraft share and current fleet mix and share was completed and is shown below in **Table 3**. As shown in the table, the fleet mix and aircraft share is trending in line with the 2018 FWP projections for 2023. There were some aircraft that experienced a larger or unnatural upward trend in 2020 due to modified delivery methods as mentioned above. It should be noted there was a significantly higher share of Boeing 737 operations in 2019 and 2020 than anticipated. These operations were carried out by Southern Air, Inc., a subsidiary of Atlas Air. It has been determined that these 737 operations ceased in March of 2021 and their share is not expected to increase in the future as operators have turned back to the Boeing 767 variant. Overall, the projected fleet mix and aircraft share in 2021 are very similar to those originally projected for 2023 as part of the 2018 FWP.



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**Table 3: Updated Cargo Fleet Mix**

	FWF		HISTORIC				FORECAST
	2018	2023	2018	2019	2020	2021	2026
<b>Widebody</b>							
Airbus 300	16.4%	24.4%	22.2%	19.5%	20.6%	22.3%	25.3%
Boeing 747-400	N/A	N/A	0.0%	0.1%	0.2%	1.0%	1.0%
Boeing 767-200	11.7%	0.0%	8.2%	5.7%	4.8%	5.5%	0.0%
Boeing 767-300	26.3%	30.2%	25.2%	30.4%	28.8%	34.8%	42.5%
MD-11	0.0%	4.7%	0.3%	2.5%	2.2%	2.3%	0.0%
Boeing 747-800F	0.0%	4.7%	0.0%	0.0%	0.0%	0.0%	5.2%
<b>Narrowbody</b>							
Boeing 757-200	45.5%	29.1%	44.1%	34.2%	28.3%	26.1%	23.0%
Boeing 737-800	0.0%	7.0%	0.0%	7.7%	15.2%	7.8%	3.0%

Source: TRAQpak (1/1/2018 through 5/31/2021), CMT Analysis

**Table 4: Annual Operations Forecast Through 2026**

Annual Operations	HISTORIC		FORECAST			
	2016	2017	2018	2023	2025	2026
Air Carrier	2,141	2,162	2,451	3,659	4,019	4,211
Air Cargo	6,757	10,065	15,774	25,296	27,528	28,702
General Aviation	23,503	25,565	25,642	26,029	26,185	26,264
Military	1,986	1,670	1,670	1,670	1,670	1,670
<b>Total Operations</b>	<b>34,387</b>	<b>39,462</b>	<b>45,537</b>	<b>56,654</b>	<b>59,402</b>	<b>60,847</b>
Cargo Landed Weight (Tons)	461,478	690,827	1,068,551	1,731,925	2,184,762	2,279,048
Passenger Enplanements	101,780	112,036	117,405	176,745	194,090	203,390
Based Aircraft	114	115	116	120	120	120

Source: FAA Cargo Enplanement Data, RFD Airport Activity Statistics, TRAQpak (1/1/2018 through 5/31/2021), CMT Analysis

**Conclusions**

Based on the analysis completed above, operational levels at RFD are within the original recommended forecast scenario for 2023. Modest growth in 2024, 2025, and 2026 in the amount of 4.3% CAGR for Cargo Operations in addition to carrying forward previous forecast methodologies for GA, Commercial, and Military categories represent a total of 4.8% growth forecasted from 2023 to 2026.

Upon Airport approval, updated operational levels for each aircraft type will be provided to Landrum & Brown to update the noise model for a forecasted out-year of 2026.

Sincerely,

**ANDY BODINE, P.E., C.M.** | Aviation Project Manager

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**TABLE B-1 | FORECAST WORKING PAPER 2028 OPERATIONS**

Equipment Type	Day/Night Split	2028 Operations
<b>CARGO</b>		
Airbus 300	43.5/56.5	7899
Boeing 767-300	46.4/53.6	13270
Boeing 747-800F	28.4/71.6	1624
Boeing 737-800BCF	72.0/28.0	937
Boeing 757-200	30.3/69.7	3591
Boeing 757-200	72.0/28.0	3591
Boeing 747-400	87.7/12.3	312
<b>Cargo Subtotal</b>		<b>31223</b>
<b>GENERAL AVIATION</b>		
C172 - Cessna Skyhawk 172/Cutlass	98.5/1.5	3156
H25B - BAe HS 125/700-800/Hawker 800	89.8/10.2	1736
SR22 - Cirrus SR 22	97.7/2.3	1596
BE58 - Beech 58	96.4/3.6	1549
PRM1 - Raytheon Premier 1/390 Premier 1	96.6/3.4	1353
BE20 - Beech 200 Super King	95.0/5.0	1316
P28A - Piper Cherokee	100/0	1279
EA50 - Eclipse 500	98.5/1.5	1251
BE33 - Beech Bonanza 33	98.4/1.6	1139
LJ40 - Learjet 40; Gates Learjet	97.3/2.7	1055
C25B - Cessna Citation CJ3	91.1/8.9	943
BE35 - Beech Bonanza 35	100/0	924
C182 - Cessna Skylane 182	94.3/5.7	821
BE9L - Beech King Air 90	97.3/2.7	700
B350 - Beech Super King Air 350	94.6/5.4	690
CL30 - Bombardier Challenger 300	97.1/2.9	644
PA24 - Piper PA-24	93.1/6.9	541
C525 - Cessna CitationJet/CJ1	94.5/5.5	514
PA30 - Piper PA-30	100/0	503
C441 - Cessna Conquest	92.3/7.7	485
PA46 - Piper Malibu	76.5/23.5	476
BE40 - Raytheon/Beech Beechjet 400/T-1	93.6/6.4	439
C56X - Cessna Excel/XLS	95.6/4.4	420
LJ45 - Bombardier Learjet 45	92.7/7.3	393
C550 - Cessna Citation II/Bravo	100/0	298
PA32 - Piper Cherokee Six	93.5/6.5	289
C560 - Cessna Citation V/Ultra/Encore	96.4/3.6	261
M20P - Mooney M-20C Ranger	92.3/7.7	243
C680 - Cessna Citation Sovereign	95.7/4.3	214



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Equipment Type	Day/Night Split	2028 Operations
PA31 - Piper Navajo PA-31	100/0	214
E55P - Embraer Phenom 300	63.6/36.4	205
E145 - Embraer ERJ-145	86.7/13.3	140
C750 - Cessna Citation X	85.7/14.3	131
B190 - Beech 1900/C-12J	92.9/7.1	131
GLF5 - Gulfstream V/G500	92.9/7.1	131
P46T - Piper Malibu Meridian	100/0	131
C206 - Cessna 206 Stationair	41.7/58.3	112
<b>General Aviation Subtotal</b>		<b>26421</b>
<b>COMMERCIAL</b>		
Airbus 319	80.0/20.0	28
Airbus 320	94.8/5.2	4361
Boeing 737-700	100.0/0.0	46
Boeing 737-800	85.4/14.6	128
Boeing 757-300	100.0/0.0	23
<b>Commercial Subtotal</b>		<b>4585</b>
<b>MILITARY</b>		
Messerschmitt MJ-90	100/0	258
Northrop T-38 Talon	100/0	231
Boeing KC-135 Stratotanker	100/0	180
Raytheon Texan 2	100/0	141
Sikorsky SH-60 Seahawk	100/0	141
Mitsubishi Regional Jet 90	100/0	128
Lockheed 130 Hercules	100/0	116
Embraer 190	100/0	103
Swearingen Merlin 4	100/0	90
Bombardier Q-400	100/0	77
Beechjet 400	100/0	77
Bombardier Learjet 35	100/0	77
Boeing E-6 Mercury	100/0	51
<b>Military Subtotal</b>		<b>1670</b>
<b>Grand Total</b>		<b>63899</b>



## Appendix C



# Noise Modeling Methodology



# Appendix C | Noise Modeling Methodology

The following appendix describes the existing noise exposure on communities surrounding Chicago Rockford International Airport (RFD or Airport). The noise analysis for this Part 150 Noise Compatibility Study (Part 150 Study) included the development of the noise contours for the existing conditions with a base year of 2023 and the future conditions with a base year of 2028. Aircraft related noise exposure is defined through noise contours prepared using the Federal Aviation Administration’s (FAA) Aviation Environmental Design Tool Version (AEDT) 3.d per Title 14 Code of Federal Regulations (14 CFR) Part 150 guidelines. Inputs into the noise model include: the number of average-annual day aircraft operations (arrivals and departures) by aircraft type and time of day, the percent of time each runway end is used for arrival and departure, and flight paths to and from the runway ends.

An explanation of the AEDT and standard noise descriptors, along with a review of the physics of noise, research regarding noise impacts on humans, social impacts of noise, and the data required to develop noise contours are explained in the sections below.

## » C.1 Characteristics of Sound

Sound is created by a source that induces vibrations in the air. The vibration produces alternating bands of relatively dense and sparse particles of air, spreading outward from the source like ripples on a pond. Sound waves dissipate with increasing distance from the source. Sound waves can also be reflected, diffracted, refracted, or scattered. When the source stops vibrating, the sound waves disappear almost instantly and the sound ceases.

Sound conveys information to listeners. It can be instructional, alarming, pleasant, relaxing, or annoying. Identical sounds can be characterized by different people or even by the same person at different times, as desirable or unwanted. Unwanted sound is commonly referred to as “noise.”

Sound can be defined in terms of three components:

1. Level (amplitude)
2. Pitch (frequency)
3. Duration (time pattern)

### C.1.1 Sound Level

The level or amplitude of sound is measured by the difference between atmospheric pressure (without the sound) and the total pressure (with the sound). Amplitude of sound is like the relative height of the ripples caused by the stone thrown into the water. Although physicists typically measure pressure using the linear Pascal scale, sound is measured using the logarithmic decibel (dB) scale. This is because the range of sound pressures detectable by the human ear can vary from 1 to 100 trillion units. A logarithmic scale allows us to discuss and analyze noise using more manageable numbers. The range of audible sound ranges from approximately 1 to 140 dB, although everyday sounds rarely rise above about 120 dB. The human ear is extremely sensitive to sound pressure fluctuations. A sound of 140 dB, which is sharply painful to humans, contains 100 trillion (10<sup>14</sup>) times more sound pressure than the least audible sound. **Exhibit C-1, Comparison of Sound**, shows a comparison of common sources of indoor and outdoor sounds measured on the dB scale.



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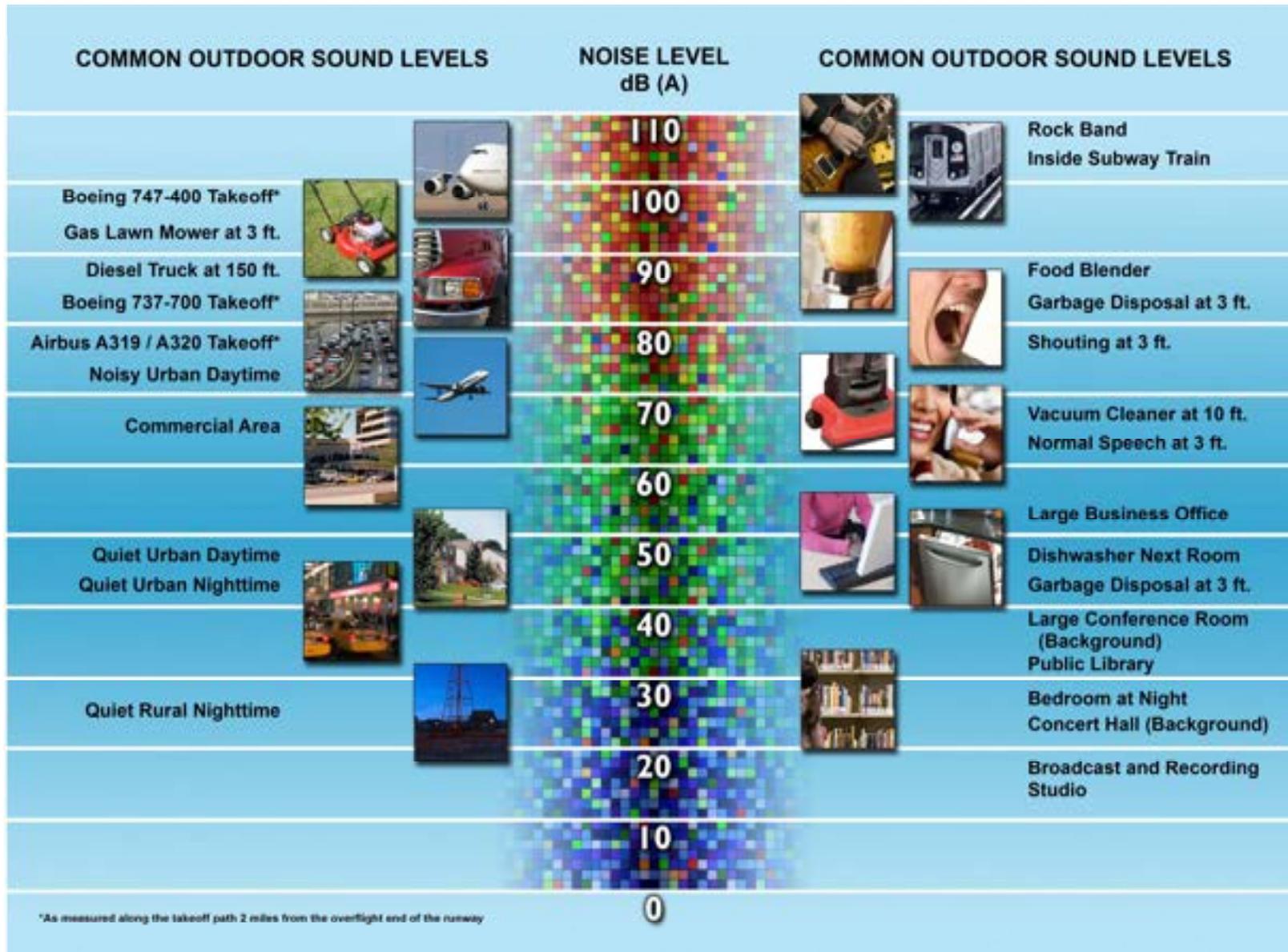
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## EXHIBIT C-1 | COMPARISON OF SOUND



Source: Landrum & Brown, 2023.



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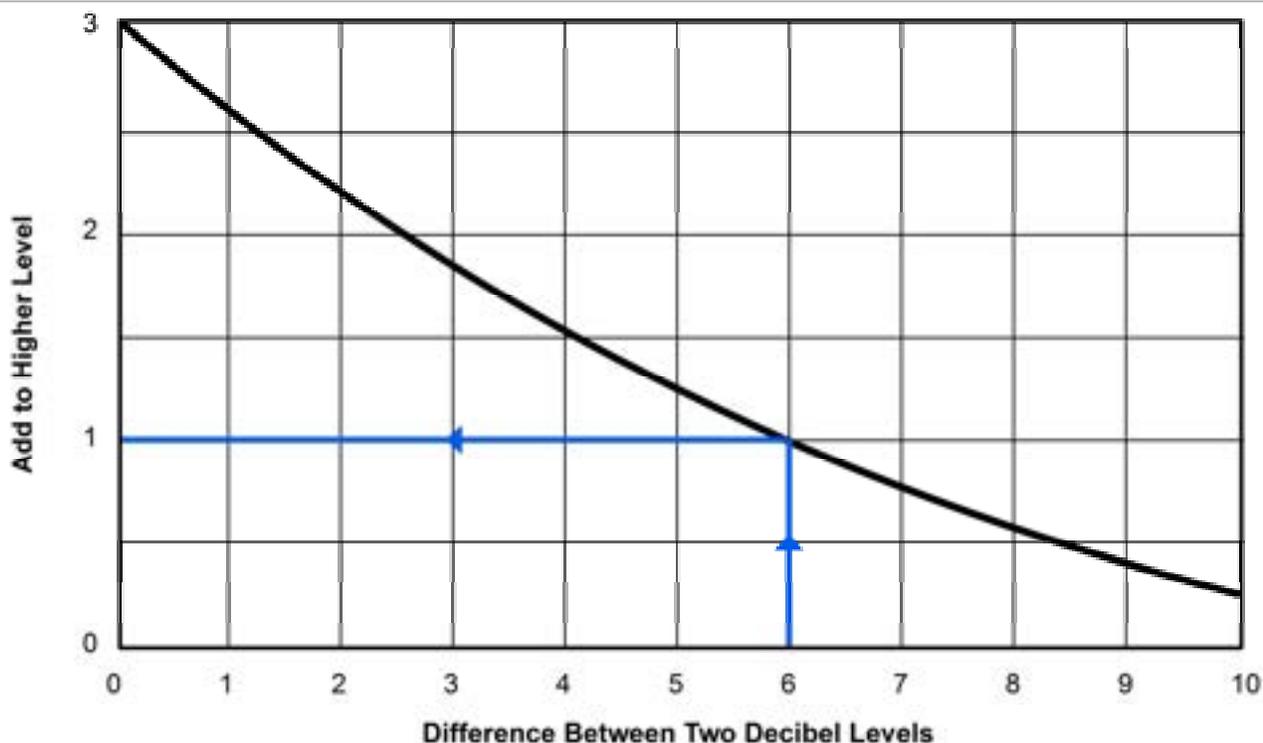
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By definition, a 10 dB increase in sound is equal to a tenfold (10<sup>1</sup>) increase in the mean square sound pressure of the reference sound. A 20 dB increase is a 100-fold (10<sup>2</sup>) increase in the mean square sound pressure of the reference sound. A 30 dB increase is a 1,000-fold (10<sup>3</sup>) increase in mean square sound pressure.

A logarithmic scale requires different mathematics than used with linear scales. The sound pressures of two separate sounds, expressed in dB, are not arithmetically additive. For example, if a sound of 80 dB is added to another sound of 74 dB, the total is a 1 dB increase in the louder sound (81 dB), not the arithmetic sum of 154 dB (See **Exhibit C-2, Example Addition of Two Decibels**). If two equally loud noise events occur simultaneously, the sound pressure level from the combined events is 3 dB higher than the level produced by either event alone.

### EXHIBIT C-2 | EXAMPLE OF ADDITION OF TWO DECIBEL LEVELS



Example:

$$80 \text{ dB} + 74 \text{ dB} = 81 \text{ dB}$$

Source: Information on Levels of Environmental Noise, USEPA, March 1974.

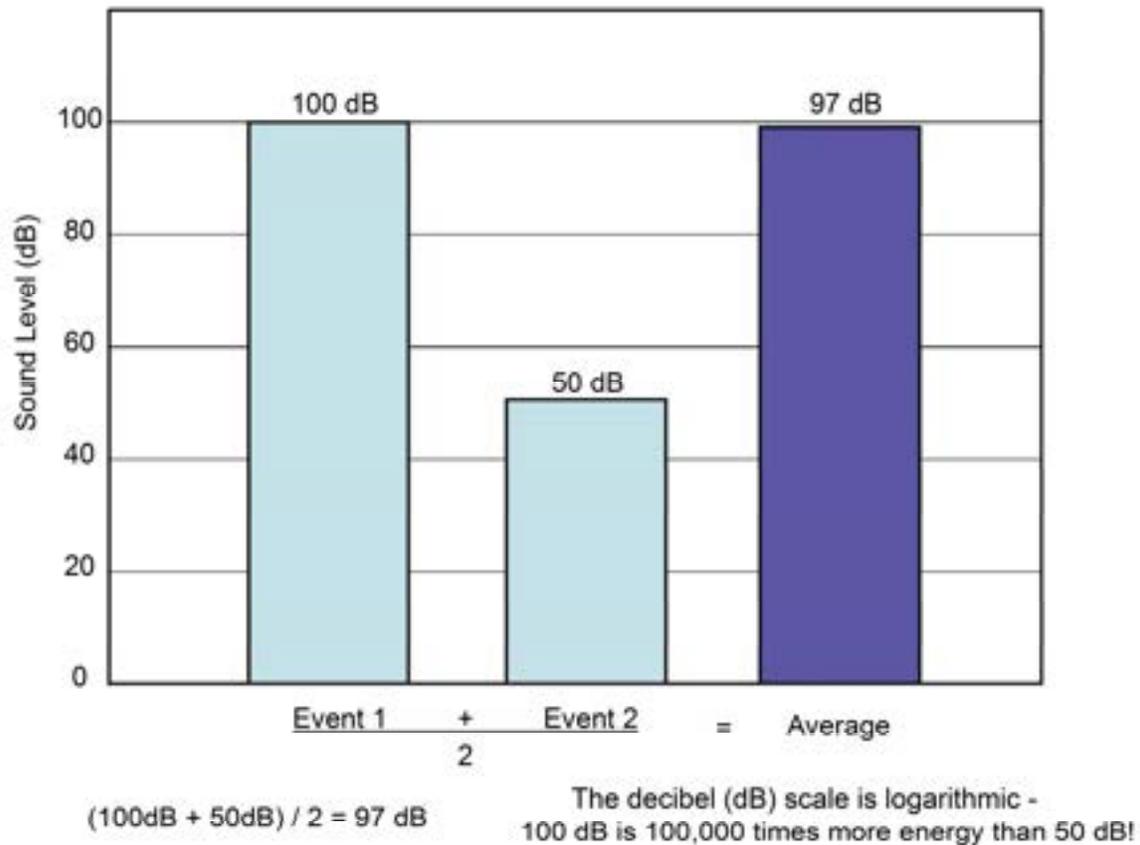
Logarithmic averaging also yields results that are quite different from simple arithmetic averaging. Consider the example shown in **Exhibit C-3, Example of Sound Level Averaging**. Two sound levels of equal duration are averaged. One has a maximum sound level ( $L_{max}$ ) of 100 dB, the other 50 dB. Using conventional arithmetic, the average would be 75 dB. The true result, using logarithmic math, is 97 dB. This is because 100 dB has far more energy than 50 dB (100,000 times as much) and is overwhelmingly dominant in computing the average of the two sounds.

Human perceptions of changes in sound pressure are less sensitive than a sound level meter. People typically perceive a tenfold increase in sound pressure, a 10 dB increase, as a doubling of loudness. Conversely, a 10 dB decrease in sound pressure is normally perceived as half as loud. In community settings, most people perceive a 3 dB increase in sound pressure (a doubling of the sound pressure or energy) as just noticeable. In laboratory settings, people with good hearing are able to detect changes in sounds of as little as 1 dB.



## EXHIBIT C-3 | EXAMPLES OF SOUND LEVEL AVERAGING

Assume two sound levels of equal duration...  
What is the average level?



Source: Landrum & Brown, 2023.

### C.1.2 Sound Frequency

The pitch (or frequency) of sound can vary greatly from a low-pitched rumble to a shrill whistle. If we consider the analogy of ripples in a pond, high frequency sounds are vibrations with tightly spaced ripples, while low rumbles are vibrations with widely spaced ripples. The rate at which a source vibrates determines the frequency. The rate of vibration is measured in units called “Hertz” -- the number of cycles, or waves, per second. One’s ability to hear a sound depends greatly on the frequency composition. Humans hear sounds best at frequencies between 1,000 and 6,000 Hertz. Sound at frequencies above 10,000 Hertz (high-pitched hissing) and below 100 Hertz (low rumble) are much more difficult to hear.

When attempting to measure sound in a way that approximates what our ears hear, we must give more weight to sounds at the frequencies we hear well and less weight to sounds at frequencies we do not hear well. Acousticians have developed several weighting scales for measuring sound. The A-weighted scale was developed to correlate with the judgments people make about the loudness of sounds. The A weighted decibel scale (dBA) is used in studies where audible sound is the focus of inquiry. **Exhibit C-4, Sound Frequency Weighting Curves**, shows the A, B, and C sound weighting scale. The U.S. Environmental Protection Agency (USEPA) has recommended the use of the A-weighted decibel scale in studies of environmental noise.<sup>1</sup> Its use

<sup>1</sup> Information on Levels of Environmental Noise Requisite to Protect Health and Welfare with an Adequate Margin of Safety. U.S. Environmental Protection Agency, Office of Noise Abatement and Control. 1974, P. A-10.

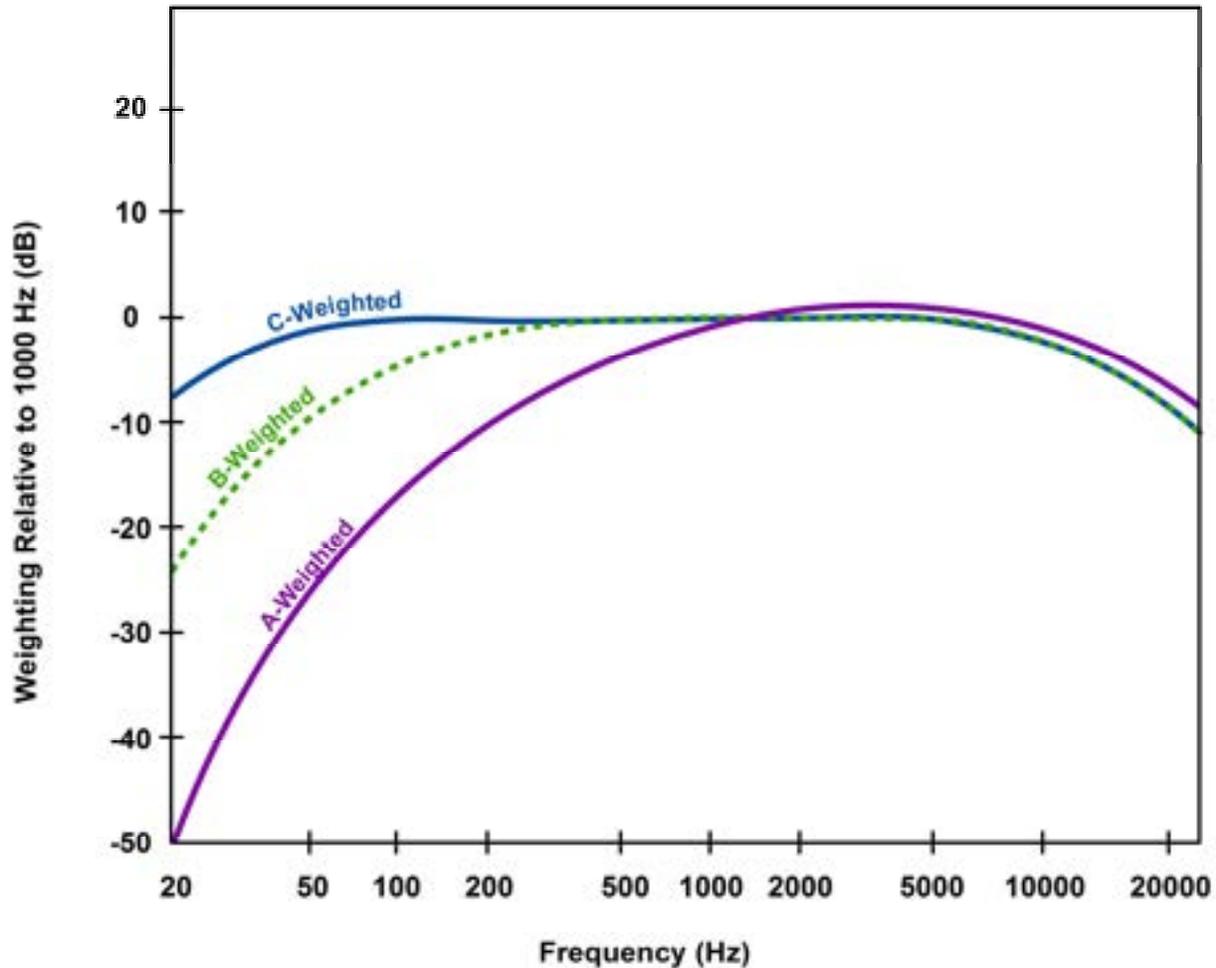


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is required by the FAA in airport noise studies.<sup>2</sup> For the purposes of this analysis, dBA was used as the noise metric and dB and dBA are used interchangeably.

### EXHIBIT C-4 | EXAMPLES OF SOUND LEVEL AVERAGING



Source: Noise Measurement Handbook, Federal Highway Administration, 2018, Sec. 17.3.3.3.

### C.1.3 Duration of Sounds

The duration of sounds – their patterns of loudness and pitch over time – can vary greatly. Sounds can be classified as continuous like a waterfall, impulsive like a firecracker, or intermittent like aircraft overflights. Intermittent sounds are produced for relatively short periods, with the instantaneous sound level during the event roughly appearing as a bell-shaped curve. An aircraft event is characterized by the period during which it rises above the background sound level, reaches its peak, and then recedes below the background level.

<sup>2</sup> "Airport Noise Compatibility Planning." 14 CFR Part 150, Sec. A150.3.



### C.1.4 Perceived Noise Levels

Perceived noisiness is another method of rating sound that was originally developed for the assessment of aircraft noise. Perceived noisiness is the subjective measure of the degree to which noise is unwanted or causes annoyance to an individual. To determine perceived noise level, individuals are asked to judge in a laboratory setting when two sounds are equally noisy or disturbing if heard regularly in their own environment. These surveys are inherently subjective and thus subject to greater variability. For example, two separate events of equal noise energy may be perceived differently if one sound is more annoying to the listener than the other.

### C.1.5 Propagation of Noise

Outdoor sound levels decrease as a function of distance from the source, and as a result of wave divergence, atmospheric absorption, and ground attenuation. If sound is radiated from a source in an homogeneous and undisturbed manner, the sound travels as spherical waves. As the sound wave travels away from the source, the sound energy is distributed over a greater area, dispersing the sound energy of the wave. Spherical spreading of the sound wave reduces the noise level at a rate of 6 dB per doubling of the distance.

Atmospheric absorption also influences the levels that are received by the observer. The greater the distance traveled, the greater the influence of the atmosphere and the resultant fluctuations. Atmospheric absorption becomes important at distances of greater than 1,000 feet. The degree of absorption is a function of the frequency of the sound as well as the humidity and temperature of the air. For example, atmospheric absorption is lowest at high humidity and higher temperatures. Sample atmospheric attenuation graphs are presented in **Exhibit C-5, Sound Attenuation Graphs**. The graphs show noise absorption rates based on temperature, relative humidity, and distance at five different frequency ranges. For example, sounds at a frequency of 2,000 Hz, with a relative humidity of 10 percent and a temperature of 90° Fahrenheit (32° Celsius), will be dissipated by 10 dB per for every 1,000 feet (305 meters) from the source.

The rate of atmospheric absorption varies with sound frequency. The higher frequencies are more readily absorbed than the lower frequencies. Over large distances, the lower frequencies become the dominant sound as the higher frequencies are attenuated.

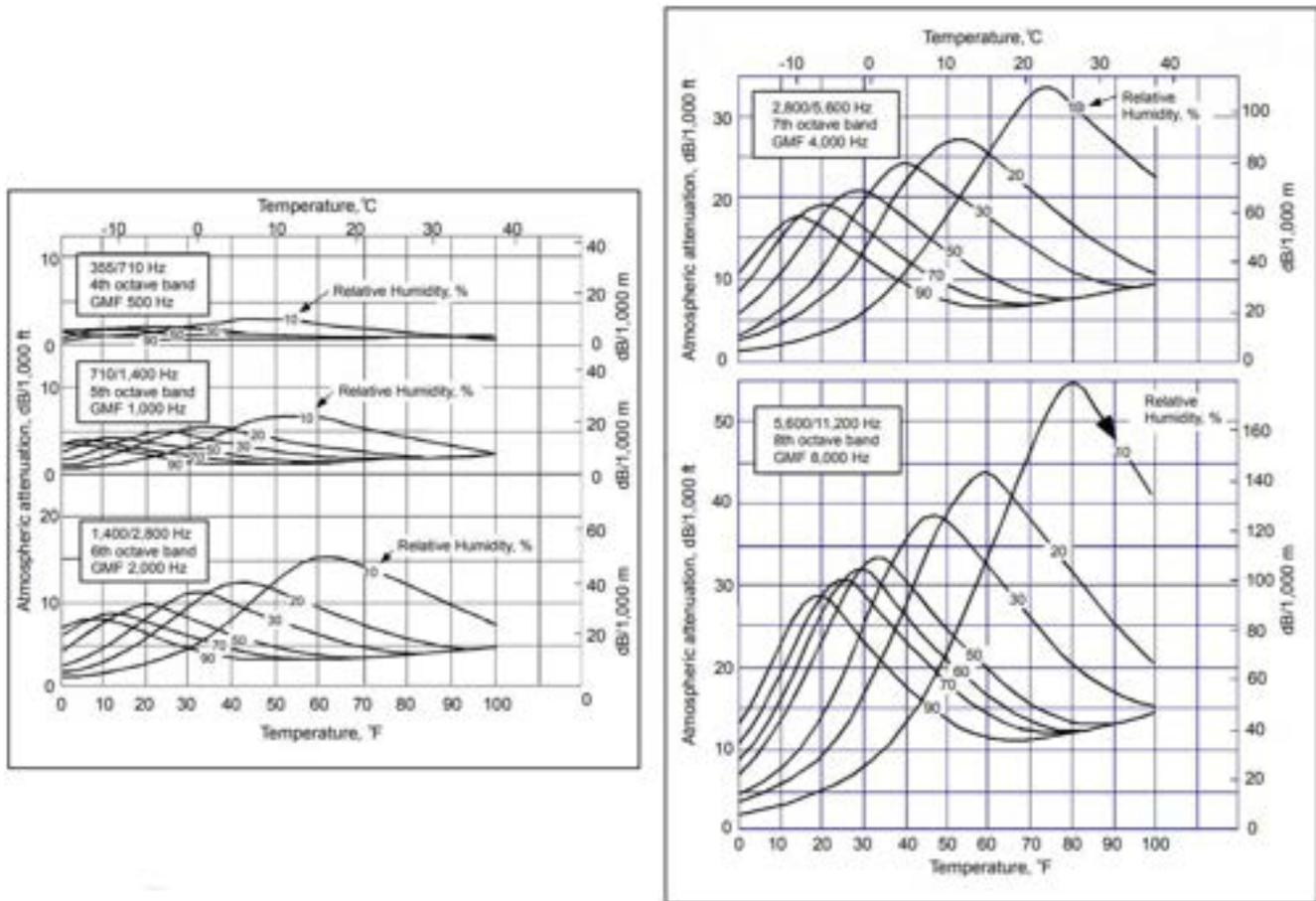
Turbulence and gradients of wind, temperature, and humidity also play a significant role in determining the degree of attenuation. Certain conditions, such as inversions, can also result in higher noise levels than would result from spherical spreading as a result of channeling or focusing the sound waves.

The effect of ground attenuation on noise propagation is a function of the height of the source and/or receiver and the characteristics of the terrain. The closer the source of noise is to the ground, the greater the ground absorption. Terrain consisting of soft surfaces such as vegetation provide for more ground absorption than hard surfaces. Ground attenuation is important for the study of noise from airfield operations (such as, thrust reversals) and in the design of noise berms or engine run-up facilities.

These factors are an important consideration for assessing in-flight and ground noise in the Rockford area. Atmospheric conditions will play a significant role in affecting the sound levels on a daily basis and how these sounds are perceived by the population.



## EXHIBIT C-5 | SOUND ATTENUATION GRAPHS



Source: Baranek, 1981.

## » C.2 Factors Influencing Human Response to Sound

Many factors influence how a sound is perceived and whether or not it is considered annoying to the listener. These factors include not only physical (acoustic) characteristics of the sound but also secondary (non-acoustic) factors, such as sociological and external factors.

Sound rating scales are developed to account for the factors that affect human response to sound. Nearly all of these factors are relevant in describing how sounds are perceived in the community. Many of the non-acoustic parameters play a prominent role in affecting individual response to noise. Background sound (ambient noise) is also important in describing sound in rural settings. Some non-acoustic factors that may influence an individual's response to aircraft noise include:

- Predictability of when the sound/noise will occur;
- How the noise affects certain activities;
- Fear of an aircraft crashing;
- Belief that aircraft noise could be prevented or reduced by aircraft designers, pilots, or authorities related to airlines or airports; and
- Sensitivity to noise in general.



Thus, it is important to recognize that non-acoustic factors such as those described above, as well as acoustic factors, contribute to human response to noise.

## » C.3 Standard Noise Descriptors

Given the multiple dimensions of sound, a variety of descriptors, or metrics, have been developed for describing sound and noise. Some of the most commonly used metrics are discussed in this section.

### C.3.1 Maximum Level

Maximum level (L<sub>max</sub>) is simply the highest sound level, or peak level, recorded during an event or over a given period of time. It provides a simple and understandable way to describe a sound event and compare it with other events. In addition to describing the peak sound level, the L<sub>max</sub> can be reported on an appropriate weighted decibel scale (A-weighted, for example) so that it can disclose information about the frequency range of the sound event in addition to the loudness.

The L<sub>max</sub>, however, fails to provide any information about the duration of the sound event. This can be a critical shortcoming when comparing different sounds. Even if they have identical L<sub>max</sub> values, sounds of greater duration contain more sound energy than sounds of shorter duration. Research has demonstrated that for many kinds of sound effects, the total sound energy, not just the peak sound level, is a critical consideration.

### C.3.2 Time Above Level

The time above level (TA) metric indicates the amount of time that sound at a particular location exceeds a given sound level threshold. The TA is often expressed in terms of the total time per day that the threshold is exceeded. The TA metric explicitly provides information about the duration of sound events, although it conveys no information about the peak levels during the period of observation.

### C.3.3 Number of Events Above Level

Similar to the TA, the number of events above (NA) metric indicates the total number of aircraft events at particular location that exceed a given sound level threshold in dB. The NA metric explicitly provides information about the number of sound events, although it conveys no information about the duration of the event(s).

### C.3.4 Sound Exposure Level

The sound exposure level (SEL) metric provides a way of describing the total sound energy of a single event. In computing the SEL value, all sound energy occurring during the event, within 10 dB of the L<sub>max</sub>, is mathematically integrated over one second. (Very little information is lost by discarding the sound below the 10 dB cut-off, since the highest sound levels completely dominate the integration calculation.) Consequently, the SEL is always greater than the L<sub>max</sub> for events with a duration greater than one second. SELs for aircraft overflights typically range from five to 10 dB higher than the L<sub>max</sub> for the event.

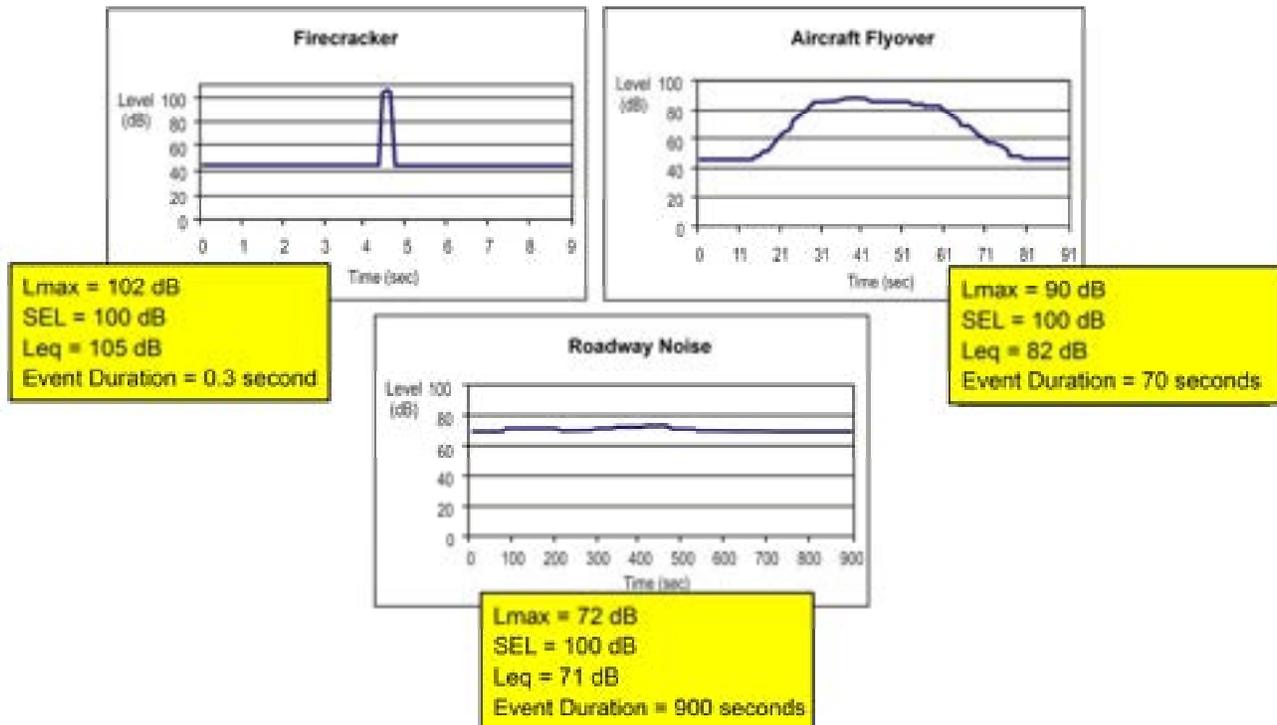
**Exhibit C-6, *Measurement of Different Types of Sound***, shows graphs of instantaneous sound levels for three different events: an aircraft flyover, steady roadway noise, and a firecracker. The L<sub>max</sub> and the duration of each event differ greatly. The pop of the firecracker is quite loud, 102 dB but lasts less than a second. The aircraft flyover has a considerably lower L<sub>max</sub> at 90 dB, but the event lasts for over a minute. The L<sub>max</sub> from the roadway noise is even quieter at only 72 dB, but it lasts for 15 minutes. By considering the loudness and the duration of these very different events simultaneously, the SEL metric reveals that the total sound energy of all three is identical. This can be a critical finding for studies where total noise dosage is the focus of study. As it happens, research has shown conclusively that noise dosage is crucial in understanding the effects of noise on animals and humans.



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### EXHIBIT C-6 | MEASUREMENT OF DIFFERENT TYPES OF SOUND



Source: Landrum & Brown, 2023.

### C.3.5 Equivalent Sound Level

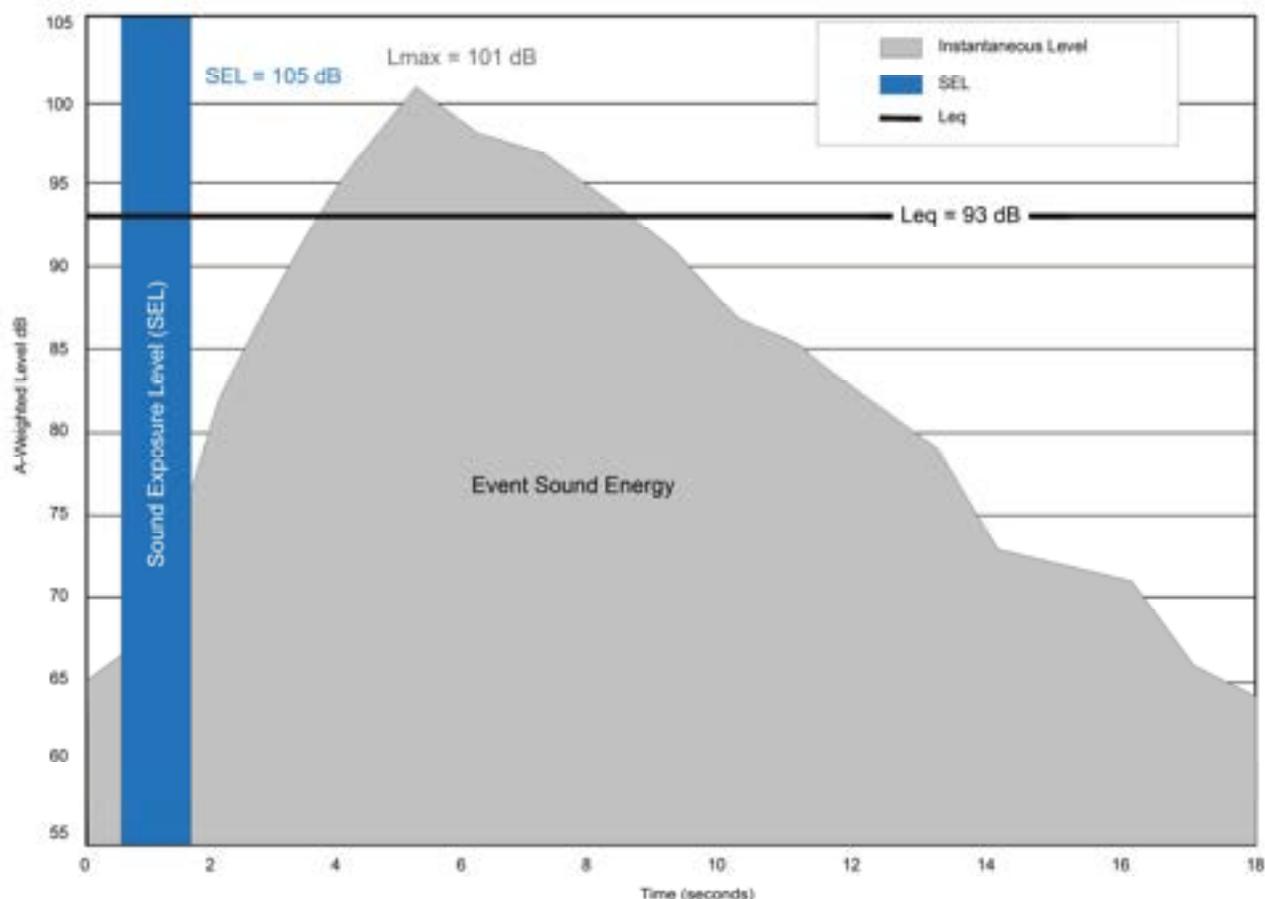
The equivalent sound level (Leq) metric may be used to define cumulative noise dosage, or noise exposure, over a period of time. In computing Leq, the total noise energy over a given period of time, during which numerous events may have occurred, is logarithmically averaged over the time period. The Leq represents the steady sound level that is equivalent to the varying sound levels actually occurring during the period of observation. For example, an 8-hour Leq of 67 dB indicates that the amount of sound energy in all the peaks and valleys that occurred in the 8 hour period is equivalent to the energy in a continuous sound level of 67 dB. Leq is typically computed for measurement periods of 1 hour, 8 hours, or 24 hours, although any time period can be specified.

**Exhibit C-7, Relationship Among Sound Metrics**, shows the relationship of Leq to L<sub>max</sub> and SEL. In this example, a single aircraft event lasting 18 seconds is represented. The instantaneous noise levels for the event range from 64 to an L<sub>max</sub> of 101 dBA. The area under the curve represents the sound energy accumulated during the entire event. The compression of this energy into a single second, results in an SEL of 105 dBA. The Leq average of the sound energy for each second during the event would be 93 dB. If this event were the only event to occur during an hour, the aircraft sound energy for the other 3,582 seconds would be considered to be zero. When converted to an hourly LEQ, the level would be nearly 70 dB of Leq. This again indicates the dominance of loud events in noise summation and averaging computations.

The Leq is a critical noise metric for many kinds of analysis where total noise dosage, or noise exposure, is under investigation. As already noted, noise dosage is important in understanding the effects of noise on both animals and people. Indeed, research has led to the formulation of the “equal energy rule.” This rule states that it is the total acoustical energy to which people are exposed that explains the effects the noise will have on them. That is, a very loud noise with a short duration will have the same effect as a lesser noise with a longer duration if they have the same total sound energy.



## EXHIBIT C-7 | RELATIONSHIP AMONG SOUND METRICS



Source: Landrum & Brown, 2023

### C.3.6 Day-Night Average Sound Level

The day-night average sound level (DNL) metric is really a variation of the 24 hour Leq metric. Like Leq, the DNL metric describes the total noise exposure during a given period. Unlike Leq, however, DNL, by definition, can only be applied to a 24-hour period. In computing DNL, an extra weight of 10 dB is assigned to any sound levels occurring between the hours of 10:00 p.m. and 7:00 a.m. This is intended to account for the greater annoyance that nighttime noise is presumed to cause for most people. Recalling the logarithmic nature of the dB scale, this extra weight treats one nighttime noise event as equivalent to 10 daytime events of the same magnitude.

As with Leq, DNL values are strongly influenced by the loud events. For example, 30 seconds of sound of 100 dB, followed by 23 hours, 59 minutes, and 30 seconds of silence would compute to a DNL value of 65 dB. If the 30 seconds occurred at night, it would yield a DNL of 75 dB.

This example can be roughly equated to an airport noise environment. Recall that an SEL is the mathematical compression of a noise event into one second. Thus, 30 SELs of 100 dB during a 24-hour period would equal DNL 65 dB, or DNL 75 dB if they occurred at night. This situation could actually occur in places around a real airport. If the area experienced 30 overflights during the day, each of which produced an SEL of 100 dB, it would be exposed to DNL 65 dB. Recalling the relationship of SEL to the Lmax of an aircraft overflight, the Lmax recorded for each of those overflights (the peak level a person would actually hear) would typically range from 90 to 95 dB.



## » C.4 Health Effects of Noise

A considerable amount of research has been conducted to identify, measure, and quantify the potential effects of aviation noise on health. The various methods by which noise can be measured (e.g. single dose, long-term average, number of events above a certain level, etc.), and difficulties in separating other lifestyle factors from the analysis, increases the complexity of determining the health effects of noise, and has caused considerable variability in the results of past studies. The health effects of noise are often divided into the following topics: cardiovascular effects, hearing loss, sleep disturbance, and speech/communication interference.

### C.4.1 Cardiovascular Effects

Several studies have suggested that increased hypertension or other cardiovascular effects, such as increased blood pressure, and change in pulse rate, may be associated with long-term exposure to high levels of environmental noise. When conducting cross-sectional studies of environmental noise exposure, it is difficult to control for other important variables. Subsequent reviews of past research have pointed out that such studies "...are notoriously difficult to interpret. They often report conflicting results, generally do not identify a cause and effect relationship, and often do not report a dose-response relationship between the cause and effect."<sup>3</sup> In 2018, the World Health Organization (WHO) published its Environmental Noise Guidelines report (WHO report) with reference to recent research related to aircraft noise and human response.<sup>4</sup> The WHO report references two ecological studies that provide information on the relationship between aircraft noise and incidence of ischemic heart disease (IHD); however, this "...evidence was rated low quality." Additionally, the WHO report references one cohort study and several cross-sectional studies of the relationship between aircraft noise and hypertension. The WHO report noted "...inconsistency across studies" and the "...evidence was rated low quality." Similar studies of the relationship between aircraft noise and cases of stroke were reviewed. The WHO report noted that this "...evidence was rated very low quality." Therefore, it is difficult to draw any conclusions about the relationship between aircraft noise exposure and cardiovascular effects.

### C.4.2 Hearing Loss

The potential for noise-induced hearing loss is commonly associated with occupational noise exposure from working in a noisy work environment or recreational noise such as listening to loud music. Recent studies have concluded that "because environmental noise does not approximate occupational noise levels or recreational noise exposures...it does not have an effect on hearing threshold levels." Furthermore, "aviation noise does not pose a risk factor for child or adolescent hearing loss, but perhaps other noise sources (personal music devices, concerts, motorcycles, or night clubs) are a main risk factor."<sup>5</sup> This conclusion is supported by the 2018 WHO Environmental Noise Guidelines which notes that "no studies were found, and therefore no evidence was available on the association between aircraft noise and hearing impairment and tinnitus."<sup>6</sup> Because aviation noise levels near airports do not approach levels of occupational or recreational noise exposures associated with hearing loss, hearing impairment is likely not caused by aircraft noise for populations living near an airport.

### C.4.3 Sleep Disturbance

Sleep disturbance is a common complaint from people who live in the vicinity of an airport. A large amount of research has been published on the topic of sleep disturbance caused by environmental noise. This research has produced variable results due to differing definitions of sleep disturbance, different ways for measuring sleep

<sup>3</sup> Airport Cooperative Research Program, Transportation Research Board, Effects of Aircraft Noise: Research Update on Selected Topics, 2008.

<sup>4</sup> World Health Organization, Regional Office for Europe, Environmental Noise Guidelines for the European Region, 2018.

<sup>5</sup> Airport Cooperative Research Program, Transportation Research Board, Effects of Aircraft Noise: Research Update on Selected Topics, 2008.

<sup>6</sup> World Health Organization, Regional Office for Europe, Environmental Noise Guidelines for the European Region, 2018.



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disturbance (behavioral awakenings or sleep interruption), and different settings in which to measure it (laboratory setting or field setting).

In 1992, the Federal Interagency Committee on Noise (FICON) recommended an interim dose-response curve to predict the percent of the exposed population expected to be awakened (percent awakening) as a function of the exposure to single event noise levels expressed in terms of the SEL. This interim curve was based on statistical adjustment of previous analysis and included data from both laboratory and field studies. In 1997, the Federal Interagency Committee on Aviation Noise (FICAN) recommended a revised sleep disturbance relationship based on data and analysis from three field studies.

**Exhibit C-8, *Sleep Disturbance Dose-Response Curves***, show the results of the 1992 and 1997 analyses. The top graph shows a comparison of the 1992 FICON and 1997 FICAN curves. The 1997 FICAN curve represents the upper limit of the observed field data and should be interpreted as predicting the "maximum percent of the exposed population expected to be behaviorally awakened", or the "maximum percent awakened" for a given residential population.

In 2008, FICAN recommended the use of a revised method to predict sleep disturbance in terms of percent awakenings based on data published by the American National Standards Institute (ANSI).<sup>7</sup> In contrast to the earlier FICAN recommendation, the 2008 ANSI standard indicates that the probability of awakening is lower for a single noise event in cases where the population is exposed to the given noise source for a long period of time (more than one year) compared to the probability of awakening for sound that is new to an area. In **Exhibit C-8**, the lower graph shows these two relationships, with Equation 1 (blue dotted line) representing percent awakenings from long-term noise and Equation B1 (pink dashed line) representing percent awakenings from a new noise source based on the 1997 FICAN results. As shown in this exhibit, at an indoor SEL of 100 dB, the probability of awakenings would be expected to exceed 15 percent for a new noise source; yet for long-term noise sources, the probability of awakening is expected to be less than 10 percent.

The numerous studies and reports that have been developed on the subject of sleep disturbance related to environmental noise over the past several decades have produced varied results. A review of past studies conducted by the Airport Cooperative Research Program (ACRP) suggests that in-home sleep disturbance studies clearly demonstrate that it requires more noise to cause awakenings than was previously theorized based on laboratory sleep disturbance studies.<sup>8</sup> The 2018 WHO Environmental Noise Guidelines references six studies that attempted to measure sleep disturbance at noise levels between 40 dB and 65 dB. Over 11% of the population was characterized as highly sleep-disturbed at nighttime levels of 40 dB. These studies were based on self-reporting and the "...evidence was rated moderate quality..." for an association between aircraft noise and probability of awakenings.<sup>9</sup>

Due to the variability of study methodologies, particularly studies outside of a laboratory, and other influencing factors, it is difficult to determine the noise level at which a high percentage of the population would be expected to be awakened by aircraft noise. No definitive conclusions have been drawn on the percent of a population that is estimated to be awakened by a certain level of aircraft noise and recent studies have cautioned about the over interpretation of the data.<sup>10</sup>

<sup>7</sup> ANSI S12.9-2008, Quantities and Procedures for Description and Measurement of Environmental Sound — Part 6: Methods for Estimation of Awakenings Associated with Outdoor Noise Events Heard in Homes, 2008.

<sup>8</sup> Airport Cooperative Research Program, Transportation Research Board, Effects of Aircraft Noise: Research Update on Selected Topics, 2008.

<sup>9</sup> World Health Organization, Regional Office for Europe, Environmental Noise Guidelines for the European Region, 2018.

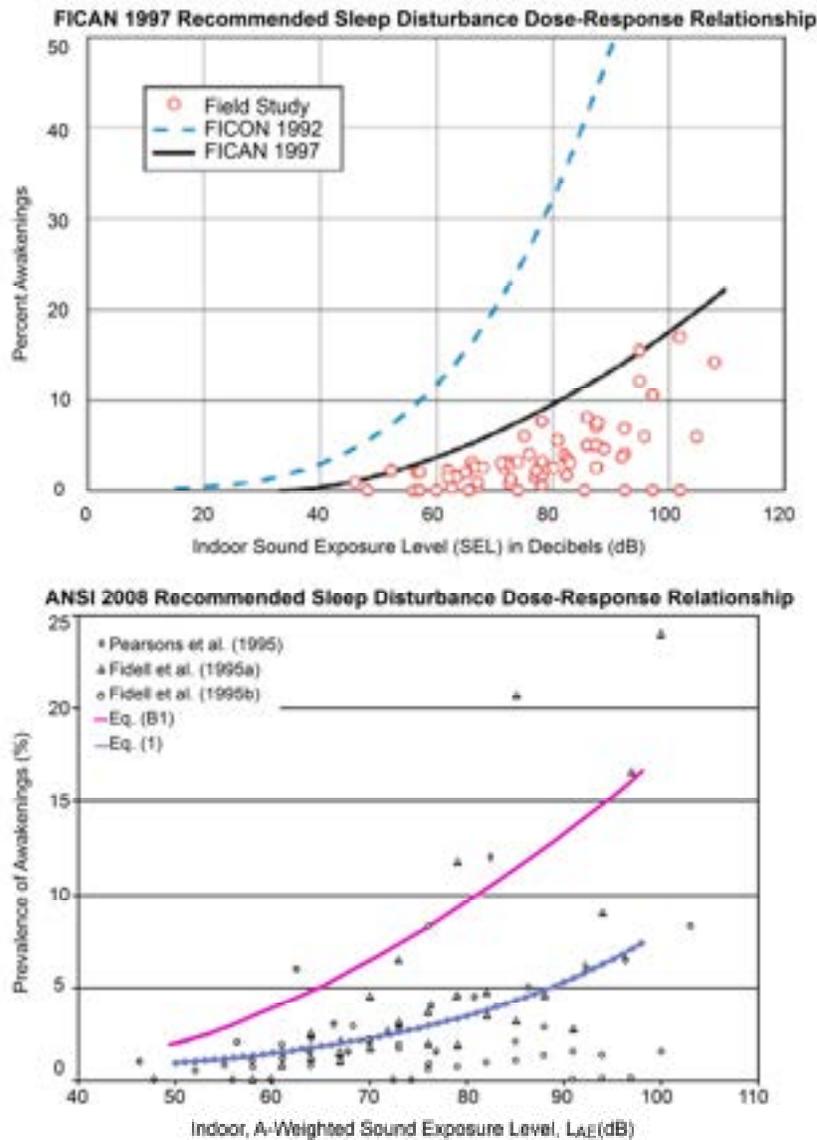
<sup>10</sup> Airport Cooperative Research Program, Transportation Research Board, Effects of Aircraft Noise: Research Update on Selected Topics, 2008.



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## EXHIBIT C-8 | SLEEP DISTURBANCE DOSE RESPONSE CURVES



Source: FICAN, June 1997; American National standards Institute, 2008.

### C.4.4 Communication Interference

Communication interference can impact activities such as personal conversations, classroom learning, and listening to radio and television. Most studies have focused on communication interference due to continual noise sources. In 1974, the USEPA published *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*, which is one of the few studies to focus on intermittent noise. The study concluded that for voice communication, an indoor  $L_{eq}$  of 45 dB allows normal conversation at distances up to 2 meters with 95 percent sentence intelligibility. **Exhibit C-9, Noise Effects on Distance Necessary for Speech Communication**, shows the required distance between talker and listener based on the type of speech communication (normal voice, loud voice, etc.) and the environmental noise level from the 1974 USEPA report.

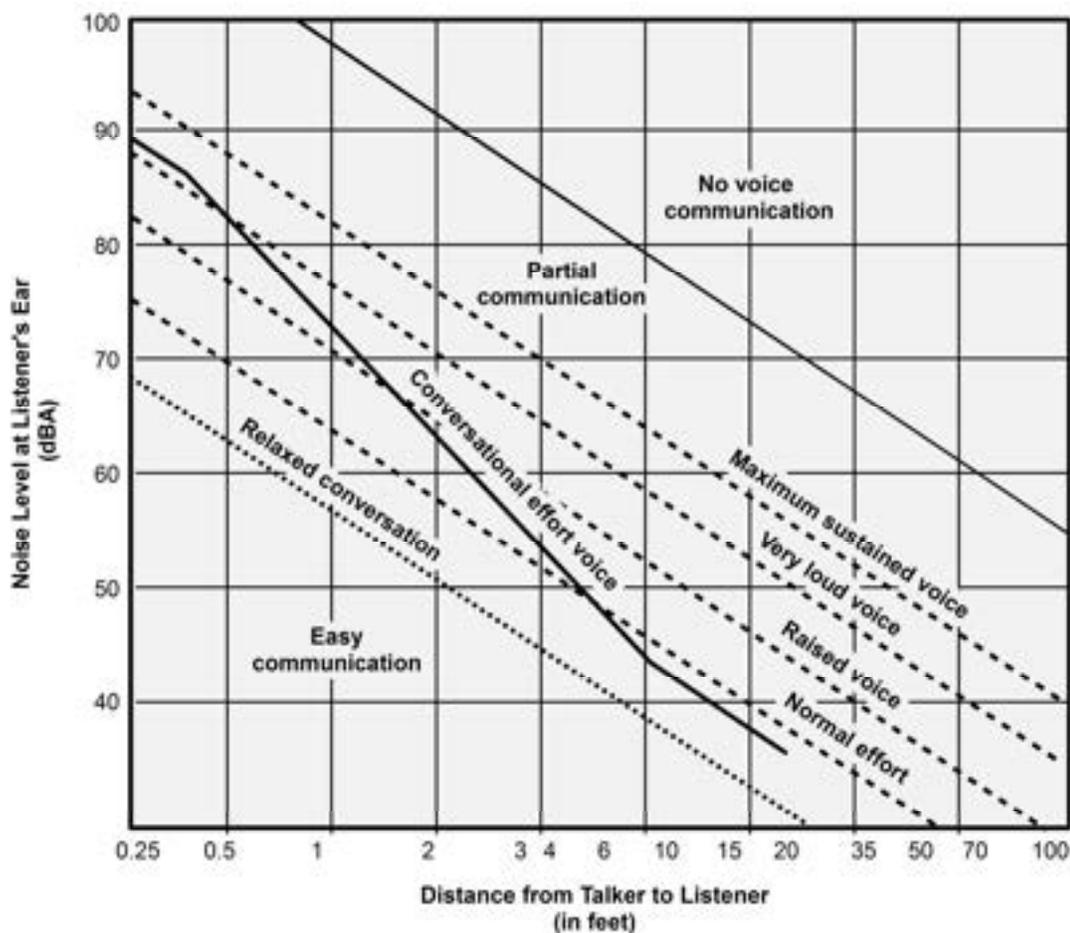


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Noise can also impact communication between student and teacher necessary for learning in a classroom setting. It is usually accepted that noise levels above a certain Leq may affect a child's learning experiences. Research has shown a "decline in reading when outdoor noise levels equal or exceed Leq of 65 dBA."<sup>11</sup> Furthermore, a study conducted by FICAN in 2007 found: "(1) a substantial association between noise reduction and decreased failure (worst-score) rates for high-school students, and (2) significant association between noise reduction and increased average test scores for student/test subgroups. In general, the study found little dependence upon student group and upon test type."<sup>12</sup> A study of noise exposure and the effects on school test scores between 2000/01 and 2008/09 found "...statistically significant associations between airport noise and student mathematics and reading test scores, after taking demographic and school factors into account."<sup>13</sup> This study also found that schools that had been provided sound insulation had better test scores than schools that were not sound insulated. This Study made no recommendation regarding the noise level at which impacts upon learning may occur.

### EXHIBIT C-9 | NOISE EFFECTS ON DISTANCE NECESSARY FOR SPEECH COMMUNICATION



Source: FICAN, 1992; from USEPA, 1974.

- <sup>11</sup> Airport Cooperative Research Program, Transportation Research Board, Effects of Aircraft Noise: Research Update on Selected Topics, 2008.
- <sup>12</sup> Federal Interagency Committee on Aviation Noise (FICAN), Findings of the FICAN Pilot Study on the Relationship between Aircraft Noise Reduction and Changes in Standardized Test Scores, July 2007.
- <sup>13</sup> National Academies of Sciences, Engineering, and Medicine; Assessing Aircraft Noise Conditions Affecting Student Learning, Volume 1: Final Report; 2014.



## » C.5 Existing (2023) Baseline Noise Modeling Methodology

The following sections describe the noise modeling methodology and assumptions for the Existing (2023) Baseline Noise Exposure Contours for Chicago Rockford International Airport (RFD or Airport). Data representative of an average-annual day of operations was obtained from the Federal Aviation Administration's (FAA) Air Traffic Activity Data System (ATADS) and Traffic Flow Management System (TFMS) reports. This data included the number of arrival and departure operations by individual types of aircraft during daytime and nighttime periods, the distribution of aircraft activities among the runway ends, the departure destinations used to determine stage length and the distribution of aircraft along the flight paths leading to or from each runway.

### C.5.1 Runway Definition

RFD has one east/west runway (7/25) and one north/south crosswind runway (1/19). Runway 7/25 is the longest runway on the airfield at 10,002 feet in length and is 150 feet wide. Runway 1/19 is 8,200 feet long and 150 feet wide. Runway end 1 is equipped with a CAT I ILS, runway end 07 is also equipped with CAT I, II and III ILS.

Runway	Length (feet)
01/19	8,200
07/25	10,002

Helicopter operations typically originate and terminate from two (2) locations on the airfield. For the purposes of this study these locations are called H1 and H2. H1 is located east of the terminal near the Emery Air facilities and H2 is located at the OSF Lifeline facilities. **Exhibit C-10, Existing Airfield Layout** shows the existing airfield layout.



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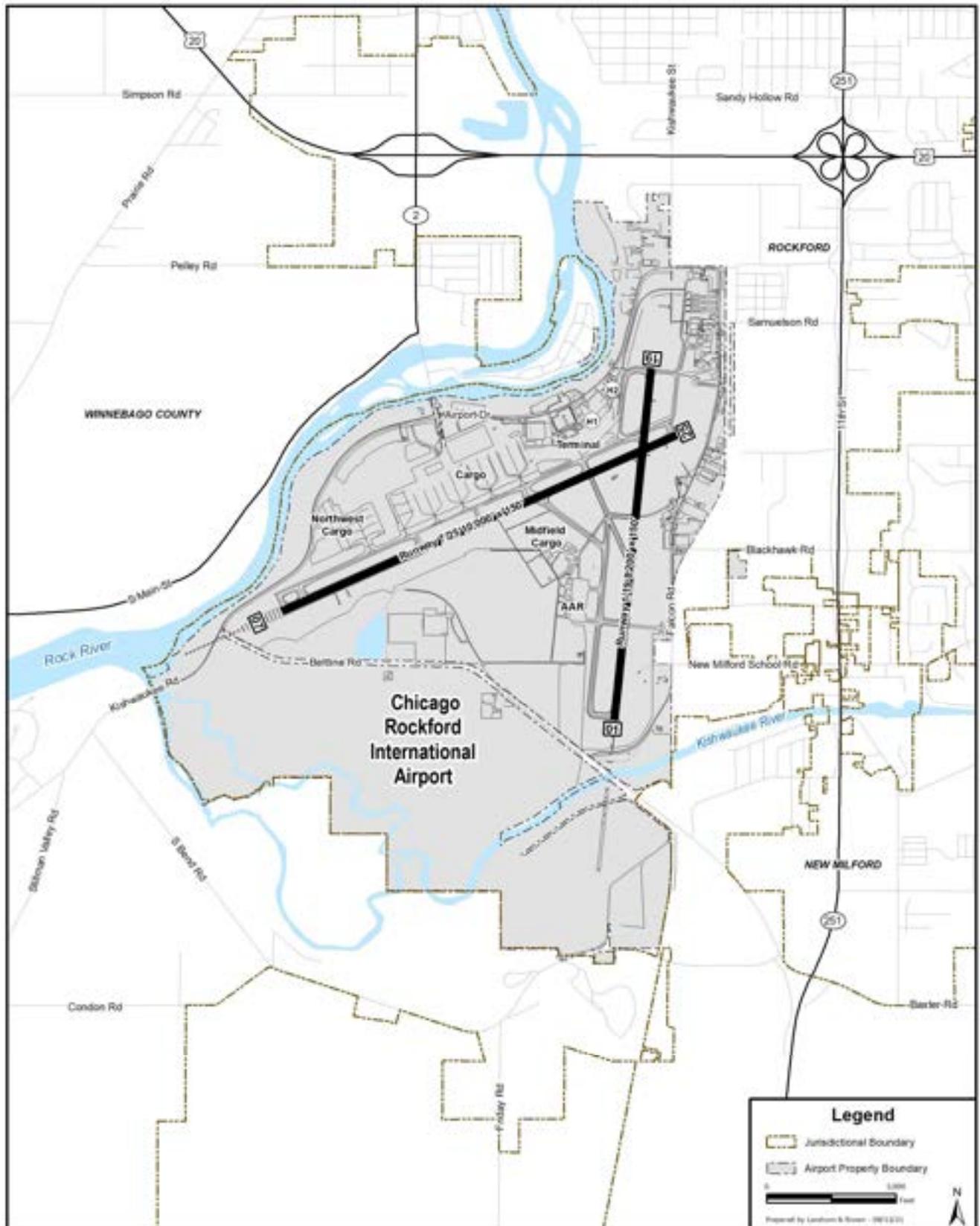
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## EXHIBIT C-10 | EXISTING AIRFIELD LAYOUT



Source: Landrum & Brown, 2023.



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## C.5.2 Number of Operations and Fleet Mix

The number of annual operations for the Existing (2023) Baseline condition at RFD was based on Federal FAA Air Traffic Control Tower (ATCT) counts for the period from November 2021 through October 2022. These counts are made available through FAA's Operations Network (OpsNet) database and ATADS reports. This was the most recent operational data available at the time modeling started. During that time period 23,540 Air Carrier commercial and cargo operations and 22,969 Air Taxi, General Aviation and Military jet and prop operations occurred at RFD for a total of 46,509 aircraft operations. When divided by 365, the result is 127.4 average-annual daily operations.

Specific aircraft types and times of operation were developed from a combination of TFMS reports and National Offload Program (NOP) data for the same period. **Table C-1, Existing (2023) Baseline Average-Annual Day Operations by Aircraft Category**, provides a summary of the average-annual daily operations by aircraft category and time of day. **Table C-2, Existing (2023) Baseline Average-Annual Day Operations by Aircraft Type**, shows the average-annual daily number of arrivals and departures by the individual aircraft types for the Existing (2023) Baseline condition.

**TABLE C-1 | EXISTING (2023) BASELINE AVERAGE-ANNUAL DAY OPERATIONS BY AIRCRAFT CATEGORY**

Aircraft Category	Arrivals		Departures		Total	Percent of Total
	Day	Night	Day	Night		
Cargo Jets	11.16	18.51	11.62	18.05	59.33	46.6%
Commercial Jets	2.00	0.58	1.88	0.70	5.16	4.0%
General Aviation Jets	2.89	0.17	2.89	0.18	6.13	4.8%
General Aviation Props	26.91	0.67	26.79	0.79	55.16	43.3%
Military Aircraft	0.82	--	0.82	--	1.64	1.3%
<b>Grand Total</b>	<b>43.79</b>	<b>19.92</b>	<b>44.00</b>	<b>19.71</b>	<b>127.42</b>	<b>100%</b>

Notes: Totals may not equal sum total due to rounding.

Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Source: Federal Aviation Administration (FAA) Operations Network (OpsNet) data, Traffic Flow Management System (TFMS) data, National Offload Program (NOP) data, Landrum & Brown analysis, 2023.

**TABLE C-2 | EXISTING (2023) BASELINE AVERAGE-ANNUAL DAY OPERATIONS BY AIRCRAFT**

Aircraft Type	AEDT ID	Arrivals		Departures		Total
		Day	Night	Day	Night	
<b>Cargo Jets</b>						
Boeing 727-200 Series Freighter	727EM2	0.02	0.01	0.02	0.01	0.05
Boeing 737-400 Freighter	737400	0.04	--	0.04	< 0.00	0.08
Boeing 747-400 Series Freighter	747400	0.13	0.08	0.13	0.08	0.41
Boeing 757-200 Series Freighter	757PW	1.12	3.77	0.97	3.92	9.79
Boeing 757-200 Series Freighter	757RR	1.12	3.77	0.97	3.92	9.79
Boeing 767-300 ER Freighter	7673ER	4.53	5.42	4.39	5.56	19.91
Boeing 767-200 Series Freighter	767CF6	1.59	0.07	1.63	0.03	3.33
Airbus A300B4-600 Series	A300-622R	2.53	4.60	3.39	3.74	14.26
Boeing DC-9-10 Series Freighter	DC910	0.01	0.01	0.02	0.00	0.04
Boeing MD-11 Freighter	MD11GE	0.03	0.39	0.03	0.38	0.83
Boeing MD-11 Freighter	MD11PW	0.03	0.39	0.03	0.38	0.83



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Aircraft Type	AEDT ID	Arrivals		Departures		Total
		Day	Night	Day	Night	
<b>Cargo Jet Subtotal</b>		<b>11.16</b>	<b>18.51</b>	<b>11.62</b>	<b>18.05</b>	<b>59.33</b>
<b>Commercial Jets</b>						
Boeing 737-700 Series	737700	0.01	--	< 0.00	< 0.00	0.01
Boeing 737-800 Series	737800	1.26	0.54	1.18	0.62	3.61
Airbus A319-100 Series	A319-131	0.21	< 0.00	0.19	0.03	0.43
Airbus A320-200 Series	A320-211	0.52	0.03	0.51	0.04	1.11
<b>Commercial Jet Subtotal</b>		<b>2.00</b>	<b>0.58</b>	<b>1.88</b>	<b>0.7</b>	<b>5.16</b>
<b>General Aviation Jets</b>						
Bombardier Global Express	BD-700-1A10	0.03	< 0.00	0.04	--	0.08
Bombardier Challenger 600	CL600	0.34	0.01	0.35	0.01	0.71
Bombardier Challenger 601	CL601	0.04	--	0.04	--	0.09
CESSNA CITATION 510	CNA510	0.09	--	0.09	--	0.18
Cessna 525 CitationJet	CNA525C	0.32	0.03	0.32	0.03	0.70
Cessna 550 Citation II	CNA55B	0.39	< 0.00	0.38	0.01	0.79
Cessna 560 Citation Excel	CNA560XL	0.22	< 0.00	0.21	0.01	0.44
Cessna 680 Citation Sovereign	CNA680	0.28	0.02	0.30	0.01	0.61
Cessna 750 Citation X	CNA750	0.11	0.00	0.09	0.02	0.22
Eclipse 500 / PW610F	ECLIPSE500	0.17	0.01	0.18	--	0.37
Dassault Falcon 20-C	FAL20	0.02	0.03	0.01	0.03	0.09
Dassault Falcon 900	FAL900EX	0.06	--	0.05	0.01	0.12
Gulfstream G650ER	G650ER	0.03	--	0.03	--	0.07
Gulfstream G400	GIV	0.07	0.01	0.07	--	0.14
Gulfstream V-SP	GV	0.03	--	0.03	--	0.06
Bombardier Learjet 35	LEAR35	0.68	0.05	0.69	0.04	1.46
<b>General Aviation Jet Subtotal</b>		<b>2.89</b>	<b>0.17</b>	<b>2.89</b>	<b>0.18</b>	<b>6.13</b>
<b>General Aviation Props</b>						
Raytheon Beech Baron 58	BEC58P	1.23	0.01	1.22	0.01	2.47
Cessna 172 Skyhawk	CNA172	8.89	0.12	8.88	0.13	18.02
Cessna 182	CNA182	1.73	0.05	1.65	0.13	3.56
Cessna 206	CNA206	0.43	--	0.43	--	0.87
Cessna 208 Caravan	CNA208	0.41	--	0.39	0.02	0.82
Cessna 441 Conquest II	CNA441	0.20	0.04	0.21	0.02	0.47
1985 1-ENG COMP	COMSEP	1.58	0.08	1.60	0.06	3.32
DeHavilland DHC-6-300 Twin Otter	DHC6	0.59	0.10	0.61	0.09	1.39
Eurocopter EC-130	EC130	0.05	0.04	0.06	0.03	0.18
Embraer EMB120 Brasilia	EMB120	0.02	0.04	0.04	0.01	0.11
Single Engine Prop	GASEPF	4.47	0.04	4.38	0.13	9.02
Single Engine Prop	GASEPV	4.66	0.16	4.67	0.16	9.65
Piper PA-28 Cherokee Series	PA28	1.98	--	1.98	--	3.97



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Aircraft Type	AEDT ID	Arrivals		Departures		Total
		Day	Night	Day	Night	
Piper PA-30 Twin Comanche	PA30	0.50	--	0.50	--	0.99
Piper PA46 (Piston)	PA31	0.16	--	0.16	--	0.33
<b>General Aviation Prop Subtotal</b>		<b>26.91</b>	<b>0.67</b>	<b>26.79</b>	<b>0.79</b>	<b>55.16</b>
<b>Military Aircraft</b>						
Lockheed 130 Hercules*	C130E	0.09	--	0.09	--	0.18
Cessna 182	CNA182	0.04	--	0.04	--	0.08
Cessna 206	CNA206	0.03	--	0.03	--	0.05
1985 1-ENG COMP	COMSEP	0.05	--	0.05	--	0.11
DeHavilland DHC-6-300 Twin Otter	DHC6	0.17	--	0.17	--	0.35
Dornier 328-100 Series	DO328	0.05	--	0.05	--	0.11
Eclipse 500 / PW610F	ECLIPSE500	0.09	--	0.09	--	0.19
Embraer ERJ175	EMB175	0.04	--	0.04	--	0.08
Lockheed Martin F-16 Fighting Falcon	F16PW0	0.04	--	0.04	--	0.08
Gulfstream V/G500	GV-M	0.05	--	0.05	--	0.11
Bombardier Learjet 35	LEAR35	0.08	--	0.08	--	0.16
Sikorsky SH-60 Sea Hawk	S70	0.08	--	0.08	--	0.16
T-38 Talon	T-38A	0.03	--	0.03	--	0.07
<b>Military Aircraft Subtotal</b>		<b>0.82</b>	<b>--</b>	<b>0.82</b>	<b>--</b>	<b>1.64</b>
<b>Grand Total</b>		<b>43.79</b>	<b>19.92</b>	<b>44.00</b>	<b>19.71</b>	<b>127.42</b>

\*Includes touch-and-go/closed patterns operations which are counted as one arrival and one departure.

Notes: Totals may not equal sum total due to rounding.

Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Source: Federal Aviation Administration (FAA) Operations Network (OpsNet) data, Traffic Flow Management System (TFMS) data, National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



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## C.5.3 Runway End Utilization

Average-annual day runway end utilization was derived from analysis of sixteen (16) weeks of National Offload Program (NOP) radar data from the year 2020. Two weeks of radar data was utilized from the following months; January, February, March, April, May, October, November and December. During the months of May through September 2020, Runway 7/25 was closed, therefore data from those months was not utilized. This data provided the average annual daily runway use for each AEDT aircraft type during day and night periods at RFD. **Table C-3, Existing (2023) Baseline Runway End Utilization**, summarizes the percentage of use by each aircraft category on each of the runways at RFD during the daytime (7:00 a.m. – 9:59 p.m.) and nighttime (10:00 p.m. – 6:59 a.m.) periods.

**TABLE C-3 | EXISTING (2023) BASELINE RUNWAY END UTILIZATION**

Aircraft Category	Runway End					
	01	07	19	25	H1	H2
<b>Daytime Arrivals</b>						
Cargo	21.6%	25.9%	14.8%	37.7%	--	--
Commercial	21.4%	23.6%	16.6%	38.4%	--	--
General Aviation Jets	24.3%	26.5%	10.1%	39.2%	--	--
General Aviation Props	27.2%	17.2%	19.4%	36.2%	--	--
GA Helicopter	--	--	--	--	--	100.0%
Military	--	56.1%	4.2%	39.7%	--	--
Military Helicopter	--	--	--	--	100.0%	--
<b>Nighttime Arrivals</b>						
Cargo	26.1%	40.1%	7.2%	26.6%	--	--
Commercial	22.8%	29.0%	4.3%	43.8%	--	--
General Aviation Jets	28.6%	21.4%	14.3%	35.7%	--	--
General Aviation Props	11.5%	26.9%	15.4%	46.2%	--	--
GA Helicopter	--	--	--	--	--	100.0%
Military	--	--	--	--	--	--
Military Helicopter	--	--	--	--	--	--
<b>Daytime Departures</b>						
Cargo	6.7%	21.8%	16.9%	54.7%	--	--
Commercial	12.9%	23.6%	23.0%	40.5%	--	--
General Aviation Jets	14.5%	17.9%	24.9%	42.8%	--	--
General Aviation Props	18.2%	16.1%	27.8%	37.9%	--	--
GA Helicopter	--	--	--	--	--	100.0%
Military	12.0%	12.0%	31.1%	44.8%	--	--
Military Helicopter	--	--	--	--	100.0%	--



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Aircraft Category	Runway End					
	01	07	19	25	H1	H2
<b>Nighttime Departures</b>						
Cargo	2.3%	13.6%	24.4%	59.7%	--	--
Commercial	3.0%	43.8%	14.2%	39.1%	--	--
General Aviation Jets	--	10.0%	30.0%	60.0%	--	--
General Aviation Props	--	15.8%	42.1%	42.1%	--	--
GA Helicopter	--	--	--	--	--	100.0%
Military	--	--	--	--	--	--
Military Helicopter	--	--	--	--	--	--

Notes: Daytime = 7:00 a.m. – 9:59 p.m., Nighttime = 10:00 p.m. – 6:59 a.m.  
Total may not equal sum total due to rounding.

Source: Federal Aviation Administration (FAA) Operations Network (OpsNet) data, Traffic Flow Management System (TFMS) data, National Offload Program (NOP) data, Landrum & Brown analysis, 2023.

## C.5.4 Flight Tracks

A flight track is the path over the ground as an aircraft flies to or from the airport. Flight track locations and percent distributions for the Existing (2023) Baseline condition were derived primarily from analysis of sixteen (16) weeks of radar data collected at RFD from January 2020 through December 2020, excluding periods of runway closure as mentioned previously. This data was analyzed to verify the location, density, and width of existing flight corridors. Consolidated flight tracks were developed from this radar data and used in the AEDT to model the flight corridors present around the Airport. **Exhibit C-11** through **Exhibit C-20** depict the arrival departure and touch and go flight tracks for jet, prop and military aircraft.

The tracks are composed of both backbone and sub-tracks that account for the dispersion of operations across a corridor of flight, rather than along a single constrained path. These types of tracks are useful at RFD where aircraft fly within wide departure flight corridors. The use of sub-tracks for the definition of baseline noise patterns allows a more definitive description of overall operating characteristics. **Table C-4, Arrival Flight Track Utilization, Table C-5, Departure Flight Track Utilization, Table C-6, Touch and Go Flight Track Utilization** and **Table C-7, Helicopter Flight Track Utilization** provides the proportion of operations assigned to each of the flight tracks indicated on the flight track exhibits.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

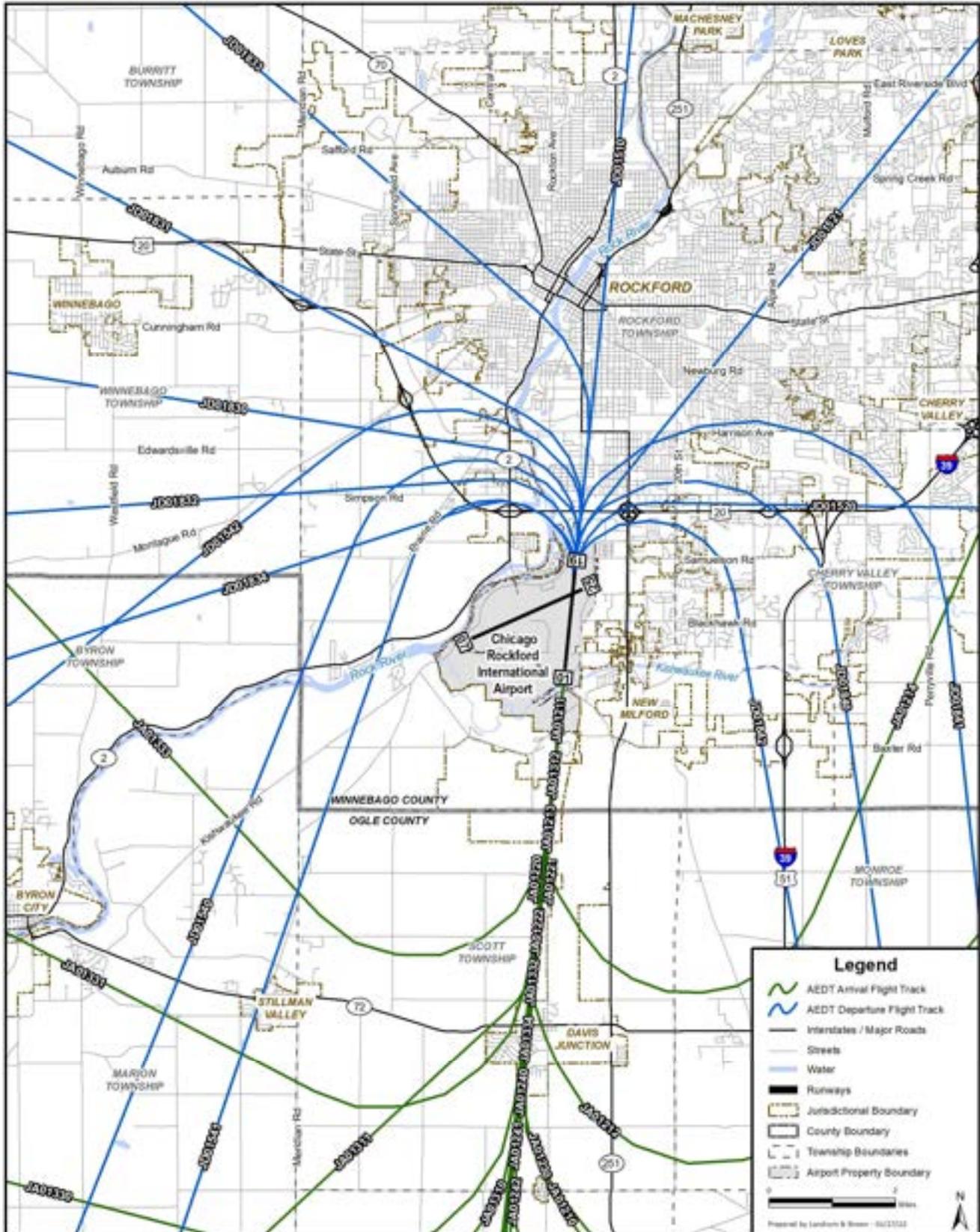
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT C-11 | RUNWAY 01 JET FLIGHT TRACKS



Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

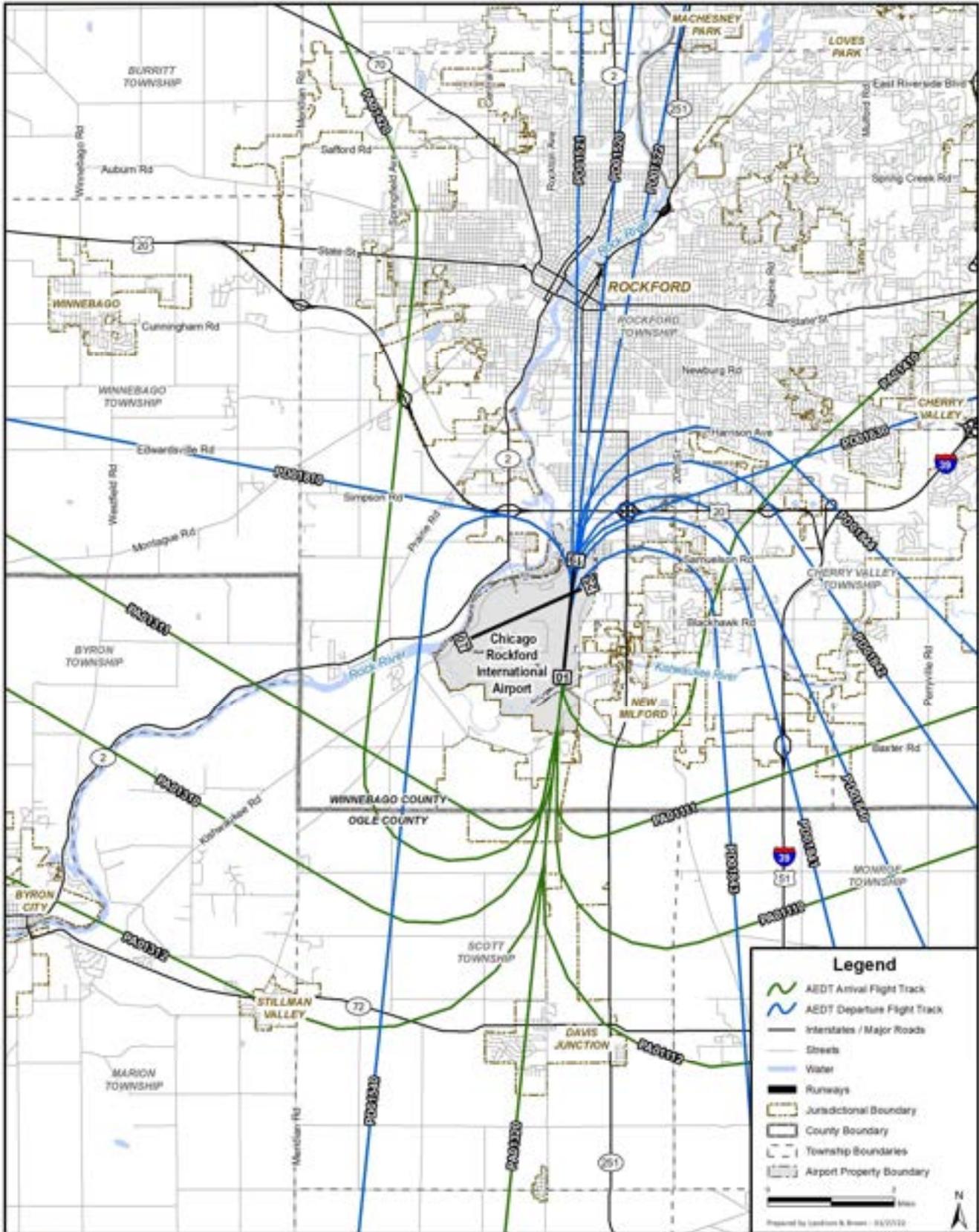
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT C-12 | RUNWAY 01 PROPELLER FLIGHT TRACKS



Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

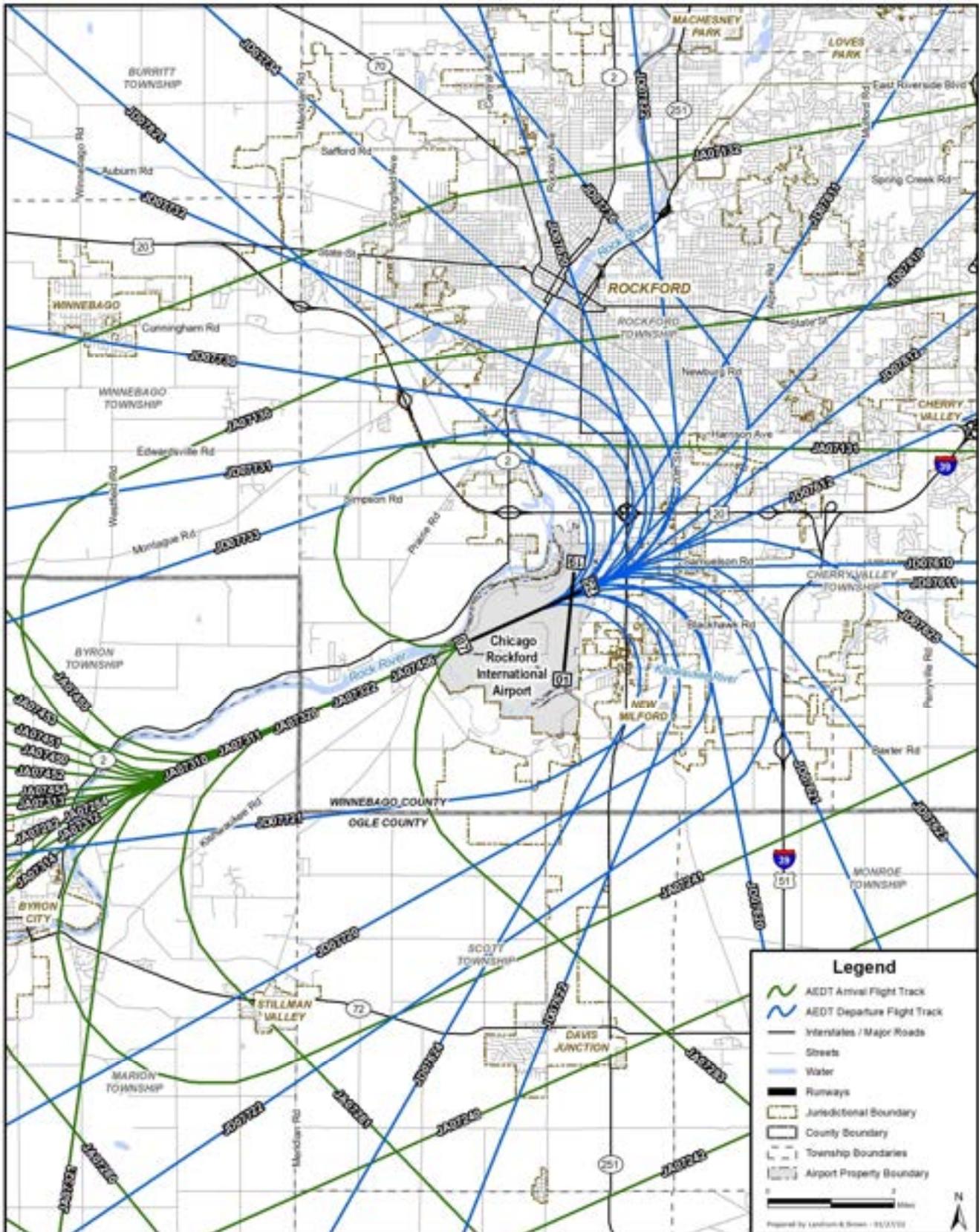
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT C-13 | RUNWAY 07 JET FLIGHT TRACKS



Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

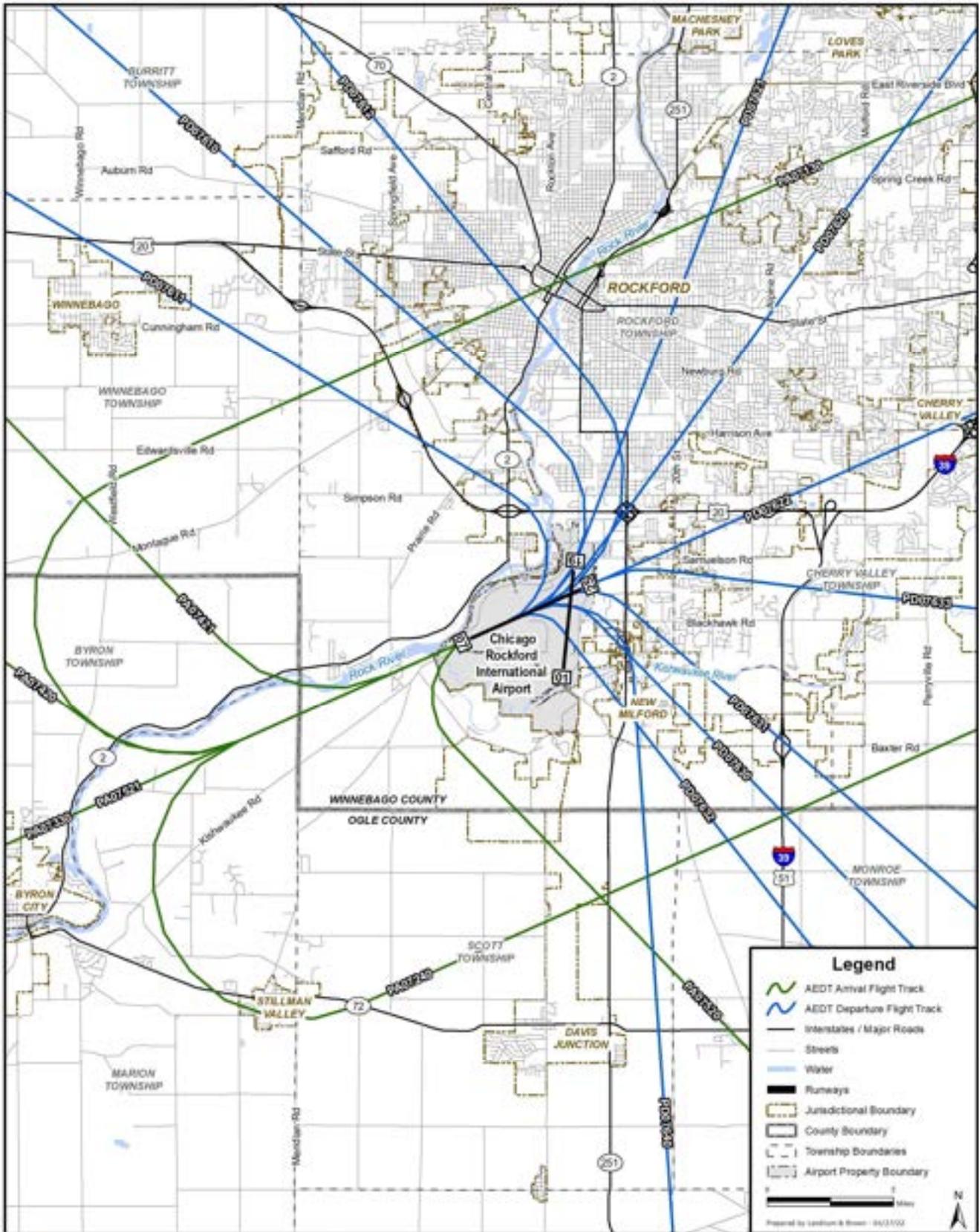
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT C-14 | RUNWAY 07 PROPELLER FLIGHT TRACKS



Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

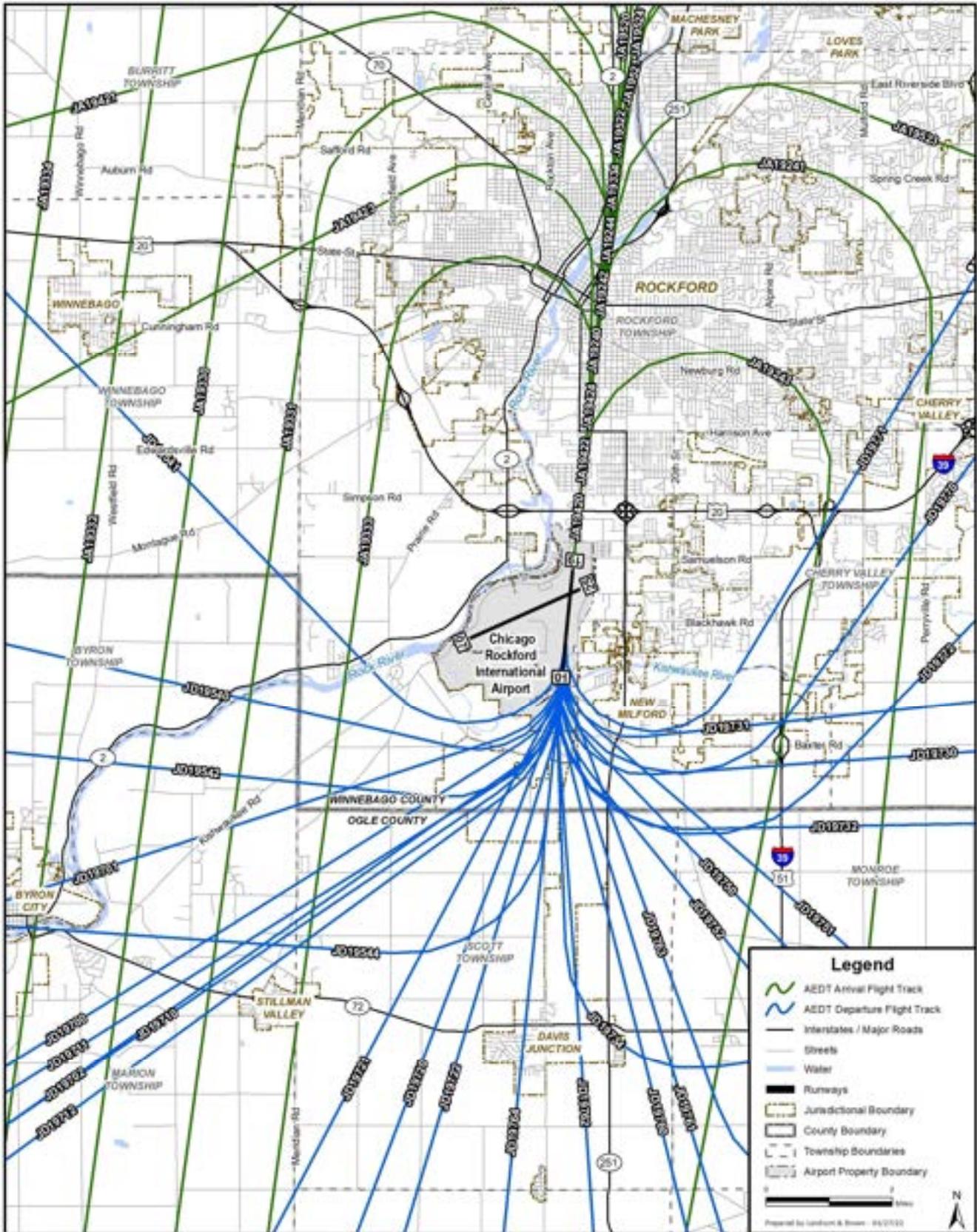
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT C-15 | RUNWAY 19 JET FLIGHT TRACKS



Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

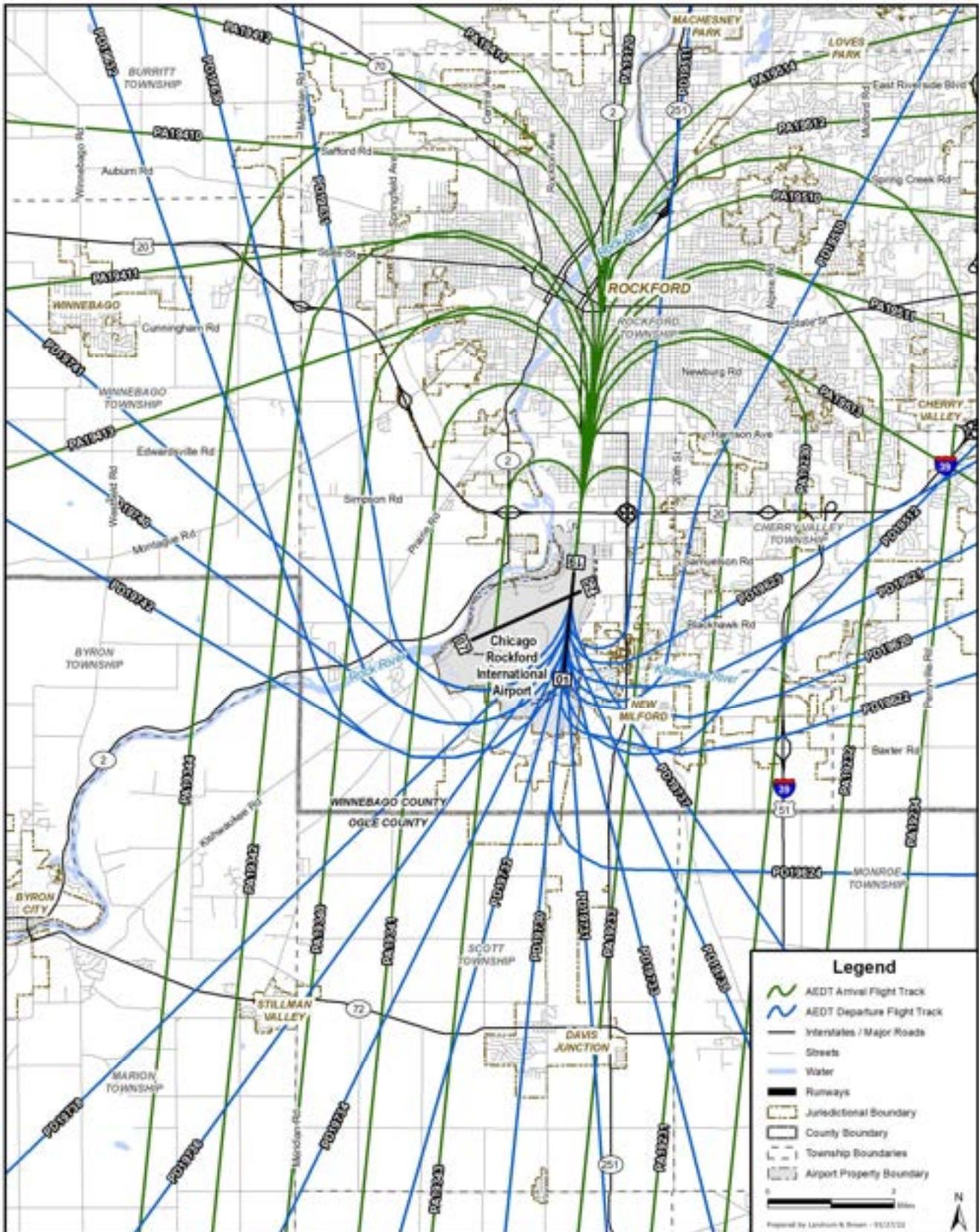
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT C-16 | RUNWAY 19 PROPELLER FLIGHT TRACKS



Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

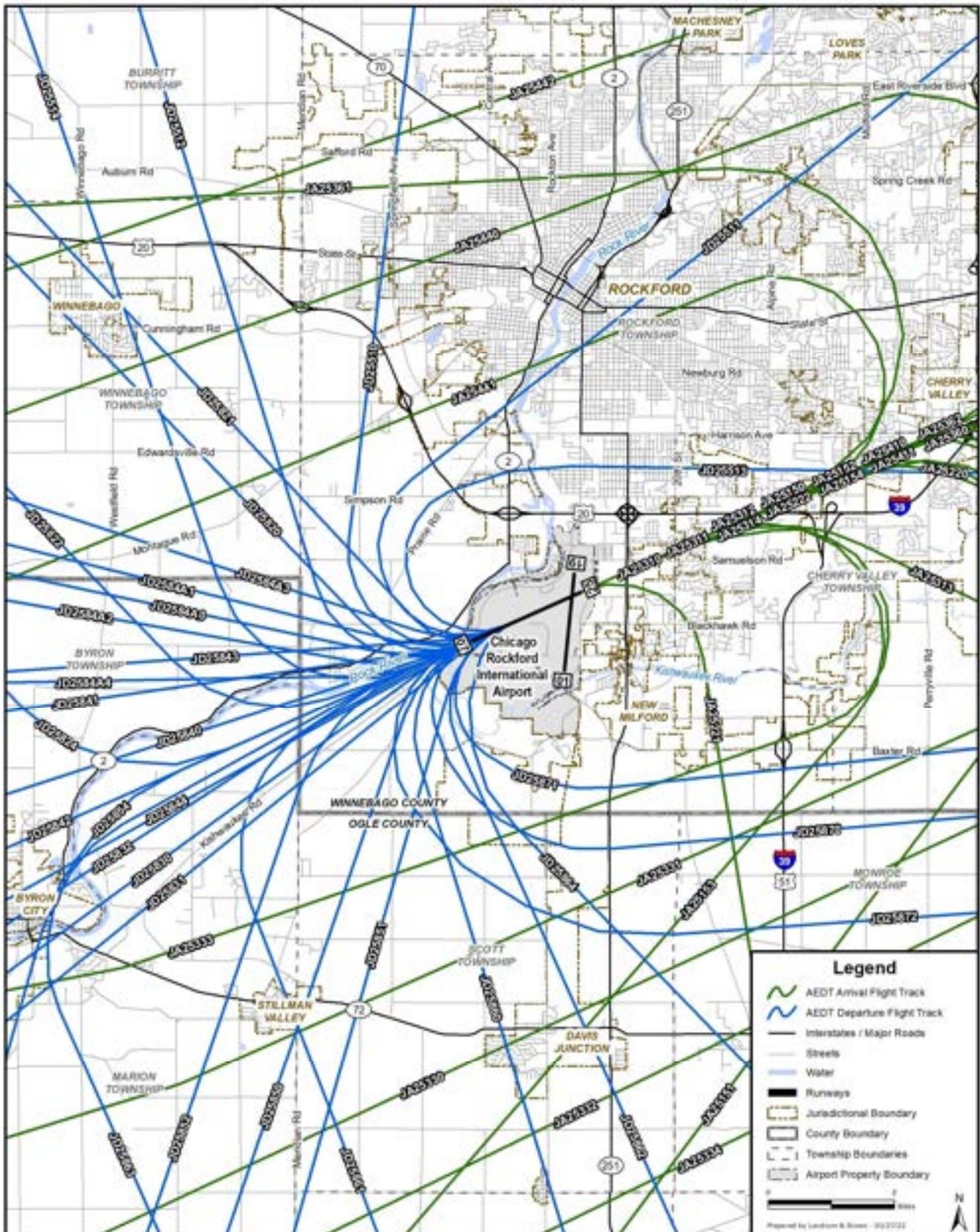
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT C-17 | RUNWAY 25 JET FLIGHT TRACKS



Source: | National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

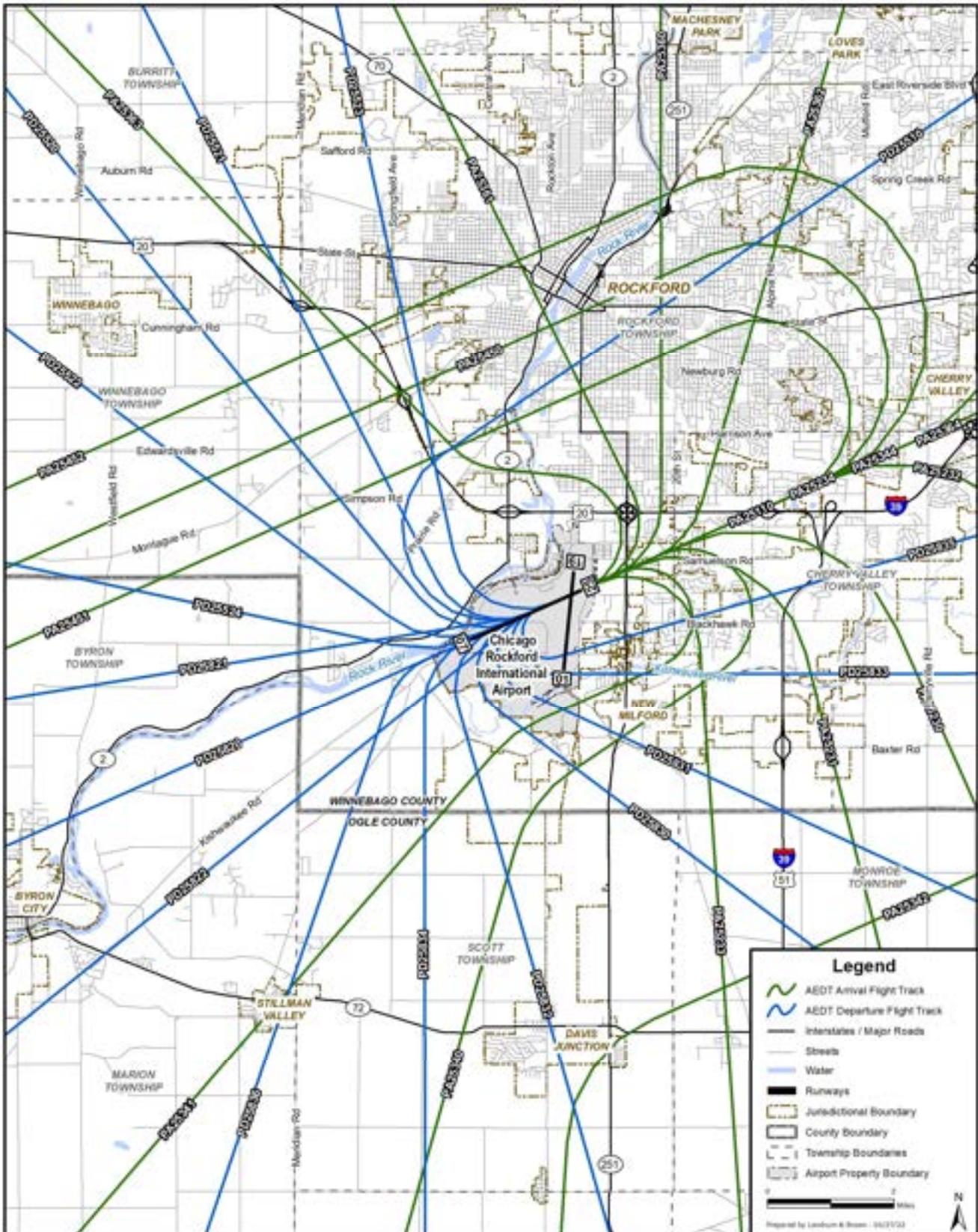
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT C-18 | RUNWAY 25 PROPELLER FLIGHT TRACKS



Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT C-19 | MILITARY FLIGHT TRACKS



Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## EXHIBIT C-20 | HELICOPTER FLIGHT TRACKS



Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

TABLE C-4 | ARRIVAL AEDT FLIGHT TRACK UTILIZATION

Runway End	Track ID	Aircraft Category			
		Cargo & Commercial	General Aviation Jets	General Aviation Props	Military
01	JA01210	3.9%	3.9%	--	--
	JA01211	3.3%	3.3%	--	--
	JA01212	3.2%	3.2%	--	--
	JA01213	2.5%	2.5%	--	--
	JA01214	2.3%	2.3%	--	--
	JA01220	7.4%	7.4%	--	--
	JA01221	8.4%	8.4%	--	--
	JA01222	2.2%	2.2%	--	--
	JA01230	5.7%	5.7%	--	--
	JA01240	3.5%	3.5%	--	--
	JA01241	3.3%	3.3%	--	--
	JA01242	3.5%	3.5%	--	--
	JA01310	3.9%	3.9%	--	--
	JA01311	2.6%	2.6%	--	--
	JA01312	14.9%	14.9%	--	--
	JA01330	7.8%	7.8%	--	--
	JA01331	3.9%	3.9%	--	--
	JA01332	10.2%	10.2%	--	--
	JA01333	2.8%	2.8%	--	--
	JA01334	4.8%	4.8%	--	--
	MA01010	--	--	--	100.0%
	PA01110	--	--	4.0%	--
	PA01111	--	--	20.0%	--
	PA01112	--	--	7.2%	--
	PA01310	--	--	2.4%	--
	PA01311	--	--	11.2%	--
PA01312	--	--	8.0%	--	
PA01320	--	--	28.8%	--	
PA01410	--	--	14.4%	--	
PA01420	--	--	4.0%	--	
07	JA07130	0.7%	0.7%	--	--
	JA07131	1.8%	1.8%	--	--
	JA07132	0.7%	0.7%	--	--
	JA07240	2.2%	2.2%	--	--
	JA07241	1.0%	1.0%	--	--
	JA07242	2.0%	2.0%	--	--
	JA07280	2.7%	2.7%	--	--
	JA07281	1.7%	1.7%	--	--



## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

Runway End	Track ID	Aircraft Category			
		Cargo & Commercial	General Aviation Jets	General Aviation Props	Military
07	JA07282	2.6%	2.6%	--	--
	JA07283	1.2%	1.2%	--	--
	JA07284	0.8%	0.8%	--	--
	JA07310	27.8%	27.8%	--	--
	JA07311	2.5%	2.5%	--	--
	JA07312	1.6%	1.6%	--	--
	JA07313	2.5%	2.5%	--	--
	JA07314	1.2%	1.2%	--	--
	JA07320	9.6%	9.6%	--	--
	JA07321	7.5%	7.5%	--	--
	JA07322	3.2%	3.2%	--	--
	JA07450	4.1%	4.1%	--	--
	JA07451	1.6%	1.6%	--	--
	JA07452	2.8%	2.8%	--	--
	JA07453	0.7%	0.7%	--	--
	JA07454	3.1%	3.1%	--	--
	JA07455	1.8%	1.8%	--	--
	JA07456	12.8%	12.8%	--	--
	MA07010	--	--	--	100.0%
	PA07130	--	--	20.5%	--
PA07240	--	--	14.5%	--	
PA07330	--	--	14.5%	--	
PA07420	--	--	10.8%	--	
PA07421	--	--	16.9%	--	
PA07520	--	--	14.5%	--	
PA07521	--	--	8.4%	--	
19	JA19240	2.5%	2.5%	--	--
	JA19241	2.5%	2.5%	--	--
	JA19242	3.3%	3.3%	--	--
	JA19243	1.0%	1.0%	--	--
	JA19244	1.3%	1.3%	--	--
	JA19330	8.1%	8.1%	--	--
	JA19331	7.1%	7.1%	--	--
	JA19332	6.8%	6.8%	--	--
	JA19333	5.1%	5.1%	--	--
	JA19334	6.3%	6.3%	--	--
	JA19420	10.4%	10.4%	--	--
	JA19421	9.8%	9.8%	--	--
	JA19422	9.1%	9.1%	--	--
JA19423	4.3%	4.3%	--	--	



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

Runway End	Track ID	Aircraft Category			
		Cargo & Commercial	General Aviation Jets	General Aviation Props	Military
19	JA19424	8.3%	8.3%	--	--
	JA19520	4.8%	4.8%	--	--
	JA19521	3.0%	3.0%	--	--
	JA19522	2.0%	2.0%	--	--
	JA19523	1.3%	1.3%	--	--
	JA19524	3.0%	3.0%	--	--
	MA19010	--	--	--	100.0%
	PA19120	--	--	10.9%	--
	PA19230	--	--	3.3%	--
	PA19231	--	--	3.3%	--
	PA19232	--	--	1.1%	--
	PA19233	--	--	12.0%	--
	PA19234	--	--	3.3%	--
	PA19340	--	--	1.1%	--
	PA19341	--	--	3.3%	--
	PA19342	--	--	1.1%	--
	PA19343	--	--	6.5%	--
	PA19344	--	--	4.3%	--
	PA19410	--	--	4.3%	--
	PA19411	--	--	3.3%	--
	PA19412	--	--	1.1%	--
	PA19413	--	--	12.0%	--
	PA19414	--	--	2.2%	--
	PA19510	--	--	3.3%	--
	PA19511	--	--	1.1%	--
	PA19512	--	--	1.1%	--
	PA19513	--	--	16.3%	--
	PA19514	--	--	5.4%	--
25	JA25150	8.8%	8.8%	--	--
	JA25151	7.1%	7.1%	--	--
	JA25152	5.4%	5.4%	--	--
	JA25153	2.3%	2.3%	--	--
	JA25154	4.7%	4.7%	--	--
	JA25220	3.4%	3.4%	--	--
	JA25221	1.1%	1.1%	--	--
	JA25222	3.9%	3.9%	--	--
	JA25310	2.1%	2.1%	--	--
	JA25311	1.1%	1.1%	--	--
	JA25312	3.3%	3.3%	--	--
	JA25313	0.6%	0.6%	--	--



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

Runway End	Track ID	Aircraft Category			
		Cargo & Commercial	General Aviation Jets	General Aviation Props	Military
25	JA25314	9.6%	9.6%	--	--
	JA25330	3.7%	3.7%	--	--
	JA25331	2.2%	2.2%	--	--
	JA25332	2.4%	2.4%	--	--
	JA25333	1.1%	1.1%	--	--
	JA25334	2.6%	2.6%	--	--
	JA25360	4.8%	4.8%	--	--
	JA25361	1.4%	1.4%	--	--
	JA25362	5.3%	5.3%	--	--
	JA25410	6.7%	6.7%	--	--
	JA25411	2.6%	2.6%	--	--
	JA25440	5.9%	5.9%	--	--
	JA25441	2.2%	2.2%	--	--
	JA25442	5.8%	5.8%	--	--
	MA25010	--	--	--	100.0%
	PA25110	--	--	16.5%	--
	PA25230	--	--	11.4%	--
	PA25231	--	--	10.8%	--
	PA25232	--	--	3.4%	--
	PA25233	--	--	3.4%	--
	PA25234	--	--	3.4%	--
	PA25340	--	--	5.1%	--
	PA25341	--	--	5.1%	--
	PA25342	--	--	1.1%	--
	PA25344	--	--	5.7%	--
	PA25360	--	--	8.0%	--
	PA25361	--	--	4.0%	--
	PA25362	--	--	5.7%	--
	PA25363	--	--	3.4%	--
	PA25364	--	--	6.3%	--
	PA25450	--	--	2.8%	--
	PA25451	--	--	2.8%	--
PA25452	--	--	1.1%	--	

Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



## 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

TABLE C-5 | DEPARTURE AEDT FLIGHT TRACK UTILIZATION

Runway End	Track ID	Aircraft Category			
		Cargo & Commercial	General Aviation Jets	General Aviation Props	Military
01	JD01510	4.8%	4.8%	--	--
	JD01520	4.3%	4.3%	--	--
	JD01521	2.4%	2.4%	--	--
	JD01540	7.6%	7.6%	--	--
	JD01541	7.1%	7.1%	--	--
	JD01542	6.7%	6.7%	--	--
	JD01830	15.7%	15.7%	--	--
	JD01831	5.2%	5.2%	--	--
	JD01832	11.9%	11.9%	--	--
	JD01833	4.8%	4.8%	--	--
	JD01834	4.8%	4.8%	--	--
	JD01840	13.3%	13.3%	--	--
	JD01841	4.8%	4.8%	--	--
	JD01842	6.7%	6.7%	--	--
	MD01010	--	--	--	50.0%
	MD01011	--	--	--	50.0%
	PD01520	--	--	18.7%	--
	PD01521	--	--	1.3%	--
	PD01522	--	--	3.9%	--
	PD01540	--	--	7.7%	--
PD01630	--	--	18.7%	--	
PD01810	--	--	24.5%	--	
PD01840	--	--	5.8%	--	
PD01841	--	--	4.5%	--	
PD01842	--	--	4.5%	--	
PD01843	--	--	5.8%	--	
PD01844	--	--	4.5%	--	
07	JD07610	7.2%	7.2%	--	--
	JD07611	2.7%	2.7%	--	--
	JD07612	3.7%	3.7%	--	--
	JD07620	12.1%	12.1%	--	--
	JD07621	11.8%	11.8%	--	--
	JD07622	10.4%	10.4%	--	--
	JD07623	4.5%	4.5%	--	--
	JD07624	4.5%	4.5%	--	--
	JD07625	2.2%	2.2%	--	--
	JD07720	3.0%	3.0%	--	--
	JD07721	1.0%	1.0%	--	--
	JD07722	2.9%	2.9%	--	--



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Greater Rockford Airport Authority

Runway End	Track ID	Aircraft Category			
		Cargo & Commercial	General Aviation Jets	General Aviation Props	Military
07	JD07730	10.7%	10.7%	--	--
	JD07731	5.2%	5.2%	--	--
	JD07732	6.1%	6.1%	--	--
	JD07733	2.6%	2.6%	--	--
	JD07734	3.6%	3.6%	--	--
	JD07736	2.9%	2.9%	--	--
	JD07810	0.9%	0.9%	--	--
	JD07811	0.4%	0.4%	--	--
	JD07812	0.4%	0.4%	--	--
	JD07820	0.7%	0.7%	--	--
	JD07821	0.3%	0.3%	--	--
	JD07822	0.3%	0.3%	--	--
	MD07010	--	--	--	100.0%
	PD07610	--	--	9.7%	--
	PD07611	--	--	2.8%	--
	PD07612	--	--	6.9%	--
	PD07620	--	--	5.5%	--
	PD07621	--	--	2.8%	--
	PD07622	--	--	44.1%	--
	PD07630	--	--	4.8%	--
PD07631	--	--	5.5%	--	
PD07632	--	--	2.1%	--	
PD07633	--	--	6.9%	--	
PD07640	--	--	9.0%	--	
19	JD19540	7.5%	7.5%	--	--
	JD19541	1.8%	1.8%	--	--
	JD19542	3.4%	3.4%	--	--
	JD19544	2.2%	2.2%	--	--
	JD19700	4.2%	4.2%	--	--
	JD19701	0.9%	0.9%	--	--
	JD19702	2.4%	2.4%	--	--
	JD19710	0.1%	0.1%	--	--
	JD19711	0.1%	0.1%	--	--
	JD19712	0.1%	0.1%	--	--
	JD19720	9.7%	9.7%	--	--
	JD19721	1.8%	1.8%	--	--
	JD19722	1.7%	1.7%	--	--
	JD19730	17.0%	17.0%	--	--
	JD19731	2.5%	2.5%	--	--
JD19732	3.9%	3.9%	--	--	



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Runway End	Track ID	Aircraft Category			
		Cargo & Commercial	General Aviation Jets	General Aviation Props	Military
19	JD19734	1.0%	1.0%	--	--
	JD19750	2.3%	2.3%	--	--
	JD19751	0.9%	0.9%	--	--
	JD19752	6.1%	6.1%	--	--
	JD19760	7.9%	7.9%	--	--
	JD19761	5.0%	5.0%	--	--
	JD19762	4.1%	4.1%	--	--
	JD19763	3.0%	3.0%	--	--
	JD19764	5.2%	5.2%	--	--
	JD19770	1.5%	1.5%	--	--
	JD19771	0.8%	0.8%	--	--
	JD19772	2.9%	2.9%	--	--
	MD19010	--	--	--	100.0%
	PD19510	--	--	6.8%	--
	PD19511	--	--	2.0%	--
	PD19512	--	--	5.2%	--
	PD19620	--	--	7.2%	--
	PD19621	--	--	5.6%	--
	PD19622	--	--	6.4%	--
	PD19623	--	--	4.8%	--
	PD19624	--	--	2.4%	--
	PD19630	--	--	3.6%	--
	PD19631	--	--	2.0%	--
	PD19632	--	--	2.0%	--
	PD19730	--	--	19.5%	--
	PD19731	--	--	6.8%	--
	PD19732	--	--	2.0%	--
	PD19733	--	--	1.6%	--
	PD19734	--	--	4.4%	--
	PD19735	--	--	1.6%	--
	PD19736	--	--	2.8%	--
	PD19737	--	--	1.6%	--
	PD19738	--	--	1.6%	--
	PD19740	--	--	5.2%	--
PD19741	--	--	3.2%	--	
PD19742	--	--	2.0%	--	
25	JD25510	1.2%	1.2%	--	--
	JD25511	0.6%	0.6%	--	--
	JD25512	1.5%	1.5%	--	--
	JD25513	0.4%	0.4%	--	--



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Runway End	Track ID	Aircraft Category			
		Cargo & Commercial	General Aviation Jets	General Aviation Props	Military
25	JD25514	0.8%	0.8%	--	--
	JD25820	4.3%	4.3%	--	--
	JD25821	0.9%	0.9%	--	--
	JD25822	0.6%	0.6%	--	--
	JD25824	0.2%	0.2%	--	--
	JD25830	11.2%	11.2%	--	--
	JD25831	3.0%	3.0%	--	--
	JD25832	1.5%	1.5%	--	--
	JD25840	6.8%	6.8%	--	--
	JD25841	3.4%	3.4%	--	--
	JD25842	2.1%	2.1%	--	--
	JD25843	0.6%	0.6%	--	--
	JD25844	0.7%	0.7%	--	--
	JD2584A0	13.3%	13.3%	--	--
	JD2584A1	9.3%	9.3%	--	--
	JD2584A2	5.7%	5.7%	--	--
	JD2584A3	2.3%	2.3%	--	--
	JD2584A4	2.2%	2.2%	--	--
	JD25850	5.8%	5.8%	--	--
	JD25851	1.2%	1.2%	--	--
	JD25852	1.0%	1.0%	--	--
	JD25854	0.7%	0.7%	--	--
	JD25860	9.9%	9.9%	--	--
	JD25861	1.5%	1.5%	--	--
	JD25862	2.2%	2.2%	--	--
	JD25863	1.1%	1.1%	--	--
	JD25864	1.9%	1.9%	--	--
	JD25870	1.0%	1.0%	--	--
	JD25871	0.7%	0.7%	--	--
	JD25872	0.7%	0.7%	--	--
	MD25010	--	--	--	100.0%
	PD25510	--	--	19.6%	--
PD25520	--	--	5.4%	--	
PD25521	--	--	3.9%	--	
PD25522	--	--	4.2%	--	
PD25523	--	--	3.3%	--	
PD25524	--	--	4.2%	--	
PD25820	--	--	12.5%	--	
PD25821	--	--	3.0%	--	
PD25822	--	--	3.0%	--	



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Runway End	Track ID	Aircraft Category			
		Cargo & Commercial	General Aviation Jets	General Aviation Props	Military
25	PD25830	--	--	8.9%	--
	PD25831	--	--	6.5%	--
	PD25832	--	--	7.7%	--
	PD25833	--	--	3.3%	--
	PD25834	--	--	6.2%	--
	PD25835	--	--	3.3%	--
	PD25836	--	--	5.1%	--

Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.

**TABLE C-6 | TOUCH AND GO FLIGHT TRACK UTILIZATION**

Runway End	Track ID	Aircraft Category			
		Cargo & Commercial	General Aviation Jets	General Aviation Props	Military
19	03PTA1	N/A			20.0%
	03PTB1				20.0%
	03PTC1				20.0%
25	09PTA1				20.0%
	09PTB1				20.0%

Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.

**TABLE C-7 | TOUCH AND GO FLIGHT TRACK UTILIZATION**

Runway End	Op Type	Track ID	Percent Utilization
H1	A	H1A1	50.0%
	A	H1A2	50.0%
	D	H1D1	20.0%
	D	H1D2	70.0%
	D	H1D3	10.0%
H2	A	H2A1	50.0%
	A	H2A2	50.0%
	D	H2D1	20.0%
	D	H2D2	70.0%
	D	H2D3	10.0%

Source: National Offload Program (NOP) data, Landrum & Brown analysis, 2023.

## C.5.5 Aircraft Weight and Trip Length

Aircraft weight upon departure is a factor in the dispersion of noise because it impacts the rate at which an aircraft is able to climb. Generally, heavier aircraft have a slower rate of climb and a wider dispersion of noise along the flight route. Where specific aircraft weights are unknown, the AEDT uses the distance flown to the first stop as a surrogate for the weight, by assuming that the weight has a direct relationship with the fuel load necessary to



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reach the first destination. The AEDT groups trip lengths into nine stage categories and assigns standard aircraft weights to each stage category as shown in **Table C-8, AEDT Stage Lengths**. These categories are:

**TABLE C-8 | AEDT STAGE LENGTHS**

Stage Length Category	Stage Length	Sample Destination
1	0-500 nautical miles	Louisville, Minneapolis, Kansas City
2	501-1000 nautical miles	Dallas, Baltimore, Denver
3	1001-1500 nautical miles	Ontario, Miami, Seattle
4	1501-2500 nautical miles	Oakland, Anchorage
5	2501-3500 nautical miles	International
6	3501-4500 nautical miles	International
7	4501-5500 nautical miles	International
8	5501-6500 nautical miles	--
9	6500+ nautical miles	--

The stage lengths modeled for the Existing (2023) Baseline condition are based upon a review of existing schedules and typical destinations for current conditions at RFD. **Table C-9, Existing (2023) Baseline Departure Day Stage Lengths** and **Table C-10, Existing (2023) Baseline Departure Night Stage Lengths** indicates the proportion of the operations that were modeled within each of the nine stage length categories for the Existing (2023) Baseline condition during the daytime (7:00 a.m. – 9:59 p.m.) and nighttime (10:00 p.m. – 6:59 a.m.) periods.



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**TABLE C-9 | EXISTING (2023) BASELINE DEPARTURE DAY STAGE LENGTHS**

Stage Length Category	Cargo	Commercial	General Aviation Jets	General Aviation Props	Military
1	26.48%	2.89%	99.16%	100.00%	100.00%
2	15.94%	76.62%	0.84%	--	--
3	56.26%	19.07%	--	--	--
4	0.74%	1.36%	--	--	--
5	--	--	--	--	--
6	0.56%	0.06%	--	--	--
7	0.03%	--	--	--	--
8	--	--	--	--	--
9	--	--	--	--	--
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Federal Aviation Administration (FAA) Operations Network (OpsNet) data, Traffic Flow Management System (TFMS) data, National Offload Program (NOP) data, Landrum & Brown analysis, 2023.

**TABLE C-10 | EXISTING (2023) BASELINE DEPARTURE NIGHT STAGE LENGTHS**

Stage Length Category	Cargo	Commercial	General Aviation Jets	General Aviation Props	Military
1	33.75%	43.63%	100.00%	100.00%	--
2	29.01%	28.55%	--	--	--
3	25.81%	27.66%	--	--	--
4	11.02%	0.15%	--	--	--
5	0.02%	--	--	--	--
6	0.40%	--	--	--	--
7	--	--	--	--	--
8	--	--	--	--	--
9	--	--	--	--	--
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>--</b>

Source: Federal Aviation Administration (FAA) Operations Network (OpsNet) data, Traffic Flow Management System (TFMS) data, National Offload Program (NOP) data, Landrum & Brown analysis, 2023.

## C.5.6 Engine Run-ups

Engine run-up activity was not tracked as it was minimal and unlikely to affect the location of the 65 DNL Noise Exposure Contour. Therefore, engine run-ups were not modeled as part of the Part 150 Study.



## » C.6 Future (2028) Baseline Noise Modeling Methodology

The following sections describe the noise modeling methodology and assumptions for the Future (2028) Baseline Noise Exposure Contours at RFD. Data representative of an average-annual day of operations was obtained from an forecast of aviation activity. This data included the number of operations by individual types of aircraft user classes.

### C.6.1 Runway Definition

The runway layout is not expected to change by 2028 at RFD; therefore, the same runway layout discussed for the Existing (2023) Baseline Noise Exposure Contour will be used to model the Future (2028) Baseline Noise Exposure Contour.

### C.6.2 Number of Operations and Fleet Mix

Per 14 CFR Part 150 requirements, the future conditions are to be dated five years after the date of submission. Therefore, the future year conditions are dated 2028. The number of Future (2028) Baseline condition average-annual daily operations at RFD is based on the Forecast Working Paper (FWP)<sup>14</sup> and subsequent update to account for impacts due to the COVID-19 health emergency.<sup>15</sup>, which is summarized in **Appendix H, Forecast**.

The Existing (2023) Baseline condition fleet mix was adjusted by reducing and or phasing out certain older aircraft types, and increasing and introducing newer aircraft to the fleet. Older aircraft that were phased out of the cargo fleet included the DC-9-10 Series Freighter, Boeing MD-11 (PW & GE versions) and the Boeing 727-200 Series Freighter. The largest increase of cargo aircraft was applied to the Boeing 767-300 ER Freighter and the Airbus A300B4-600 Series, while the Boeing 737-800BCF aircraft was added to the cargo fleet. The number of average-annual daily operations for each aircraft was scaled based on data included in the aviation forecast for the year 2028.

Based on the aviation forecast data, it is projected that there will be 63,899 total aircraft operations at RFD by 2028. When divided by 365, the result is 175.1 average-annual daily operations. **Table C-11, Future (2028) Baseline Average-Annual Day Operations by Aircraft Category**, provides a summary of the average-annual daily operations and fleet mix at RFD, organized by aircraft type, operation type, and time of day for Future (2028) Baseline conditions. **Table C-12, Future (2028) Baseline Average-Annual Day Operations by Aircraft Type**, shows the average-annual daily number of arrivals and departures by the individual aircraft types for the Future (2028) Baseline condition.

<sup>14</sup> Development of Northwest Cargo Apron & Midfield Development Program, Forecast Summary, September 2018, Crawford Murphy & Tilly.

<sup>15</sup> Chicago Rockford International (RFD) – 2018 Forecast Working Paper (FWP) Sensitivity Analysis, July 2021, Crawford Murphy & Tilly.



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**TABLE C-11 | FUTURE (2028) BASELINE AVERAGE-ANNUAL DAY OPERATIONS BY AIRCRAFT CATEGORY**

Aircraft Category	Arrivals		Departures		Total	Percent of Total
	Day	Night	Day	Night		
Cargo Jets	18.05	24.72	18.05	24.72	85.54	48.9%
Commercial Jets	5.94	0.34	5.94	0.34	12.56	7.2%
General Aviation Jets	12.88	0.99	12.88	0.99	27.74	15.8%
General Aviation Props	21.41	0.91	21.41	0.91	44.64	25.5%
Military Aircraft	2.29	--	2.29	--	4.58	2.6%
<b>Grand Total</b>	<b>60.58</b>	<b>26.96</b>	<b>60.58</b>	<b>26.96</b>	<b>175.07</b>	<b>100%</b>

Notes: Total may not equal sum total due to rounding.  
Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Source: RFD Forecast Working Paper, 2018, RFD forecast Working Paper Sensitivity Analysis, 2021, Landrum & Brown analysis, 2023.

**TABLE C-12 | FUTURE (2028) BASELINE AVERAGE-ANNUAL DAILY OPERATIONS BY AIRCRAFT TYPE**

Aircraft Type	AEDT ID	Arrivals		Departures		Total
		Day	Night	Day	Night	
<b>Cargo Jets</b>						
Boeing 737-800BCF	737800	0.92	0.36	0.92	0.36	2.57
Boeing 747-400 Series Freighter	747400	0.38	0.05	0.38	0.05	0.86
Boeing 747-800 Freighter	7478	0.63	1.59	0.63	1.59	4.45
Boeing 757-200 Series Freighter	757PW	1.49	3.43	1.49	3.43	9.84
Boeing 757-200 Series Freighter	757RR	1.49	3.43	1.49	3.43	9.84
Boeing 767-300 ER Freighter	7673ER	8.43	9.74	8.43	9.74	36.36
Airbus A300B4-600 Series	A300-622R	4.71	6.11	4.71	6.11	21.64
<b>Cargo Jet Subtotal</b>		<b>18.05</b>	<b>24.72</b>	<b>18.05</b>	<b>24.72</b>	<b>85.54</b>
<b>Commercial Jets</b>						
Boeing 737-700 Series	737700	0.06		0.06		0.13
Boeing 737-800 Series	737800	0.15	0.03	0.15	0.03	0.35
Boeing 757-300 Series	757300	0.03		0.03		0.06
Airbus A319-100 Series	A319-131	0.03	0.01	0.03	0.01	0.08
Airbus A320-200 Series	A320-211	5.66	0.31	5.66	0.31	11.95
<b>Commercial Jet Subtotal</b>		<b>5.94</b>	<b>0.34</b>	<b>5.94</b>	<b>0.34</b>	<b>12.56</b>
<b>General Aviation Jets</b>						
Bombardier Challenger 600	CL600	0.86	0.03	0.86	0.03	1.76
Cessna 500 Citation I	CNA500	0.66	0.04	0.66	0.04	1.41
Cessna 525 Citation Jet	CNA525C	1.18	0.11	1.18	0.11	2.58
Cessna 550 Citation II	CNA55B	2.21	0.34	2.21	0.34	5.09
Cessna 560 Citation Ultra	CNA560U	0.34	0.01	0.34	0.01	0.71
Cessna 560 Citation Excel	CNA560XL	0.55	0.03	0.55	0.03	1.15
Cessna 680 Citation Sovereign	CNA680	0.28	0.01	0.28	0.01	0.59
Cessna 750 Citation X	CNA750	0.15	0.03	0.15	0.03	0.36
Eclipse 500	ECLIPSE500	1.69	0.03	1.69	0.03	3.43
Embraer ERJ-145	EMB145	0.17	0.03	0.17	0.03	0.38



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Greater Rockford Airport Authority

Aircraft Type	AEDT ID	Arrivals		Departures		Total
		Day	Night	Day	Night	
Gulfstream V/G500	GV	0.17	0.01	0.17	0.01	0.36
Bombardier Learjet 35A/36A (C-21A)	LEAR35	4.07	0.29	4.07	0.29	8.72
Raytheon Beechjet 400	MU3001	0.56	0.04	0.56	0.04	1.20
<b>General Aviation Jet Subtotal</b>		<b>12.88</b>	<b>0.99</b>	<b>12.88</b>	<b>0.99</b>	<b>27.74</b>
<b>General Aviation Props</b>						
Beech 1900	1900D	0.17	0.01	0.17	0.01	0.36
Raytheon Beech Baron 58	BEC58P	2.36	0.04	2.36	0.04	4.81
Cessna 172 Skyhawk	CNA172	4.24	0.06	4.24	0.06	8.61
Cessna 182	CNA182	1.06	0.06	1.06	0.06	2.24
Cessna 206	CNA206	0.06	0.09	0.06	0.09	0.30
Cessna 441 Conquest II	CNA441	1.49	0.04	1.49	0.04	3.06
1985 1-ENG COMP	COMSEP	2.13	0.05	2.13	0.05	4.35
DeHavilland DHC-6-300 Twin Otter	DHC6	3.53	0.16	3.53	0.16	7.38
Eurocopter EC-130	EC130	0.05	0.04	0.05	0.04	0.18
Single Engine Prop	GASEPV	4.08	0.19	4.08	0.19	8.56
Piper PA-28 Cherokee Series	PA28	1.74		1.74		3.49
Piper PA-30 Twin Comanche	PA30	0.50	0.15	0.50	0.15	1.30
<b>General Aviation Prop Subtotal</b>		<b>21.41</b>	<b>0.91</b>	<b>21.41</b>	<b>0.91</b>	<b>44.64</b>
<b>Military Aircraft</b>						
Lockheed 130 Hercules*	C130E	0.19	--	0.19	--	0.39
Swearingen Merlin 4	DHC6	0.15	--	0.15	--	0.30
Bombardier Q-400	DHC830	0.13	--	0.13	--	0.26
Mitsubishi Regional Jet 90	EMB175	0.22	--	0.22	--	0.43
Embraer 190	EMB190	0.17	--	0.17	--	0.35
Raytheon Texan 2	GASEPV	0.24	--	0.24	--	0.47
Boeing KC-135 Stratotanker*	KC135B	0.30	--	0.30	--	0.61
Bombardier Learjet 35	LEAR35	0.13	--	0.13	--	0.26
Beechjet 400	MU3001	0.13	--	0.13	--	0.26
Sikorsky SH-60 Seahawk	S70	0.24	--	0.24	--	0.47
Northrop T-38 Talon	T-38A	0.39	--	0.39	--	0.78
<b>Military Aircraft Subtotal</b>		<b>2.29</b>	<b>--</b>	<b>2.29</b>	<b>--</b>	<b>4.58</b>
<b>Grand Total</b>		<b>60.58</b>	<b>26.96</b>	<b>60.58</b>	<b>26.96</b>	<b>175.07</b>

\* Includes touch-and-go/closed patterns operations which are counted as one arrival and one departure.

Notes: Totals may not equal sum total due to rounding.

Daytime = 7:00am – 9:59pm, Nighttime = 10:00pm – 6:59am.

Source: RFD Forecast Working Paper, 2018, RFD forecast Working Paper Sensitivity Analysis, 2021, Landrum & Brown analysis, 2023.

## C.6.3 Runway End Utilization

Average-annual day runway end utilization in 2028 is expected to remain the same as the Existing (2023) Baseline condition. The runway end utilization parameters presented in **Table C-3** were utilized in the Future (2028) Baseline Noise Contour input data.



### C.6.4 Flight Tracks

No changes to flight track locations are expected to occur within the general study area by 2028. Therefore, flight track locations and utilization modeled for the Existing (2023) Baseline Noise Exposure Contour, and shown in **Exhibit C-11** through **Exhibit C-20** and **Table C-4** through **Table C-7** remain the same for the Future (2028) Baseline Noise Exposure Contour modeling.

### C.6.5 Aircraft Weight and Trip Length

The stage length distribution for the Future (2028) Baseline condition was adjusted slightly to account for additional aircraft included in the fleet mix. **Table C-13, Future (2028) Baseline Daytime Departure Stage Lengths** and **Table C-14, Future (2028) Baseline Nighttime Departure Stage Lengths**, presents the proportion of the operations that were modeled within each of the nine stage length categories for the Future (2028) Baseline condition.



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**TABLE C-13 | FUTURE (2028) BASELINE DEPARTURE DAY STAGE LENGTHS**

Stage Length Category	Cargo	Commercial	General Aviation Jets	General Aviation Props	Military
1	26.48%	2.89%	99.89%	100.00%	100.00%
2	15.94%	76.62%	0.11%	--	--
3	56.26%	19.07%	--	--	--
4	0.74%	1.36%	--	--	--
5	--	--	--	--	--
6	0.56%	0.06%	--	--	--
7	0.03%	--	--	--	--
8	--	--	--	--	--
9	--	--	--	--	--
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>

Source: Federal Aviation Administration (FAA) Operations Network (OpsNet) data, Traffic Flow Management System (TFMS) data, National Offload Program (NOP) data, Landrum & Brown analysis, 2023.

**TABLE C-14 | FUTURE (2028) BASELINE DEPARTURE NIGHT STAGE LENGTHS**

Stage Length Category	Cargo	Commercial	General Aviation Jets	General Aviation Props	Military
1	33.75%	43.63%	100.00%	100.00%	--
2	29.01%	28.55%	--	--	--
3	25.81%	27.66%	--	--	--
4	11.02%	0.15%	--	--	--
5	0.02%	--	--	--	--
6	0.40%	--	--	--	--
7	--	--	--	--	--
8	--	--	--	--	--
9	--	--	--	--	--
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>--</b>

Source: Federal Aviation Administration (FAA) Operations Network (OpsNet) data, Traffic Flow Management System (TFMS) data, National Offload Program (NOP) data, Landrum & Brown analysis, 2023.



## Appendix D



# Public Involvement



## Appendix D Public Involvement

This appendix provides information related to the public involvement process undertaken during the Chicago Rockford International Airport (RFD or Airport) Part 150 Noise Compatibility Study (Part 150 Study) Update. The materials listed below are contained in this appendix. Over the course of the study a website was maintained to facilitate public announcement of meetings, registration for online virtual public workshops, posting of recordings and presentations for Advisory Committee (AC) and Public Workshops and to allow the public to comment and ask questions regarding the RFD Part 150 Study Update.

### **Website Address**

<https://www.airportprojects.net/rfd-part150/home/>

### **AC Meetings (AC Members on next page)**

- Committee Invitation Letter
- Meeting Agenda
- Presentation

### **Public Workshops**

- Announcement Letters
- Workshop Presentation

### **Public Workshop & Public Hearing**

- Public Workshop/Hearing Announcement
- Public Hearing Meeting Legal Notices
- Public Workshop/Hearing Presentation
- Public Hearing Transcript
- Public Hearing Comments

**Advisory Committee Members**

April Prunty, City of Rockford, 5<sup>th</sup> Ward Aldermen

Karl Franzen, City of Rockford, Director of Community & Economic Development

Barb Chidley, City of Rockford, Neighborhood Specialist

Scott Capovilla, City of Rockford, Planning & Zoning Manager

Dan Ross, Rockford Chamber of Commerce, Board of Directors Chairman

Timothy Owens, Village of New Milford, Village President

Michael Dunn, Rockford Metropolitan Agency for Planning, Executive Director

Jeff Matz, UPS, Airport Properties Manager

Mary Barnicle, Amazon, Public Policy

Jonathon German, Atlas Air, Station Manager

Adam Wold, Emery Air, Director of Operations

Josh Bachman, Emery Air, FBO Assistant Manager

Troy Primus, AAR, VP of Operations

Amy Hanson, FAA, Environmental Protection Specialist

Bob Beauchamp, FAA, Environmental Program Manager

Shawn Lowry, FAA, Air Traffic Control Tower Manager

Richard Borus, IDOT, Airport Program Engineer

Zach Oakley, GRAA, Deputy Director of Operations and Planning

Seth Nygren, GRAA, Operations Manager

Terrence Schaddel, CMT, Senior Project Manager

Jesse Baker, L&B, Project Manager

Sarah Farsalas, L&B, Deputy Project Manager

Alan Hass, L&B, Associate VP

Kirsten Hammons, L&B, Analyst



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## Advisory Committee Meeting #1 December 8, 2021

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- Committee Invitation Letter
- Presentation

Note: Meeting presentation and recording of meeting are available on the study website at <https://www.airportprojects.net/rfd-part150/home/advisory-committee/>



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Greater Rockford Airport Authority

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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## AC INVITATION LETTER



November 15, 2021

RE: Chicago Rockford International Airport (RFD)  
Part 150 Noise Compatibility Study Update

Dear \_\_\_\_\_

The Greater Rockford Airport Authority (GRAA) is initiating a study to document the noise effects from aircraft operations at Chicago Rockford International Airport (RFD). The study is commonly referred to as a Part 150 Noise Compatibility Study (Part 150 Study) Update. The purpose for conducting a Part 150 Study is to develop a balanced and cost-effective plan to reduce current noise impacts, where practical, and to limit the potential for future noise impacts. The GRAA has contracted with Landrum & Brown, a consulting firm specializing in airport noise and noise compatibility planning, to manage this study.

We are writing to ask for your participation on the **Advisory Committee (AC)** that is being formed as part of the Part 150 Study. The AC will consist of representatives from the communities in the vicinity of the airport which are most affected by aircraft operations, airport users, local planning organizations, elected officials or staff members, local citizen groups, Federal Aviation Administration (FAA) representatives, and airport staff. The AC will review study findings, comment on study recommendations before they are presented to the public at-large, and will participate in discussions related to aircraft noise issues.

The AC will meet three (3) times during **online virtual meetings** over the course of the Part 150 Study. The first meeting of the AC is anticipated to be held in December. If you or your organization elects to participate in the AC, an invitation link to the meeting will be sent via email. Each meeting will last approximately two hours. AC members will receive meeting announcements, directions, and an agenda in advance of the meetings. Meeting materials will also be posted on the study website: <https://www.airportprojects.net/rfd-part150/>

60 AIRPORT DR. ROCKFORD, IL 61109-2902 PHONE 815-969-4000 FLYRFD.com FOREIGN-TRADE ZONE (FTZ) #176



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

CHICAGO ROCKFORD  INTERNATIONAL AIRPORT

We value and look forward to your input and participation in this process. If your organization would like to participate, please RSVP by November 26<sup>th</sup>, 2021. Please include the name and contact information for the individual from your organization who will be serving on the committee. Email your RSVP to Jesse Baker at [jesse.baker@landrumbrown.com](mailto:jesse.baker@landrumbrown.com).

Sincerely,

A handwritten signature in black ink, appearing to read 'Zach Oakley'.

Zach Oakley

C: Ms. Amy Hanson, Environmental Protection Specialist, Chicago Airports District Office  
Mr. Richard Borus, P.E., Airport Programming, Planning & Environment Section, IDOT Div.  
of Aeronautics

60 AIRPORT DR. ROCKFORD, IL 61109-2902 PHONE 815-969-4000 [FLYRFD.com](http://FLYRFD.com) FOREIGN-TRADE ZONE (FTZ) #176



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## MEETING PRESENTATION

# 14 CFR Part 150 Noise Compatibility Study Update

Advisory Committee Meeting | December 2021

WELCOME TO ROCKFORD

# Agenda

- Introduction
- Role of the Advisory Committee
- Part 150 Study Overview, Process & Elements
- Public Involvement
- History of Noise Abatement Planning
- Noise Modeling Input Data Collection
- Baseline Noise Exposure Contours
- Next Steps

Agenda | 2



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Advisory Committee (AC)

### Role of the Advisory Committee (AC)

Sounding Board

Link to the Community

Technical Review

Aid to Implementation

### AC Meeting Schedule

MEETING #1	MEETING #2	MEETING #3
<ul style="list-style-type: none"> <li>Part 150 Background Information</li> <li>Existing (2020) Noise Contours &amp; Input Data</li> <li>Future (2027) Noise Contours &amp; Input Data</li> <li>Incompatible Land Uses</li> </ul>	<ul style="list-style-type: none"> <li>Noise Abatement Recommendations</li> <li>Land Use Mitigation Recommendations</li> <li>Program Management Recommendations</li> </ul>	<ul style="list-style-type: none"> <li>Final Noise Compatibility Program (NCP) Measures</li> <li>Draft Document</li> </ul>
Winter 2021	Spring 2022	Summer 2022

Advisory Committee (AC) | 3

## Part 150 Study Overview

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graph TD
    A[Study Initiation] --> B1[Data Collection]
    A --> B2[Forecast Validation]
    A --> B3[Radars Data Analysis]
    B1 --> C[Baseline Noise Exposure Maps]
    B2 --> C
    B3 --> C
    C --> D[Initial Future Noise Exposure Map]
    D -.-> E1[Noise Abatement Alternatives]
    D -.-> E2[Land Use Management Alternatives]
    E1 --> F1[Noise Abatement Plan]
    E1 --> F2[Program Management Plan]
    E2 --> F3[Land Use Management Plan]
    F1 --> G[Draft Noise Compatibility Program & NEMs]
    F2 --> G
    F3 --> G
    G --> H[Draft Documents and Public Hearings]
    H --> I[Recommended Noise Compatibility Program & Final NEMs]
    I --> J[Review and Approval]
            
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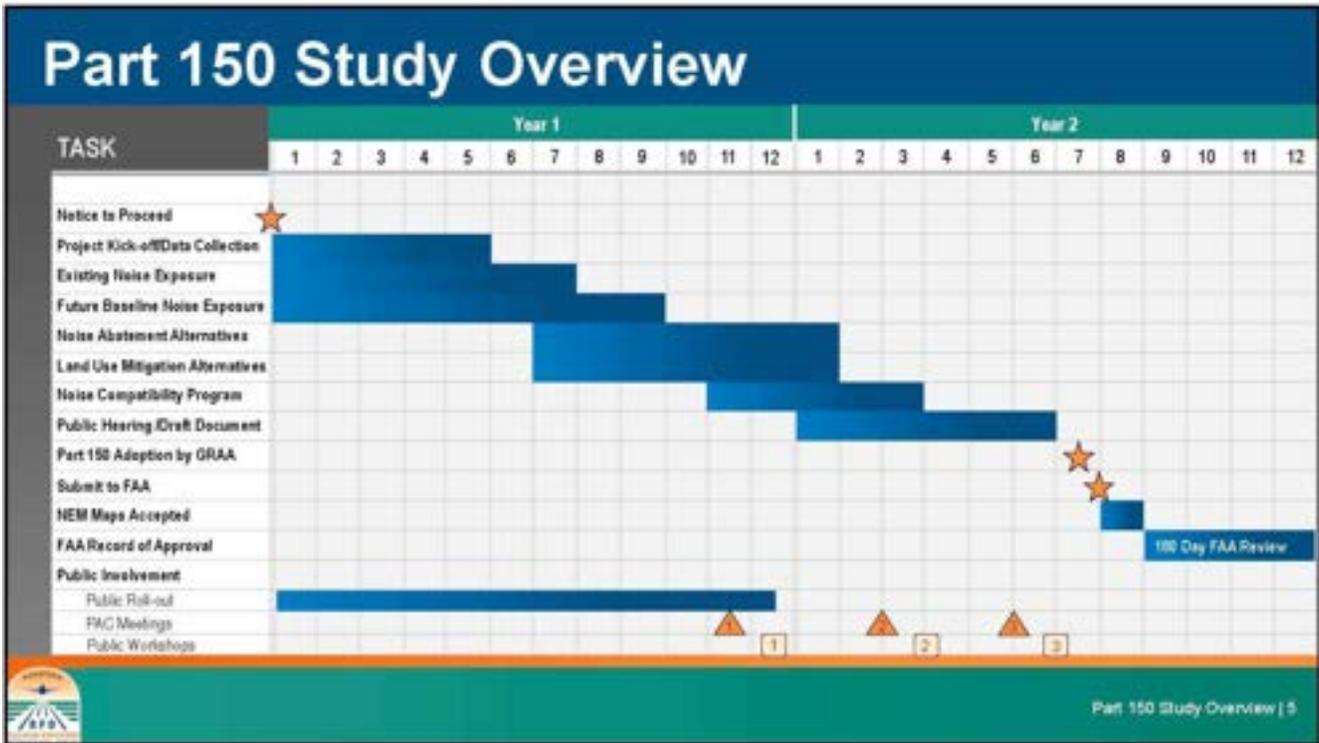
Part 150 Study Overview | 4

Part 150 Study Overview | 4



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority



## Part 150 Noise Compatibility Study Process

### Overview

- Code of Federal Regulations (14 CFR) Part 150
  - Established requirements for airport owners who choose to submit noise exposure maps and develop noise compatibility planning programs for FAA review and approval
  - Part 150 Studies undertake an in depth and public oriented approach to noise and compatible land use
- Part 150 Studies Are Planning Studies
  - Identify noise and land use impacts that exist today and in the future
  - Work to develop solutions within the FAA's framework
- Part 150 Studies can open funding sources
  - Following 14 CFR Part 150 guidelines makes airport eligible to apply for grants for implementing recommendations of the study
  - Funding is subject to availability and not guaranteed
- Part 150 Studies Do Not:
  - Recommend closing an airport or implementing mandatory restrictions on aircraft
  - Give environmental approval for implementing noise abatement or land use programs

Part 150 Noise Compatibility Study Process | 6



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### Noise Exposure Maps

- Description of the noise levels for existing and future (+5 years) conditions
- Future condition should take into account any changes (physical or operational) that may have an effect on the noise levels around the airport
  - Examples of physical changes may include: runway threshold relocation, changes in terminal/gate layout, new aircraft parking facilities
  - Examples of operational changes may include: changes in aircraft operating levels, and fleet mix, new flight tracks, new destinations

## Essential Elements of a Part 150 Study



### Noise Compatibility Program

- Recommendations for reducing, minimizing, and/or mitigating aircraft noise and land use conflicts
  - Noise Abatement
  - Land Use Mitigation
  - Program Management



Essential Elements of a Part 150 Study | 7

## Public Involvement



### Public Involvement Opportunities

- **Advisory Committee** – Group of stakeholders affected by, or having oversight responsibilities for, issues covered by the Part 150 Study Update
  - Airport Authority Officials
  - Aircraft Operators
  - Government Officials / Land Use Planners
  - Community Groups
  - Air Traffic Controllers
- **Public Workshops** - Open house, informational meetings to discuss and gather comments on potential aviation noise, land use, and other mitigation measures
- **Public Hearings** - to receive comments (either oral or written) from the public on the Draft Part 150 Study Update document
- **Project Website / Social Media**
  - Project website and social media will be updated with study information, including images and documents pertinent to the study - <https://www.airportprojects.net/rfd-part150/>
  - Posting of all meeting notices
  - Posting of study process and draft findings



Public Involvement | 8



## History of Noise Compatibility Planning



### Federal Regulations and Guidelines

- Jet Age + Rapid Expansion of Airports + Continued Suburban Development/Sprawl = Adverse Noise Impacts
- Aviation Noise Abatement Policy of 1976
- Aviation Safety and Noise Abatement Act of 1979
  - 14 CFR Part 150 (1981) established requirements for airport owners who choose to submit noise exposure maps and develop noise compatibility planning programs to the FAA for review and approval.
  - Typically voluntary on the part of the sponsor and is not an automatic requirement of the Federal government.
- Airport Noise and Capacity Act of 1990
  - Established phase-out timeline of Stage 2 aircraft (Commercial aircraft >75,000 lbs.)
  - Restricted airports from imposing locally based, non-voluntary restrictions without first completing a Part 151 Study. (To date no Part 151 restrictions request has been submitted and fully approved by the FAA)
- FAA Final Policy on Part 150 Noise Mitigation Measures (Oct 1, 1998)
  - New homes constructed within an FAA-approved and published noise exposure contour are NOT eligible for remedial noise mitigation.

History of Noise Compatibility Planning | 9

### Previous Studies

Established existing noise abatement measures in place at RFD

- 1990 Part 150 Study
- 1995 Part 150 Study
- 2003 Part 150 Study
- 2012 NEM Update

## History of Noise Compatibility Planning at RFD



### This Part 150 Update will...

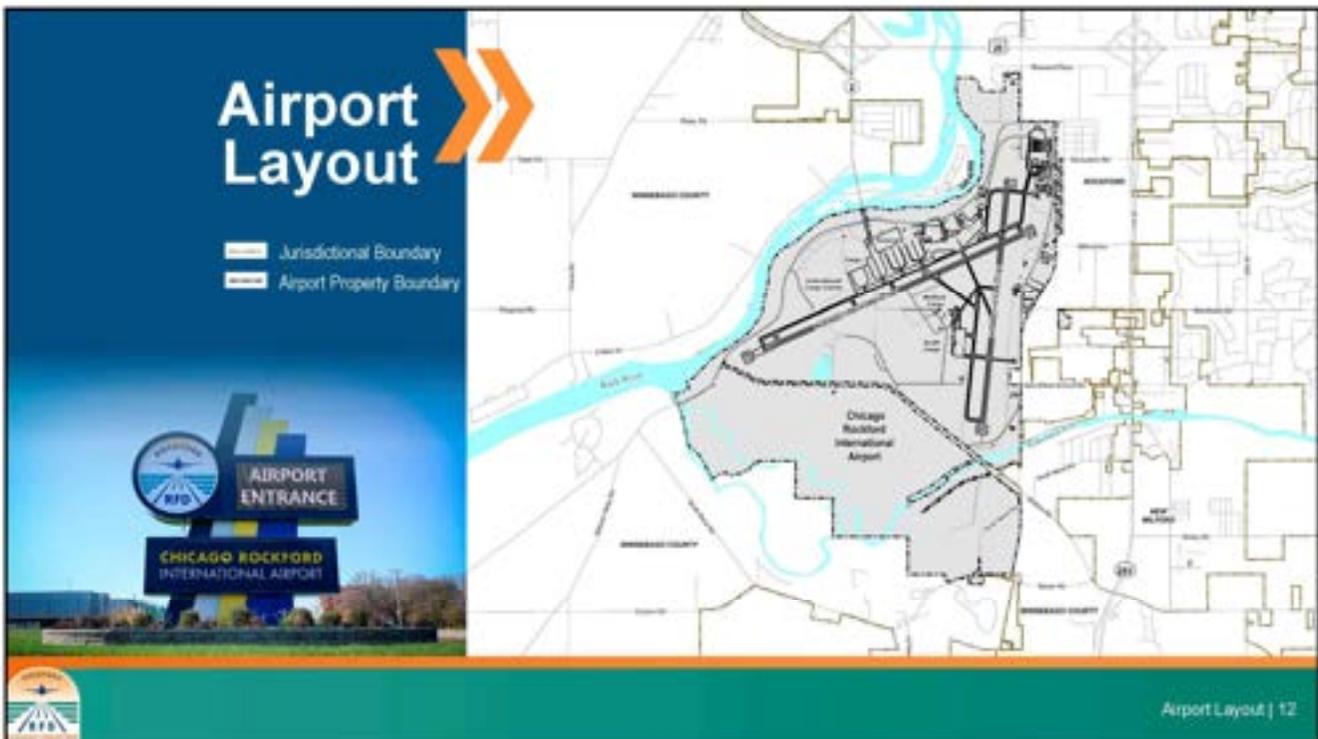
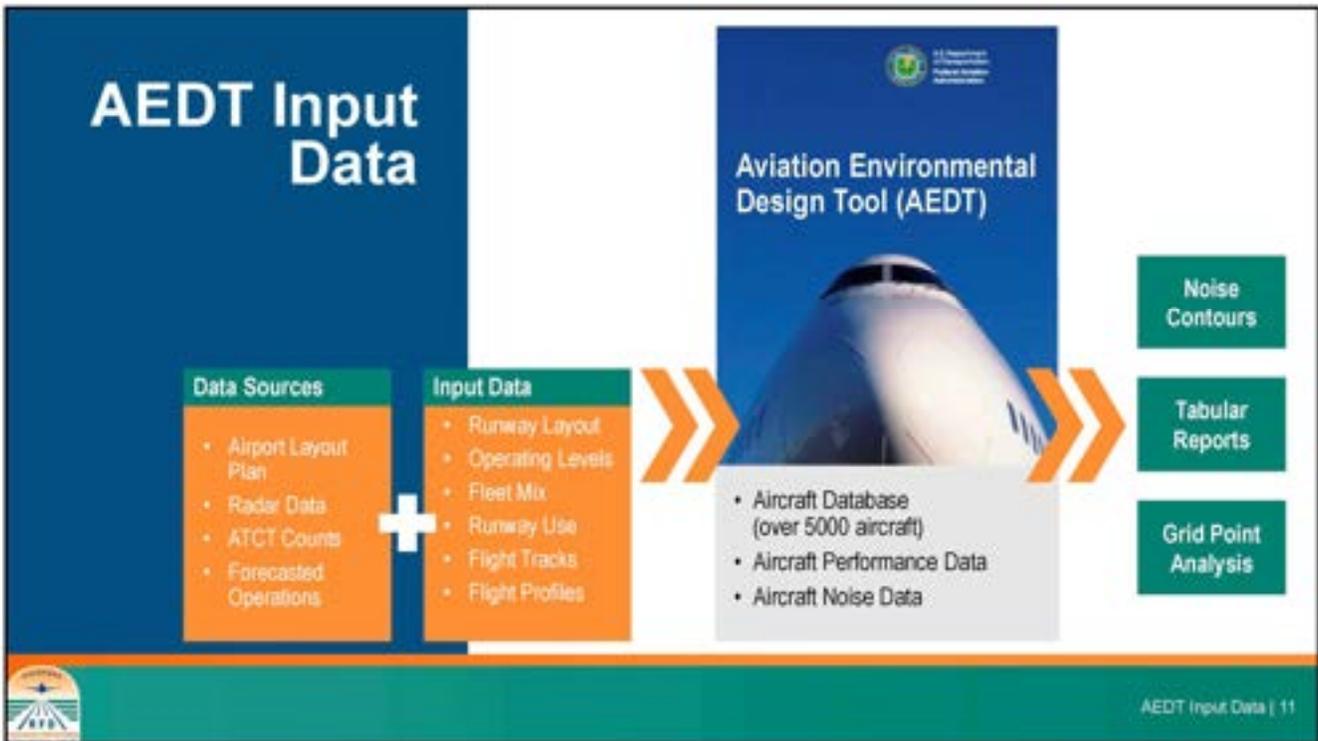
- Update Noise Exposure Maps for Existing (2020) and Future (2027) Baseline conditions
- Review existing NCP
- Modify existing NCP measures where necessary
- Recommend new noise abatement and/or land use mitigation measures based on land use incompatibilities within the 65+ DNL noise contour

History of Noise Compatibility Planning at RFD | 10



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Data Collection

### Overview

- Existing (2020) Baseline condition input data based on most recent 12 months of data from:
  - FAA's Traffic Flow Management System (TFMS) data
  - FAA's Operational Network (OPSNET)
  - Radar track data received from the FAA's National Offload Program (NOP)
- Existing (2020) Baseline condition cargo operations primarily consist of:
  - Boeing 757-200 Series Freighter (757CFB) 34%
  - Boeing 757-200 Series Freighter (757PW / 757RR) 33%
  - Airbus A300B4-600 Series (A300-622R) 24%
- Future (2027) Baseline condition input data based on data from:
  - Existing (2020) Baseline condition
    - AEDT Flight Tracks
    - Runway Utilization
    - Time of Day
    - Stage length
  - Forecast Working Paper Sensitivity Analysis, 2021
    - Annual Operations
    - Fuel Mix
- Future (2027) Baseline condition cargo operations primarily consist of:
  - Boeing 757-300 ER Freighter (7573ER) 43%
  - Boeing 757-200 Series Freighter (757PW / 757RR) 23%
  - Airbus A300B4-600 Series (A300-622R) 25%

Data Collection | 13

## Data Collection

### Existing (2020) Baseline Condition Aircraft Operations

Aircraft Type	2020 Annual Operations	2020 Average Annual Day			Percent of Total
		Day	Night	Total	
Cargo Aircraft	17,494.8	18.4	29.5	47.9	40.9%
Commercial Aircraft	4,885.2	10.1	3.3	13.4	11.4%
General Aviation Jets	2,006.0	5.2	0.3	5.5	4.7%
General Aviation Props	17,286.9	46.2	1.2	47.4	40.4%
General Aviation Helicopter	57.1	0.1	0.1	0.2	0.1%
Military Aircraft	1,031.0	2.8	—	2.8	2.4%
Grand Total	42,761	82.7	34.4	117.2	100.0%

Data Collection | 14



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Data Collection

### Future (2027) Baseline Condition Forecasted Aircraft Operations

Aircraft Type	2027 Annual Operations	2027 Average Annual Day			Percent of Total
		Day	Night	Total	
Cargo Aircraft	29,936.0	34.6	47.4	82.0	48.0%
Commercial Aircraft	4,394.0	11.4	0.7	12.0	7.0%
General Aviation Jets	10,096.1	25.7	2.0	27.7	16.2%
General Aviation Props	16,189.3	42.6	1.7	44.4	26.0%
General Aviation Helicopter	57.0	0.1	0.1	0.2	0.1%
Military Aircraft	1,670.0	4.6	--	4.6	2.7%
<b>Grand Total</b>	<b>62,342.4</b>	<b>119.0</b>	<b>51.8</b>	<b>170.8</b>	<b>100.0%</b>

Data Collection | 15

## Data Collection

### Existing (2020) & Future (2027) Baseline Condition Arrival Runway Utilization

Aircraft Category	Runway End						Total
	01	07	19	25	H1	H2	
<b>Daytime Arrivals</b>							
Cargo Jets	21.6%	25.9%	14.8%	37.7%	--	--	100.0%
Commercial Jets	21.4%	23.6%	16.6%	38.4%	--	--	100.0%
General Aviation Jets	24.3%	26.5%	10.1%	39.2%	--	--	100.0%
General Aviation Props	27.2%	17.2%	19.4%	36.2%	--	--	100.0%
General Aviation Helicopter	--	--	--	--	--	100.0%	100.0%
Military Aircraft	--	54.8% (50.0%)	5.5% (10.4%)	39.7% (39.6%)	--	--	100.0%
Military Helicopter	--	--	--	--	100.0%	--	100.0%
<b>Nighttime Arrivals</b>							
Cargo Jets	26.1%	40.1%	7.2%	26.6%	--	--	100.0%
Commercial Jets	22.8%	29.0%	4.3%	43.9%	--	--	100.0%
General Aviation Jets	28.6%	21.4%	14.3%	35.7%	--	--	100.0%
General Aviation Props	11.5%	26.9%	15.4%	46.2%	--	--	100.0%
General Aviation Helicopter	--	--	--	--	--	100.0%	100.0%
Military Aircraft	--	--	--	--	--	--	--
Military Helicopter	--	--	--	--	--	--	--

Data Collection | 16



## Data Collection

### Existing (2020) & Future (2027) Baseline Condition Departure Runway Utilization

Aircraft Category	Runway End						Total
	01	07	19	25	H1	H2	
<b>Daytime Departures</b>							
Cargo Jets	6.7%	21.8%	16.9%	54.7%	--	--	100.0%
Commercial Jets	12.9%	23.6%	23.0%	40.5%	--	--	100.0%
General Aviation Jets	14.5%	17.9%	24.9%	42.8%	--	--	100.0%
General Aviation Props	18.2%	16.1%	27.8%	37.9%	--	--	100.0%
General Aviation Helicopter	--	--	--	--	--	100.0%	100.0%
Military Aircraft	11.8%	11.8%	31.7%	44.8%	--	--	100.0%
Military Helicopter	(6.7%)	(6.7%)	(38.6%)	(47.9%)	--	--	100.0%
<b>Nighttime Departures</b>							
Cargo Jets	2.3%	13.6%	24.4%	59.7%	--	--	100.0%
Commercial Jets	3.0%	43.8%	14.2%	39.1%	--	--	100.0%
General Aviation Jets	--	10.0%	30.0%	60.0%	--	--	100.0%
General Aviation Props	--	15.2%	40.6%	40.6%	--	--	100.0%
General Aviation Helicopter	--	--	--	--	--	100.0%	100.0%
Military Aircraft	--	--	--	--	--	--	--
Military Helicopter	--	--	--	--	--	--	--

## Data Collection

### Flight Tracks

- Flight tracks are lines that represent the path of an aircraft as it arrives or departs the airport
- AEDT applies a 3-dimensional profile to each track that includes altitude, speed, thrust, and flap settings to calculate aircraft noise along each flight route
- Radar data was collected from the FAA for the year 2020
  - Sixteen (16) weeks of radar data, two (2) weeks from 8 different months in 2020
  - May through September excluded due to Runway 07/25 closure
- Representative tracks were created in the AEDT to model operations



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Data Collection

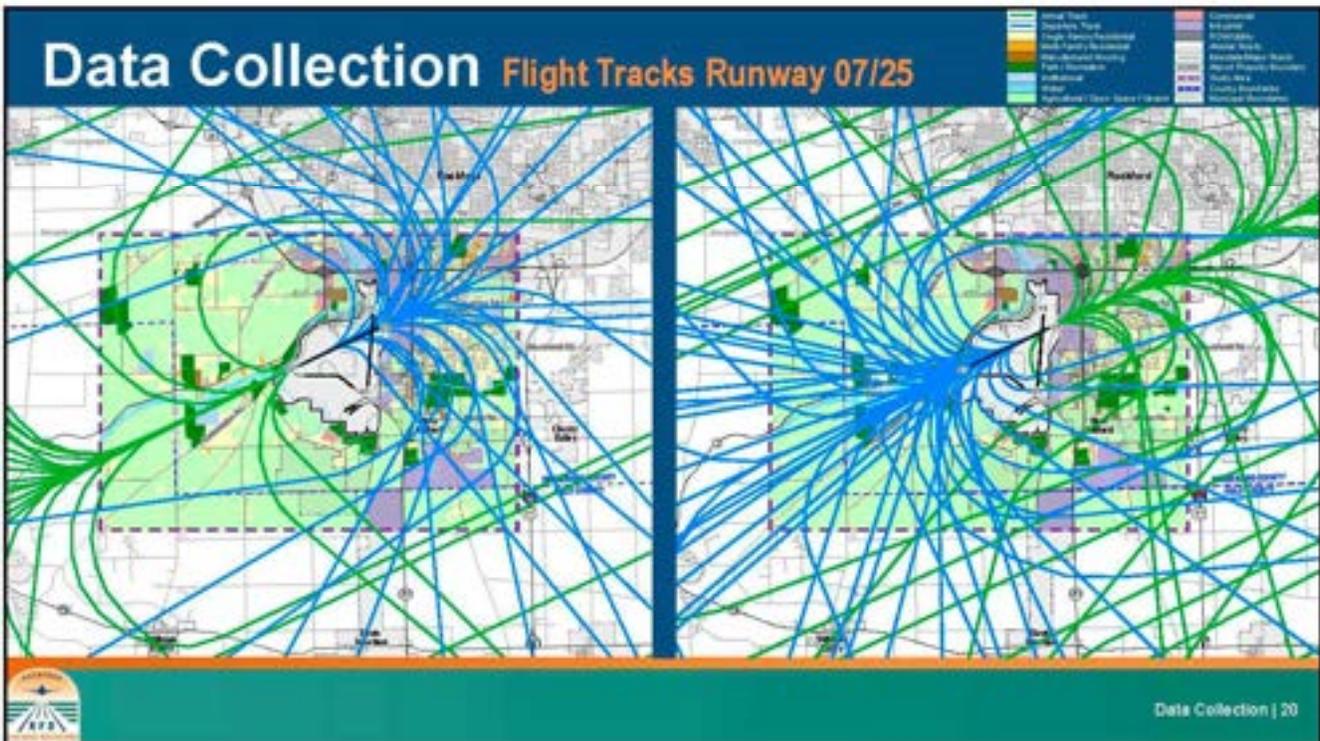
### Flight Profiles

- All arrivals are categorized Stage Length 1
- All general aviation prop/helicopter and military departures are categorized Stage Length 1
- Cargo, commercial and general aviation jets are categorized by distance to destination from RFD

Stage Length	Distance (nautical miles)	Typical Destinations
1	0-500	SDF, MSP, ACO
2	501-1,000	DFW, SWI, DEN
3	1,001-1,500	ONT, MIA, SEA
4	1,501-2,500	OKA, ANC
5	2,501-3,500	International
6	3,501-4,500	International
7	4,501-5,500	International

Aircraft Category	Stage Length							Total
	1	2	3	4	5	6	7	
<b>Daytime Departures</b>								
Cargo Jets	28.5%	15.9%	58.3%	0.7%	--	0.6%	0.0%	<b>100.0%</b>
Commercial Jets	2.9%	78.8%	19.1%	1.4%	--	0.1%	--	<b>100.0%</b>
General Aviation Jets	69.2%	0.8%	--	--	--	--	--	<b>100.0%</b>
<b>Nighttime Departures</b>								
Cargo Jets	33.8%	29.0%	25.8%	11.0%	0.0%	0.4%	--	<b>100.0%</b>
Commercial Jets	43.6%	28.8%	27.7%	0.2%	--	--	--	<b>100.0%</b>
General Aviation Jets	100.0%	--	--	--	--	--	--	<b>100.0%</b>

Flight Tracks | 19







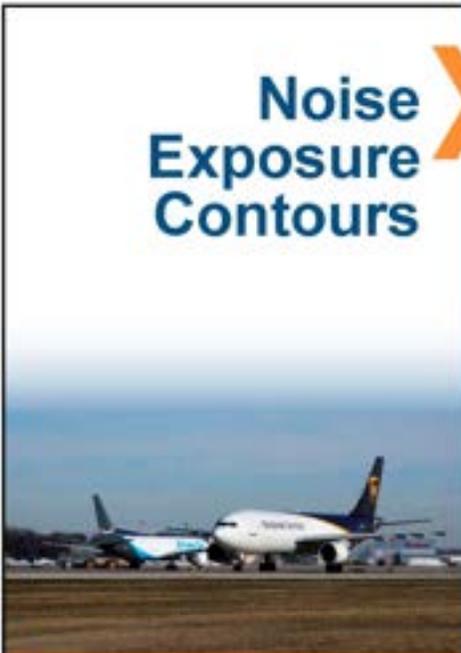
# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Noise Exposure Contours

### Technical Requirements

- Represents an annual-average day (1 year of operations/365 days)
- Described with a set of continuous lines that represent equal levels of noise
- Prepared using the FAA's Airport Environmental Design Tool (AEDT) Ver 3d
- Must use specific noise metric: Day-Night Average Sound Level (DNL)
  - DNL represents 24-hour average noise level
  - Penalty for nighttime (10:00 p.m. - 6:59 a.m.) flights (x 10)
  - National standard for all Federal agencies
  - 65 DNL identified as threshold for impact to noise sensitive land uses

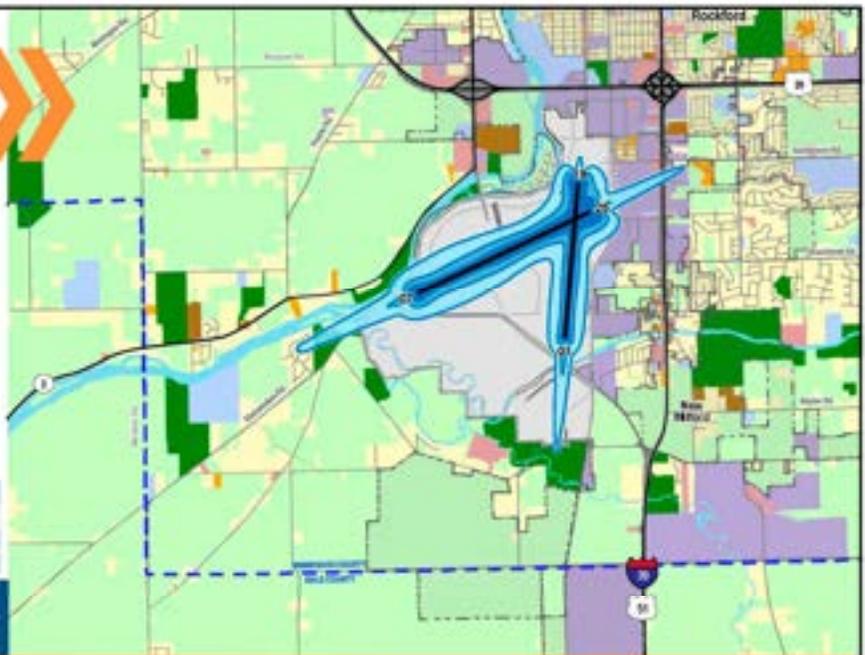


## Noise Exposure Contours

### Existing (2020) Condition Land Use Incompatibilities

	65 - 70 DNL	752.9 Acres
	70 - 75 DNL	297.8 Acres
	75+ DNL	251.3 Acres
	65+ DNL	1,302.0 Acres

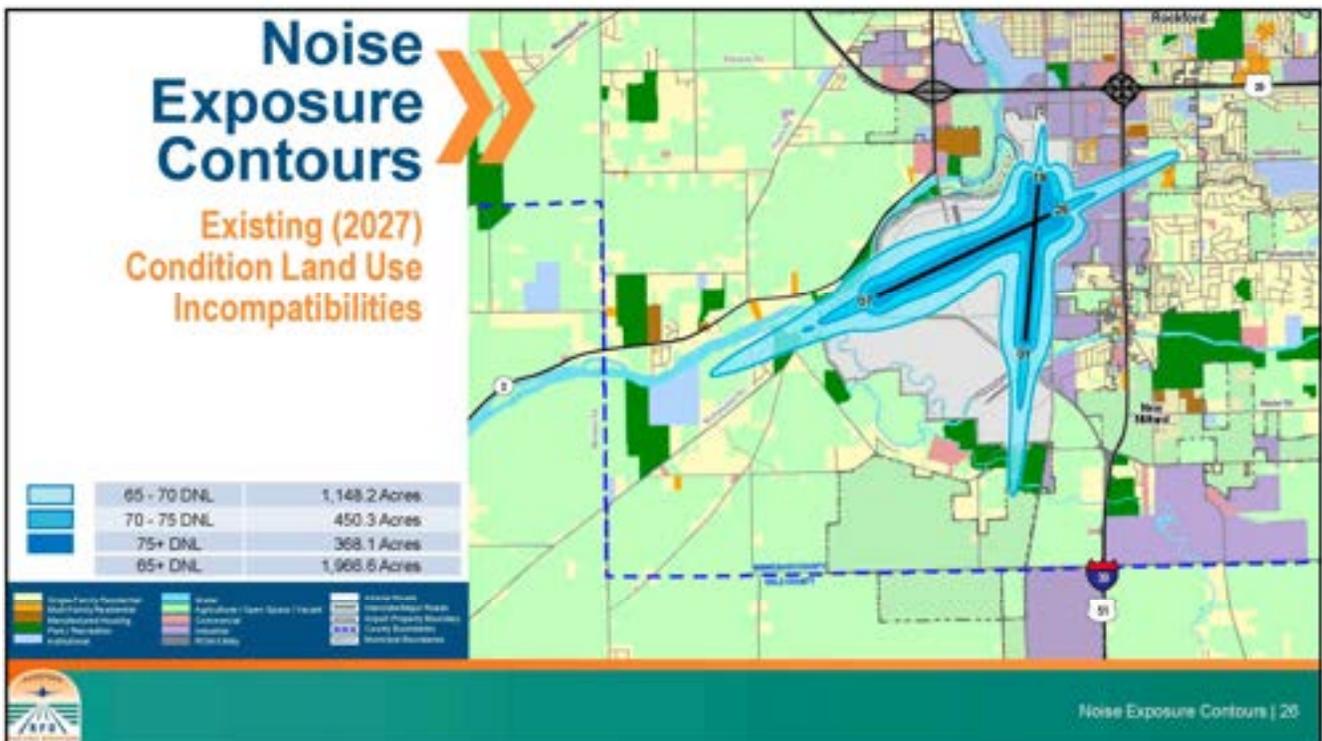
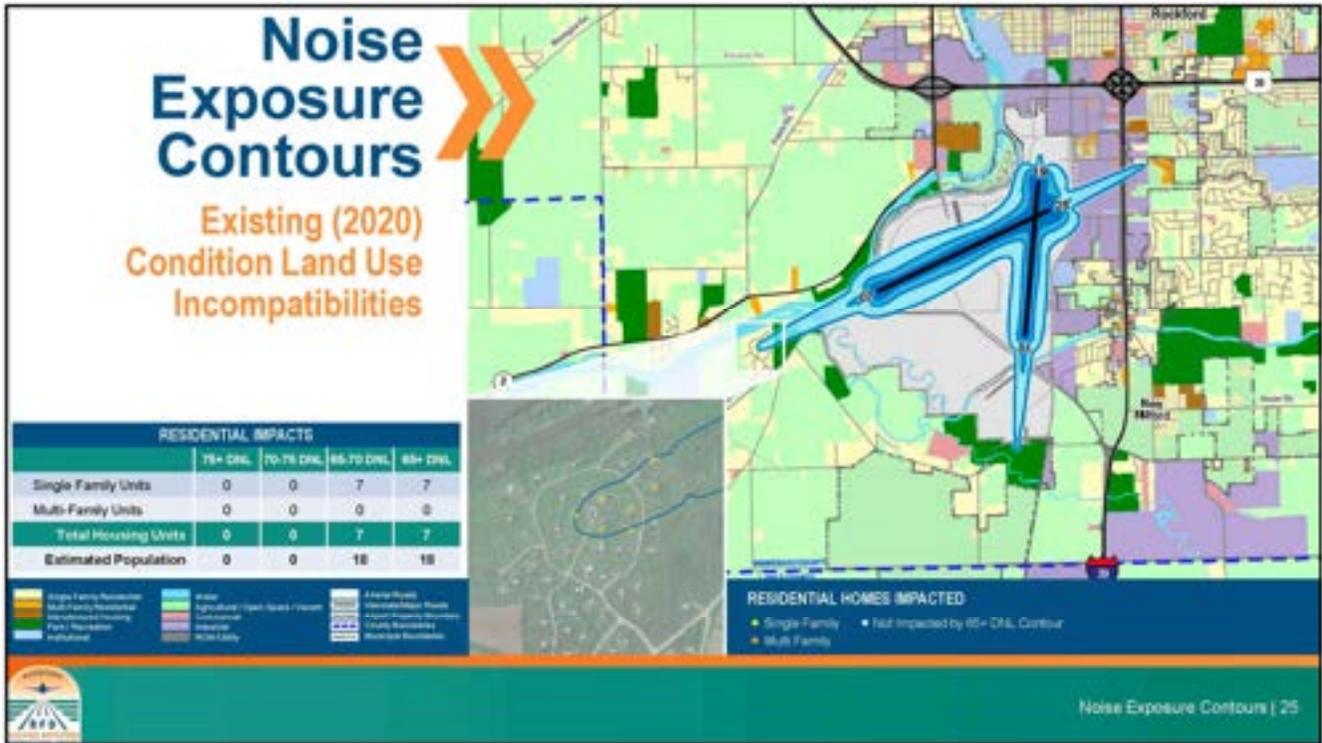
Open Space/Recreation	Water	Airport Noise Incompatibility Areas
Residential/Commercial	Agriculture/Forest	Airport Property Security
Road/Highway	Wetlands	County Boundaries
Industrial	Wetlands	Municipal Boundaries





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

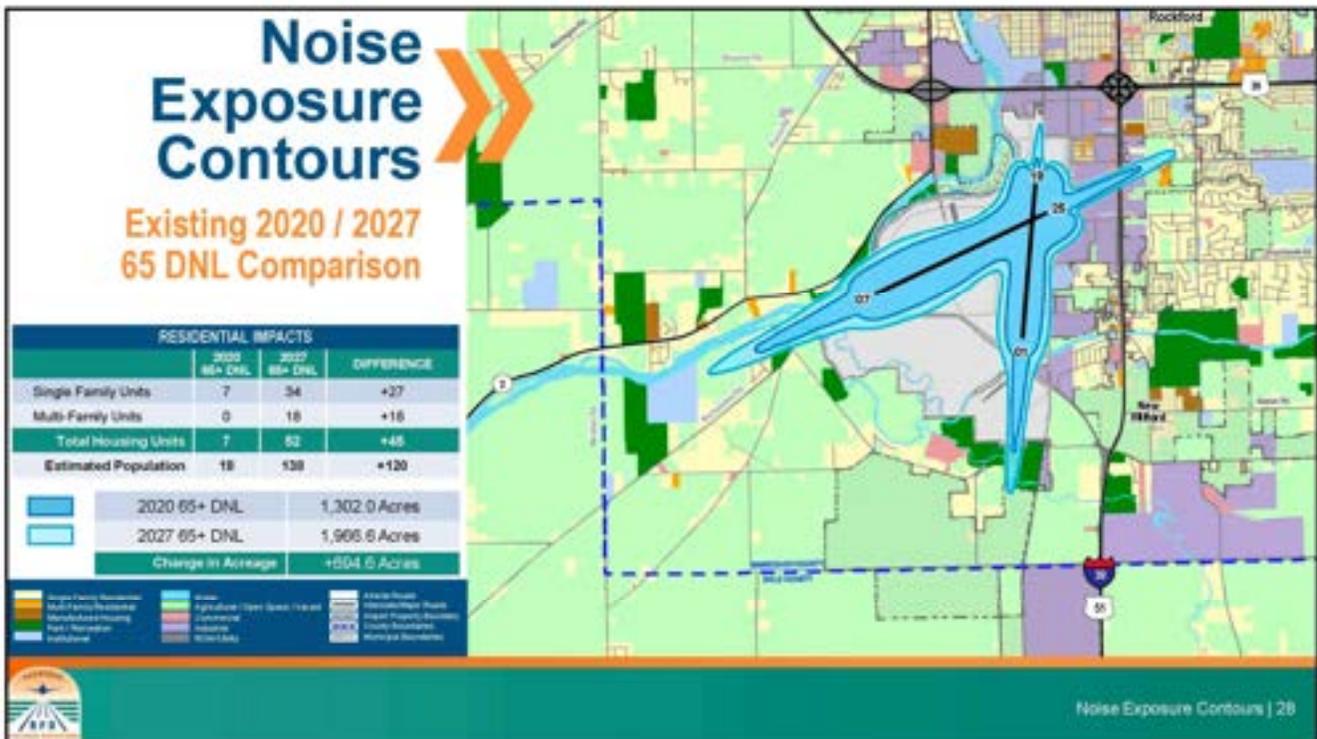
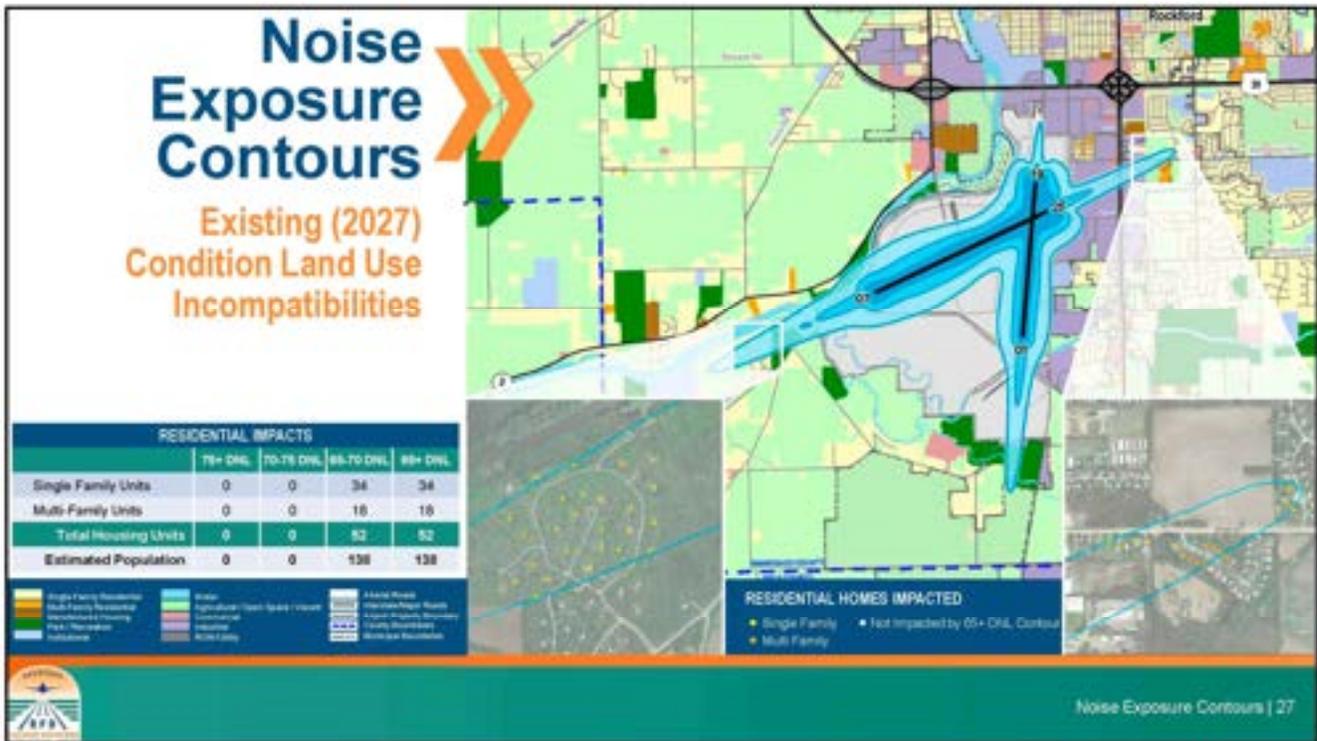
Greater Rockford Airport Authority





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Next Steps

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    graph TD
      A[Study Initiation] --> B[Data Collection]
      A --> C[Forecast Validation]
      A --> D[Radar Data Analysis]
      B --> E[Draft Baseline Noise Exposure Map]
      C --> E
      D --> E
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      G --> I[Noise Abatement Plan]
      G --> J[Program Management Plan]
      G --> K[Land Use Management Plan]
      H --> I
      H --> J
      H --> K
      I --> L[Draft Noise Compatibility Program & NEMs]
      J --> L
      K --> L
      L --> M[Draft Documents and Public Hearings]
      M --> N[Recommended Noise Compatibility Program & Final NEMs]
      N --> O[Review and Approval]
    
```

- **Noise Compatibility Program (NCP) Alternatives Analysis**
  - **Noise Abatement Alternatives**  
*Purpose: To **ABATE** noise levels in surrounding communities*
  - **Land Use Mitigation Alternatives**  
*Purpose: To **MITIGATE** noise levels in surrounding communities*
  - **Program Management Alternatives**  
*Purpose: To **PROVIDE** administrative and management actions to allow the airport to maintain land use compatibility in surrounding communities*
- **Develop Recommended NCP Measures & Program Map**

Next Steps | 29

## Contacts

**Jesse Baker**  
 1-816-225-6346  
 jbaker@landrum-brown.com

**Jesse Baker, will be the Project Manager for this Part 150 Study.** Jesse has over 18 years of experience in environmental analysis and modeling. Jesse began his career with L&B and provided noise and air quality data analysis for numerous large-scale projects, including the EIS for the New York / New Jersey / Philadelphia Airspace Re-design and the EIS for the relocation of St. George Municipal Airport. Jesse also participated in Part 150 Studies at Kansas City International and Albany International Airports.

Jesse's technical background, while focused on environmental analysis, and modeling of airport design, airspace design, and air traffic control procedures also includes serving on the Aviation Environmental Design Tool (AEDT) and Aviation Environmental Screening Tool (AEST) development team as a Quality Assurance Lead and Subject Matter Expert, and providing technical support and guidance to the FAA Environmental Policy Team Office (ATO-AJV-114) and the FAA Office of Environmental and Energy Research and Development (FAA-AEE).

Through his work on the development of AEDT, Jesse has become one of the foremost experts on the use of the program for aviation noise and air quality analysis. His expertise will be of great benefit to the Part 150 Study at RFD.

Contacts | 30



## **Advisory Committee Meeting #2** **November 17, 2022**

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- AC Meeting Announcement
- Presentation

Note: Meeting presentation and recording of meeting are available on the study website at <https://www.airportprojects.net/rfd-part150/home/advisory-committee/>



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## AC MEETING ANNOUNCEMENT



### ADVISORY COMMITTEE MEETING ANNOUNCEMENT

Where: Online (Microsoft Teams)

When: November 17, 2022, from 2:00 p.m. – 4:00 p.m.

The Greater Rockford Airport Authority (GRAA) is requesting your participation as a member of the Advisory Committee for the Part 150 Noise Compatibility Study it is conducting. This will be the second of three Advisory Committee and the materials presented will focus on the Noise Compatibility Program (NCP) at RFD. The recommended measures included in the NCP are designed to minimize the impacts of aviation noise to the surrounding community and enhance the administration of the overall noise compatibility program for RFD.

**AGENDA**

- Introduction
- Review Future 2027 Noise Contour
- NCP Background Information
- Existing RFD NCP Measures and Recommendations
- Noise Abatement and Land Use Mitigation Screening and Recommendations
- Land Use Mitigation Recommendations
  - Residential Sound Insulation Program
  - Aviation Easements
  - Improved Building Codes
  - Voluntary Fair Disclosure

The meeting will be held on Microsoft Teams, a recording of the meeting will be made available on the study website provided below. If you can not attend but would like another representative from your organization to attend, please forward this invitation to them.

<https://www.airportprojects.net/rfd-part150/>

**Please email RSVP to:**

[jesse.haker@landrumbrown.com](mailto:jesse.haker@landrumbrown.com)

We value and look forward to your input and participation in this process.

Sincerely,

Zach Oakley  
Deputy Director of Operations and Planning



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## MEETING PRESENTATION

**14 CFR Part 150 Noise Compatibility Study Update**

**Greater Rockford Airport Authority (GRAA)**

Advisory Committee Meeting | November 2022

## Agenda

- Future 2027 Noise Compatibility Program (NCP) Noise Contour
- Elements of a Noise Compatibility Program
- Previously Approved Noise Abatement Measures
- Noise Abatement Screening & Recommendations
- Previously Approved Land Use Mitigation Measures
  - Remedial / Corrective
  - Preventative
- Land Use Mitigation Screening, Recommendations & Cost
- Previously Approved Program Management Measures
- Program Management Screening, Recommendations & Cost
- Next Steps

Agenda | 2



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority



## Elements of a Noise Compatibility Program

- 1. Noise Abatement Measures**  
*Purpose: To abate noise levels in surrounding communities*
- 2. Land Use Mitigation Measures**  
*Purpose: To mitigate noise levels in surrounding communities*
- 3. Program Management Measures**  
*Purpose: To provide administrative and management actions to allow the airport to maintain land use compatibility in surrounding communities*

Elements of a Noise Compatibility Program | 4



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Elements of a Noise Compatibility Program

### Types Of NCP Measures:

- **Noise Abatement**
  - Flight Track Location
  - Runway Use
  - Flight Management
  - Ground Activity Restrictions
  - Facility Modification
- **Land Use Mitigation**
  - Preventive
  - Remedial / Corrective
- **Program Management**
  - Noise Complaint Protocols
  - Management of Noise Program
  - Updates to NEM/NCP

Elements of a Noise Compatibility Program | 5

## Previously Approved Noise Abatement Measures

Measure	Description	Responsible Party	2003 Status	Current Status	2022 NCP Recommendation
<b>Approved Noise Abatement Measures</b>					
<b>NA-1</b>	Maintain existing noise abatement procedures per Tower Order of June 15, 1984.	Air Traffic Control Tower (ATCT), Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be withdrawn
<b>NA-2</b>	Aircraft in excess of 12,500 pounds departing Runway 25 should be directed to turn 20 degrees to the right of left as soon as practicable after takeoff.		Previously withdrawn in the 1984 NCP		
<b>NA-3</b>	All aircraft departing on Runway 7 should be trained along three departure tracks: Left, Right, and Center.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued
<b>NA-4</b>	Direct pilots of C-130s to turn as tightly as practicable when training on Runway 19.	ATCT, Airlines, GRAA	Approved as Voluntary	Not Applicable	Recommended to be withdrawn
<b>NA-5</b>	Direct pilots of air carriers, when training on Runway 05, to begin turning to downwind leg after four Distance Measuring Equipment (DME) from localizer and establishing the downwind leg at five DME.		Previously withdrawn in the 1984 NCP		
<b>NA-6</b>	Establishment of an informal preferential runway use plan, weather and operating requirements permitting, as follows for aircraft weighing more than 12,500 pounds, using a five-knot tailwind and 10-knot crosswind component for runway assignment.		Previously withdrawn in the 2003 NCP. Replaced by NA-10.		

Previously Approved Noise Abatement Measures | 6



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

Previously Approved Noise Abatement Measures

Measure	Description	Responsible Party	2003 Status	Current Status	2022 MCP Recommendations
Approved Noise Abatement Measures					
NA-7	During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses of 250 degrees clockwise through 060 degrees inclusive turn right in course to the Dubuque (D02) or the Noeline (CD) navigational fix as soon as practicable.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued with modifications
NA-8	During daytime hours (7:00 a.m. to 10:00 p.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses 070 degrees clockwise through 240 degrees inclusive within 20-degree left turn and maintain heading until reaching 3,000 feet mean sea level (MSL).	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued with modifications
NA-9	During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 19 having departure courses of 0 degrees clockwise through 190 degrees maintain runway heading until reaching 3,000 feet MSL before turning in course.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued with modifications
NA-10	Establish an informal preferential runway use plan for all daytime and nighttime operations after Runway 7CS is extended.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued
NA-11	For all aircraft requiring more than 6,000 feet certified takeoff length, Runway 25 preferred.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued

Previously Approved Noise Abatement Measures | 7

Previously Approved Noise Abatement Measures

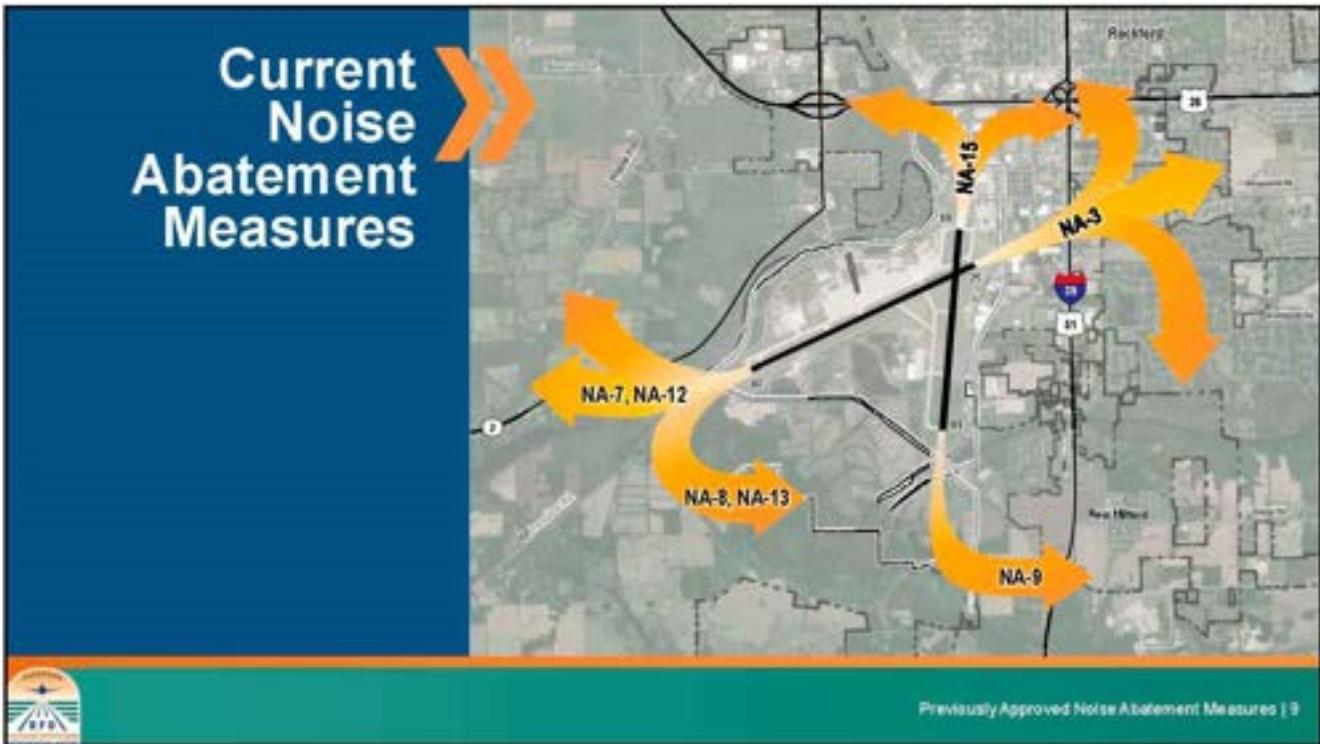
Measure	Description	Responsible Party	2003 Status	Current Status	2022 MCP Recommendations
Approved Noise Abatement Measures					
NA-12	During daytime hours (7:00 a.m. to 10:00 p.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses of 250 degrees clockwise through 060 degrees inclusive turn right in course to the Dubuque (D02) or the Noeline (CD) navigational fix as soon as practicable.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued with modifications
NA-13	During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses 070 degrees clockwise through 240 degrees inclusive turn to a heading of 20 degrees as soon as practicable and maintain heading until reaching 3,000 feet MSL.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued with modifications
NA-14	Aircraft weighing more than 12,500 pounds conduct touch and go and low approach training activity on the south side of the airport when using Runways 7 or 25.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued with modifications
NA-15	During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 1, maintain runway heading until reaching 3,000 feet MSL before turning in course.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued
NA-16	Encourage the use of noise abating construction standards for all new on-airport structures/facilities and use those structures as noise barriers/buffers to adjacent off-airport facilities.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued

Previously Approved Noise Abatement Measures | 8



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority



## Noise Abatement Screening Analysis

Description	Benefits	Drawbacks	Evaluation And Recommendation
Flight Track Modifications			
Modify arrival and departure flight tracks to reduce noise within the 65 DNL noise contour	In some circumstances may reduce noise within the 65+ DNL contour	Impacted areas northwest of Runway End 25 are primarily impacted by arrival operations on final approach. These flight track locations cannot be adjusted. ATC currently depose departure operators with left and right turns based on destination.  Areas to the southwest of Runway End 7, are impacted by both arrival and departure operations. The arrival tracks could not be modified as the aircraft are on final approach near the impacted homes. Departures are currently depose with left and right turns as soon as practical.	Due to the inability to provide benefits to the homes impacted within the 65-DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.  Several currently approved voluntary measures address departure flight track dispersion and turn locations and are recommended to be continued (NA-1, NA-3, NA-4, NA-7, NA-8, NA-9, NA-12, NA-13, NA-14 and NA-15)
Runway Use Modifications			
Increase usage of Runway 01R	Could reduce noise levels for the areas within the 65+ DNL noise contour to the northeast and southwest of Runway 07G	Based on the RFD level, the majority of operations will require the use of Runway 705 due to the length of the runway. The amount of traffic required to provide substantial noise reduction benefits in impacted areas would not be achievable based on current wind, weather and operational necessities to operate aircraft safely.  Increasing the arrivals to Runway End 1 and Departures from Runway End 15 could potentially impact areas in dense urban areas, offsetting any benefits in the reduction of homes in the 65+ DNL to the northeast and southwest of the airport.	Due to the inability to provide benefits to the homes impacted within the 65-DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.

Noise Abatement Screening Analysis | 10



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

## Greater Rockford Airport Authority

## Noise Abatement Screening Analysis

Description	Benefits	Drawbacks	Evaluation And Recommendation
<b>Aircraft Operational Procedure Modifications</b>			
Optimized Profile Descent Approach procedure	Optimized Profile Descent (OPD) procedures (previously known as continuous descent approach (CDA)) have been used at some airports to reduce approach noise at a distance from the airport. Generally, their most notable effect related to reduced fuel burn and corresponding air emissions.	Potential noise reduction benefits would be limited to areas outside DNL, DE+ noise contour. Due to the impacted homes location, implementing OPD's would have no significant noise benefit for impacted homes.	Due to the inability to provide benefits to the homes impacted within the DE+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
Implement Distant Noise Abatement Profile (NADP)	Implementing Distant NADPs can potentially reduce noise for areas further away from the runway end (greater than three miles).	Distant NADPs can potentially increase noise for areas closer to the runway end. Due to the impacted homes location, implementing NADPs would have no significant noise benefit for impacted homes.	Due to the inability to provide benefits to the homes impacted within the DE+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
Implement Close-in Noise Abatement Profile (NADP)	Implementing Close-in NADPs can potentially reduce noise for areas in close proximity to the runway end (less than three miles).	Close-in NADPs can potentially increase noise for areas further away from the runway end. Due to the fleet mix at RFD many of the aircraft would not have the capabilities to execute Close-in NADPs.	Due to the inability to provide benefits to the homes impacted within the DE+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
Moderate Reverse Thrust on Landing	Reduces the amount of noise from the application of reverse thrust after landing.	Reverse thrust can not be eliminated altogether and would be up to the discretion of the pilot. Due to the location of the homes and the anticipated participation, significant reductions in the number of impacted homes in the DE+ DNL are unlikely.	Due to the inability to provide benefits to the homes impacted within the DE+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.

Greater Rockford Airport Authority logo

Noise Abatement Screening Analysis | 11

## Noise Abatement Screening Analysis

Description	Benefits	Drawbacks	Evaluation And Recommendation
<b>Airport Facility Modifications</b>			
Extend Runway 1/19	Additional aircraft in the RFD fleet this would be able utilize Runway 1/19, potentially reducing the utilization of Runway 7/25.	New residential areas to the north and south of the airport could be impacted by increasing utilization of Runway 1/19. Existing buildings and roadways to the north and the Kishwaukee River and existing railroad to the south limit the potential length of Runway 1/19.  The cost benefit of such a project is not practical.	Due to the cost of this measure and limitations to the final runway length this alternative is <b>NOT RECOMMENDED</b> to be continued for further analysis.
Ground Run-up Enclosures (GRE)	Can reduce jet run-up noise levels by up to 20 dB.	Currently there are no significant jet aircraft maintenance activities that would justify the cost-benefit of constructing GRE's.	Due to the inability to provide benefits to the homes impacted within the DE+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
<b>Airport Facility Restrictions</b>			
Implement Airport Operational Restrictions (Part 151 Restrictions) such as: noise-time-based landing fees, airport capacity restrictions based on relative "noisiness", aircraft type restrictions based on "noisiness"	Can resolve noise annoyance issues with certain loud aircraft events or aircraft types operating at RFD.	Such restrictions would be subject to the costly and time-consuming analytical requirements under Federal Aviation Regulations Part 151. The FAA has never officially approved such measures.  Would have severe financial ramifications to both the Airport and the region.	Restrictions on access to an airport are measures of last resort for use in the most extreme cases of noise impact. This alternative is <b>NOT RECOMMENDED</b> for further analysis.

Greater Rockford Airport Authority logo

Noise Abatement Screening Analysis | 12



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Noise Abatement Recommendations

### Existing Noise Abatement Measures

Five (5) measures recommended to continue

Six (6) measures recommended to continue with modifications

Two (2) measures recommended to be withdrawn

*The currently implemented noise abatement measures reduce noise impacts within the 65+ DNL noise contour to the fullest extent possible*



## Previously Approved Land Use Mitigation Measures

Measure	Description	Responsible Party	2003 Status	Current Status	2022 NCP Recommendation
<b>Approved Land Use Measures</b>					
LU-1	Redevelop land south of US Route 20 Bypass and west of 20 <sup>th</sup> Street from agricultural to medium density				Previously withdrawn in the 1994 NCP
LU-2	Adopt noise overlay zoning prohibiting development of selected noise-sensitive land uses within the 60-65 DNL noise contour (NC-2), high occupancy uses in the "double-clear zone" area (NC-3), and residential uses in the 65+ DNL noise contour (NC-1) of the 2005 Noise Exposure Map (NEM)/Noise Compatibility Program (NCP) within the "double-clear zone" area	GRAA, City of Rockford, Winnebago County, Ogle County	Approved	To date only Ogle County zoning ordinances have incorporated the RFD NCP. These ordinances were updated in 2021 but continue to reference the 1994 NCP	Recommended to be continued with modification to include the new 2022/2027 NEM
LU-3	Amenity local comprehensive plans to show planned industrial and commercial uses at interchanges of US 20 Bypass and South Main Street				Previously withdrawn in the 1994 NCP
LU-4	Amenity local comprehensive plans by adopting the updated Part 150 NCP as their noise compatibility elements for the City of Rockford and Ogle and Winnebago Counties	GRAA, City of Rockford, Winnebago County, Ogle County	Approved	To date only Ogle County Comprehensive Plans have incorporated the RFD NCP, however the language is no longer included in the 2042 Comprehensive Plan. Language related to continuing an active presence in RFD activities is included	Recommended to be continued with modification to include the new 2022/2027 NEM





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Previously Approved Land Use Mitigation Measures

Measure	Description	Responsible Party	2003 Status	Current Status	2022 NCP Recommendation
<b>Approved Land Use Measures</b>					
LU-5	Adopt guidelines for discretionary review of development projects for the City of Rockford, Winnebago County, Ogle County, and the GRAA.	GRAA, City of Rockford, Winnebago County, Ogle County	Approved	Implemented as Needed	Recommended to be continued with modification to include the new 2022/2027 NEM.
LU-6	Acquire homes off the approach end of Runway 15			Previously withdrawn in the 1994 NCP	
LU-7	Encourage Forest Preserve District to consider acquisition of land adjacent to the existing Forest Preserves south of the airport.			Previously withdrawn in the 1994 NCP	
LU-8	Voluntary acquisition of single-family residences on Blackhawk Island in the 2008 NEM/NCP 65 DNL noise contour.	GRAA	Approved	Fully Implemented	Recommended to be withdrawn from NCP
LU-9	Redevelop airport-owned land parcels located along Kishwaukee Street south of Research Parkway	GRAA	Approved	The implementation of this measure pending, dependent upon the interest of a potential developer and the availability of funding.	Recommended to be continued
LU-10	Consideration of transfer of GRAA land of high natural value along Kishwaukee River to Forest Preserve or park district to be maintained as natural area and airport noise buffer.			Previously withdrawn in the 2003 NCP	



Previously Approved Land Use Measures | 15

## Previously Approved Land Use Mitigation Measures

Measure	Description	Responsible Party	2003 Status	Current Status	2022 NCP Recommendation
<b>Approved Land Use Measures</b>					
LU-11	Acquire development and overflight rights via purchase of land use and aviation easement over undeveloped parcel in Runway 07L approach area on south side of Kishwaukee River.	GRAA	Approved	Fully Implemented	Recommended to be withdrawn from NCP
LU-12	Offer options of voluntary sale to GRAA or sound insulation to owner of one (1) single-family residence south of the airport in the 65 DNL contour of the 1993 NCP.	GRAA	Approved	This measure was implemented with the voluntary sale of one (1) single-family home.	Recommended to be withdrawn as acquisition of the single-family home was completed.
LU-13	Encourage the City of Rockford and Winnebago County to require plat notes on new subdivision plats and to record the notes on deeds for new subdivisions within the Airport Noise Overlay Zones AC-1 and AC-2.	GRAA, City of Rockford, Winnebago County	Approved	To date, the airport noise contours are not referenced in any local subdivision ordinance.	Recommended to be continued with modification to include the new 2022/2027 NEM.
LU-14	Encourage Winnebago County, the City of Rockford, the Village of New Milan, and the Village of Davis Junction not to allow an increase in the residential density in the Agricultural Priority (AP) or Rural Residential (RR) zoning districts (Winnebago County) in the 2008 NEM/NCP 60+ DNL noise contour.	GRAA, City of Rockford, Winnebago County, Ogle County and Villages of New Milan and Davis Junction	Approved	To date based on zoning ordinances the allowable residential densities allowed in these zones has been increased.	Recommended to be continued with modification to include the new 2022/2027 NEM.

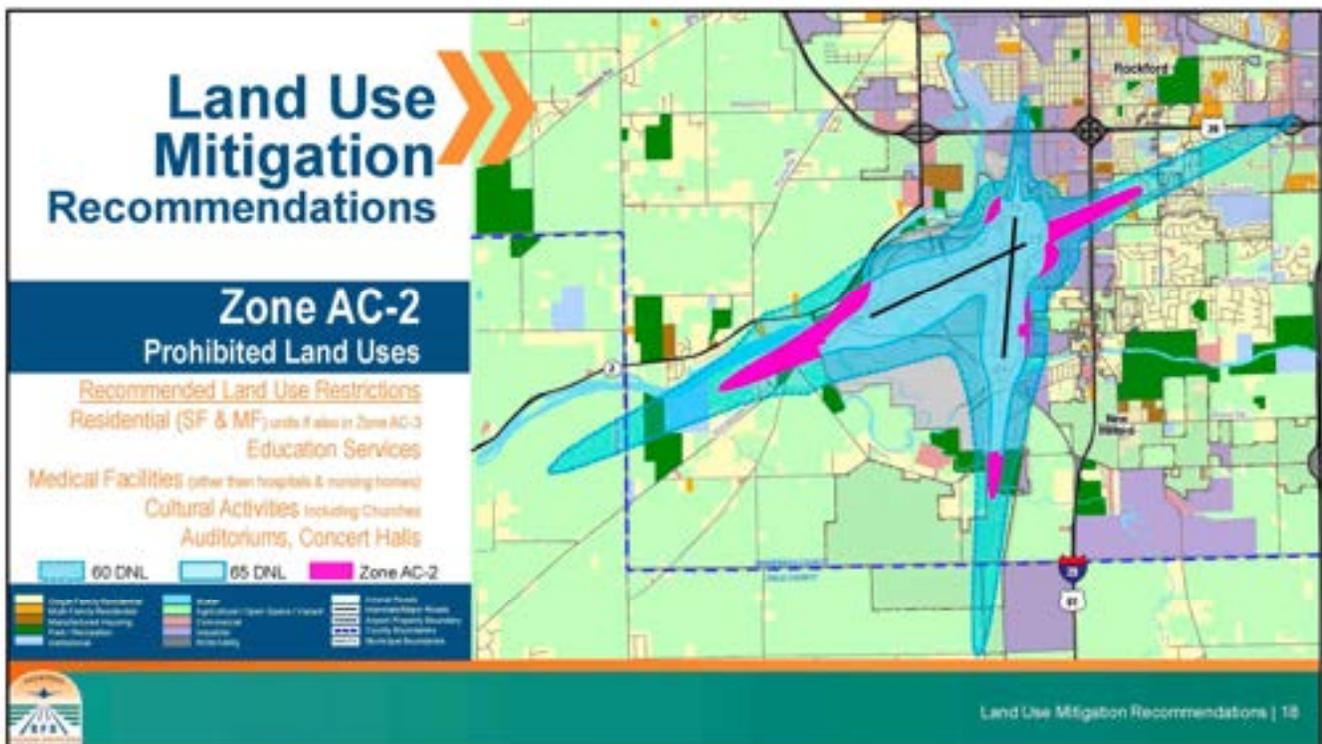
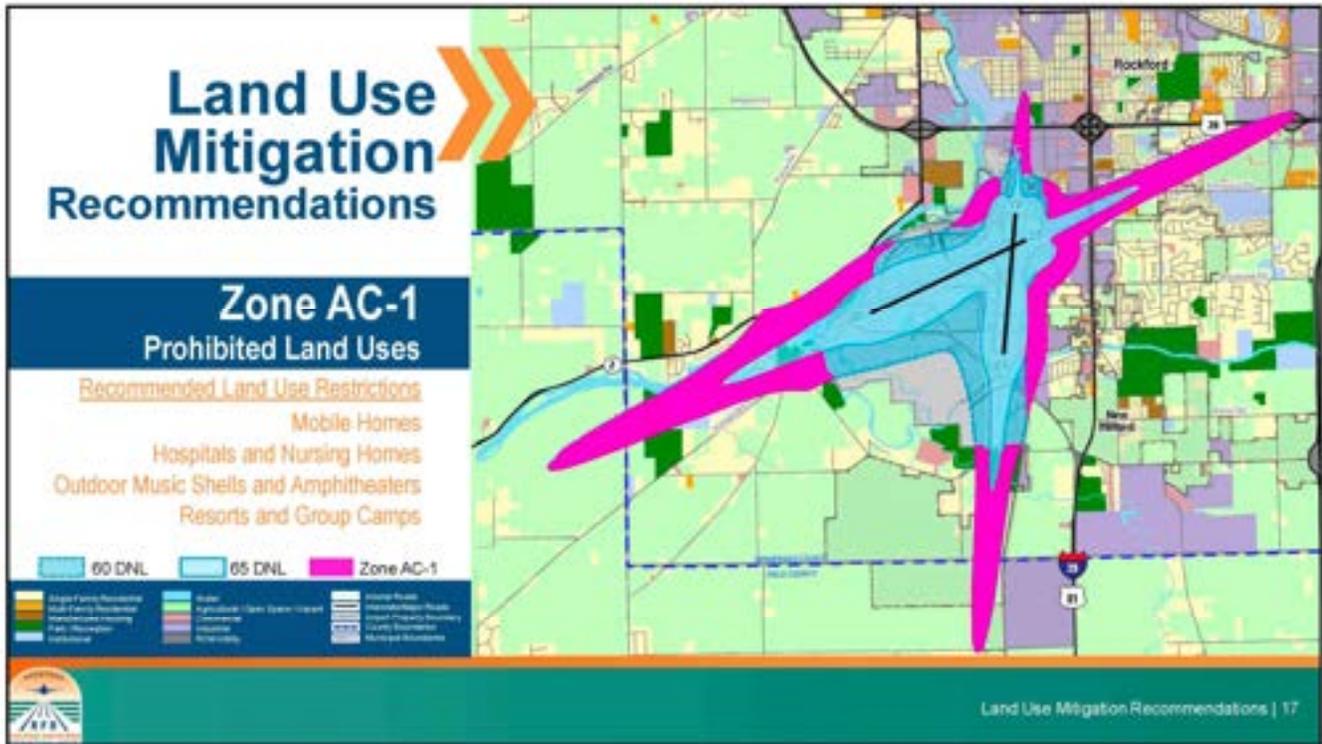


Previously Approved Land Use Measures | 16



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

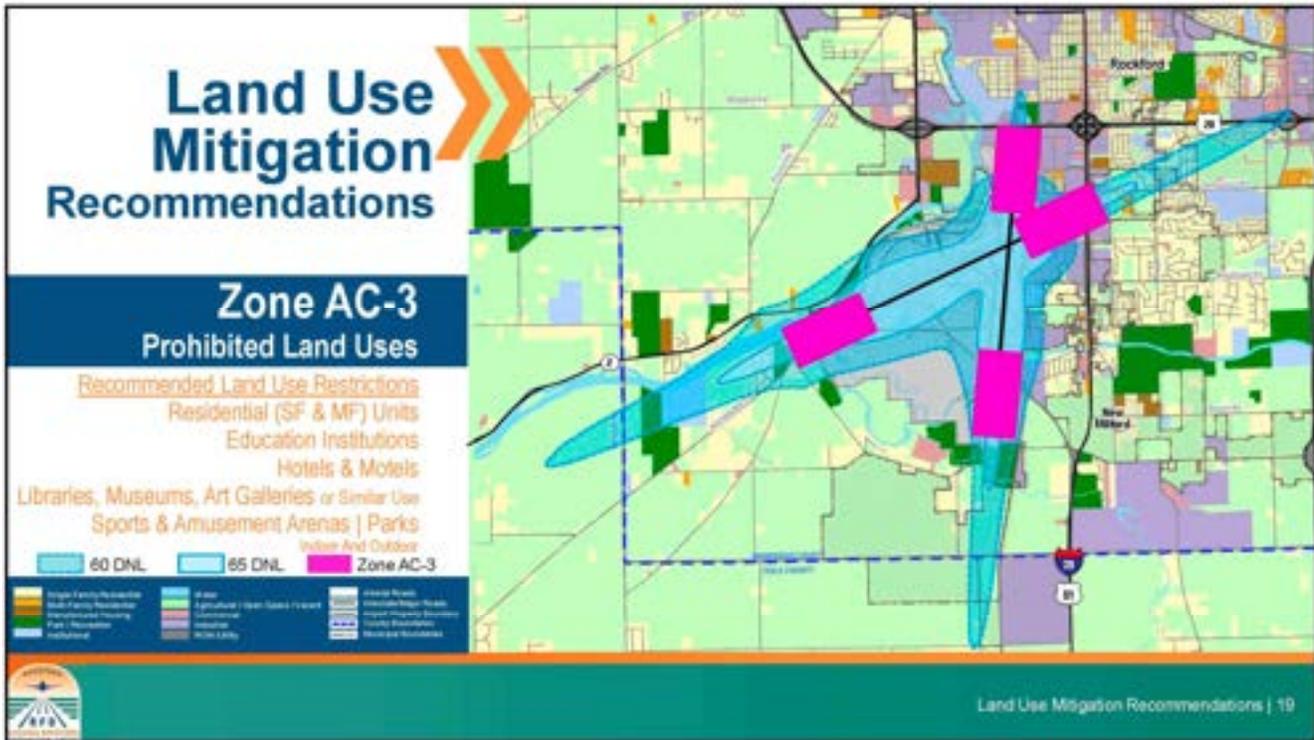
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority



## Land Use Mitigation Screening Analysis

Description	Benefits	Drawbacks	Evaluation & Recommendation
<b>Corrective</b>			
Offer Residential Sound Insulation Program for Single- and Multi-Family Homes within the 65+ DNL Noise Contour and in the defined Block Rounding Areas Outside of the 65+ DNL Noise Contour	Would reduce interior noise levels for the homes impacted within the 65+ DNL contour and in the block rounding area outside of the 65+ DNL noise contour.	Final eligibility for each property would have to be determined. Final cost would still have to be determined based on participation rates and local costs to implement.	This measure has the ability to provide benefits to the homes impacted by the 65+ DNL noise contour and in the block rounding area outside the 65+ DNL noise contour. Therefore, this alternative is <b>RECOMMENDED</b> for inclusion in the NCP.
Offer Avigation Assessments to Owner-Occupied Single- and Multi-Family Homes if Sound Insulation is declined by property owner	Has the potential to convert owner-occupied residential housing units into compatible uses. Properties would remain as taxable land.	Final eligibility for each property would have to be determined. Final cost dependent on participants that decline sound insulation.	This measure has the ability to convert impacted properties to compatible uses. Therefore, this alternative is <b>RECOMMENDED</b> for inclusion in the NCP.

Land Use Mitigation Screening Analysis | 20



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Land Use Mitigation Screening Analysis

Description	Benefits	Drawbacks	Evaluation & Recommendation
<b>Presentative</b>			
Adopt Improved Building Codes	This alternative would recommend updating existing building codes to ensure that new residential construction meets current FAA criteria for sound insulation within AC-1 and AC-2 zones.	This alternative would likely increase the overall cost of residential construction.	This measure will require potential builders to use higher quality materials during construction to reduce noise within residential structures within the 60+ DNL noise contour. Therefore, this alternative is <b>RECOMMENDED</b> for inclusion in the NCP.
Develop a Voluntary Fair Disclosure Program for Resale Properties	We discuss through regulations on the seller or their representatives at the time of sale that an existing property could be subjected to aircraft noise. Potential buyers will be made aware before they purchase the property that it is within AC-1 and AC-2 zones.	We need to seek cooperation from the City of Rockford and Winnebago County along with the local Rockford residents to participate.	This measure will notify potential buyers that they may be subjected to aircraft noise within the 60+ DNL noise contour. This alternative is <b>RECOMMENDED</b> for inclusion in the NCP.
Rezoning of parcels within AC-1 and AC-2 zones	This measure would attempt to prevent future non-compatible development and land uses within AC-1 and AC-2 zones.	Potential loss of tax base dependent on future zoning designation. Based on local land use regulations and ordinances, residential and other incompatible land uses are permitted within compatible zoning such as commercial and industrial.	This measure fails to meet FAA guidance for effectively preventing incompatible land use due to local land use guidelines. Therefore, this alternative is <b>NOT RECOMMENDED</b> for inclusion in the NCP.



## Land Use Mitigation Recommendations

- **Nine (9) previously approved Land Use Mitigation Measures are recommended for continuation**
- **Eight (8) Measures are recommended for continuation with modification**
- **One (1) Measure is recommended for continuation**
- **Three (3) Measures are recommended to be withdrawn**
- **Four (4) new Measures are recommended for inclusion in the 2022 NCP**





## New Remedial Land Use Mitigation Recommendations

- Two (2) new remedial land use mitigation measures are recommended
  - LU-15: Sound Insulation of residential properties is recommended within defined boundaries known as Noise Mitigation Program Area's (NMPA)
    - Not all properties will meet eligibility requirements for sound insulation, based on interior sound level reduction tests performed during the program.
  - LU-16: Offer Avigation Easements to owner-occupied single- and multi-family homes within NMPA #1 if sound insulation is declined and or eligibility requirements are not met.

Land Use Mitigation Recommendations | 23

## Remedial Land Use Mitigation Analysis Recommendations

### NMPA #1 Residential Sound Insulation Program

37 Single-Family Units  
16 Multi-Family Units

60 DNL    65 DNL    NMPA #1

Single-Family Residential	Water	Agriculture (Open Space / Parks)	General/Other
Multi-Family Residential	Commercial	Industrial	International Airport
Manufactured Housing	Government	Public Use	Other
Public Recreation	Highway	Religious	Other
Public Use	Other	Other	Other

Land Use Mitigation Recommendations | 24



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

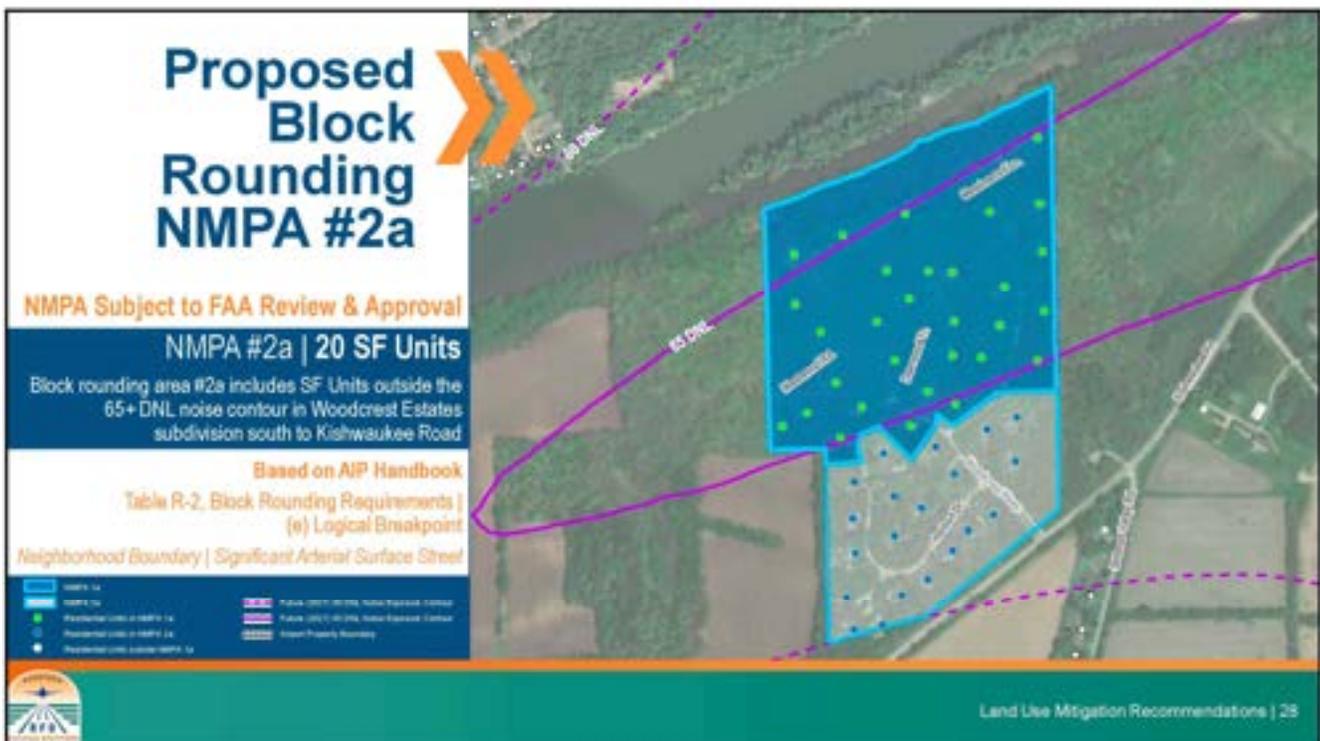
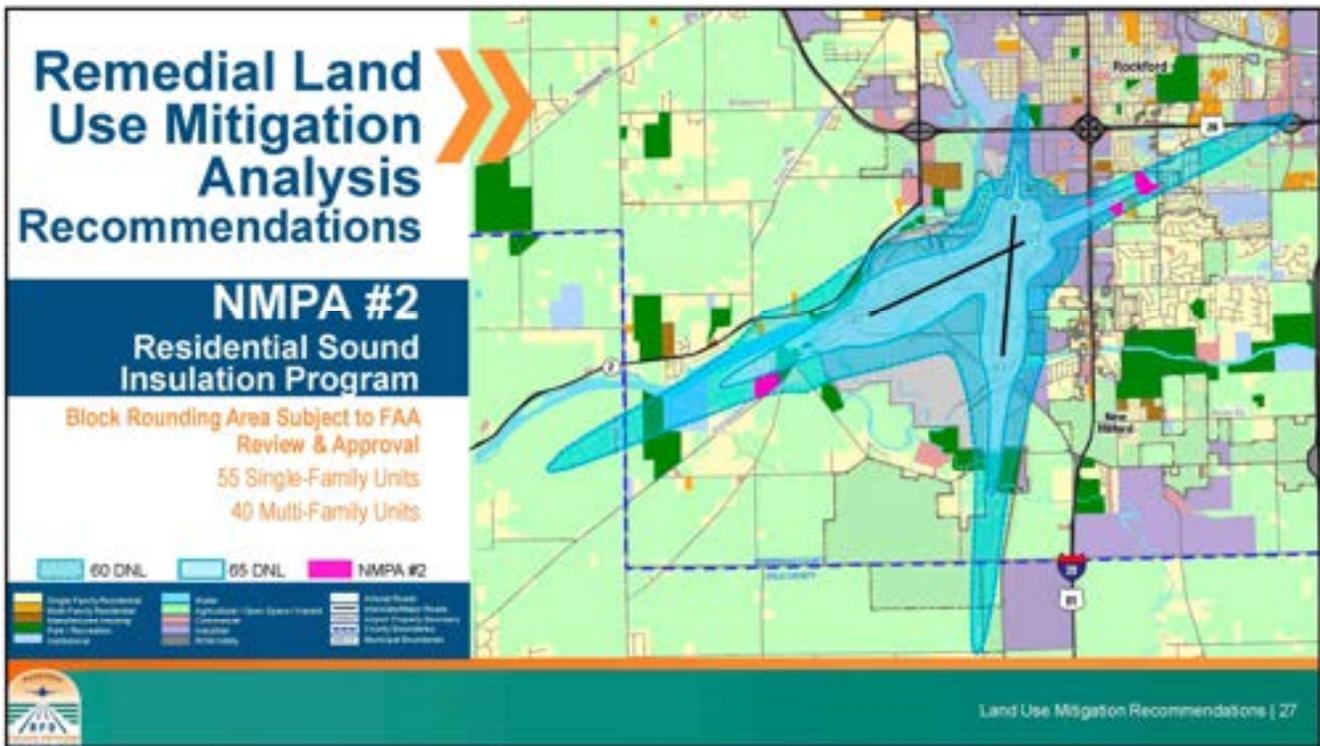
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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority



## NMPA Housing Units and Population Counts

Land Use	NMPA #1		NMPA #2		Total	
	Total Housing Units	Population	Total Housing Units	Population	Total Housing Units	Population
<b>Runway 7 Approach End – Southwest of Airport</b>						
SF Residential	30	76	20	51	50	127
MF Residential	0	0	0	0	0	0
<b>Runway 25 Approach End – Northeast of Airport</b>						
SF Residential	7	19	35	97	42	116
MF Residential	16	44	40	110	56	154
<b>Total</b>	<b>53</b>	<b>139</b>	<b>95</b>	<b>258</b>	<b>148</b>	<b>397</b>

Land Use Mitigation Recommendations | 30



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

## Greater Rockford Airport Authority

### Corrective Land Use Mitigation Estimated Cost

Measure Id	Type Of Measure	Direct Cost (Total)	Direct Cost To FAA (80% Share)	Direct Cost To Airport (20% Share)
<b>Residential Sound Insulation Program</b>				
LU-15 <sup>(1)</sup>	Offer Residential Sound Insulation to 53 Residential Units within the 65 DNL Noise Contour (NMPA 1a & 1b) and 95 Residential Units outside the 65 DNL Noise Contour (NMPA 2a, 2b, 2c, & 2d)	\$9,187,500 <sup>(2)</sup> (\$62,500 per home)	\$7,350,000	\$1,837,500

Notes:  
 (1) Property owners who decline sound insulation would be offered mitigation assessments as part of measure LU-16. Estimated costs of mitigation assessments \$1,000 per home.  
 (2) Total cost for LU-15 mitigation measure is the maximum possible mitigation cost and assumes 100 percent participation in program by eligible property owners. Property owners participating would also have to ensure they meet both the eligibility requirements for interior noise levels and the year the property was built. In addition, some property owners may choose one measure over another which would reduce overall costs. All costs are based on 2023 cost projections.

NMPA	Housing Counts	Direct Cost (Total)	Direct Cost To FAA (80% Share)	Direct Cost To Airport (20% Share)
1a/1b	Residential Units inside 65 DNL – 53 SF & MF units	\$3,312,500	\$2,650,000	\$662,500
2a	Residential Units outside 65 DNL – 20 SF units	\$1,250,000	\$1,000,000	\$250,000
2b	Residential Units outside 65 DNL – 4 SF units	\$250,000	\$200,000	\$50,000
2c	Residential Units outside 65 DNL – 40 MF units	\$2,500,000	\$2,000,000	\$500,000
2d	Residential Units outside 65 DNL – 30 SF units	\$1,875,000	\$1,500,000	\$375,000



### New Preventative Land Use Mitigation Recommendations

Two (2) new preventative land use mitigation measures are recommended

**LU-17: Improved Building Codes**

- Update existing building codes to meet current sound insulation guidelines
- Reduces interior noise levels
- For new development or major remodeling

**LU-18: Voluntary Fair Disclosure Program**

- Property sales subjected to notification
- Probability of safety or aircraft noise impacts
- Formal measure would require recording of a notice at time of sale
- Informal measure could be mailings of disclosure notices within community





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Preventative Land Use Mitigation Estimated Costs

Type Of Measure	Direct Cost (Total)	Direct Cost To FAA (80% Share)	Direct Cost To Airport (20% Share)	Direct Cost To Local Government	Direct Cost To Users
<b>Mitigation Measures (Preventative)</b>					
Adopt Improved Building Codes	\$25,000	\$20,000	\$5,000	Minimal	None
Develop A Voluntary Fair Disclosure Program	\$25,000	--	\$25,000	Minimal	None
<b>Subtotal</b>	<b>\$50,000 Plus Administrative Costs</b>	<b>\$20,000 Plus Administrative Costs</b>	<b>\$30,000 Plus Administrative Costs</b>	<b>Minimal Administrative Costs; Plus Potential Loss Of Tax Base</b>	<b>None</b>



## Previously Approved Program Management Measures

Measure	Description	Responsible Party	2023 Status	Current Status	2022 MCP Recommendation
<b>Approved Program Management Measures</b>					
OM-1	Monitoring compliance with recommended Noise Abatement Measures, continue updating (five-year cycle), and land use implementation assistance.	Greater Rockford Airport Authority (GAA)	Approved	Implemented	Recommended to be continued
OM-2	Noise complaint response system and computer database.	GAA	Approved	Partially Implemented	Recommended to be continued with modifications
OM-3	Plan review and evaluation. GAA staff periodically review the MCP and consider revisions and refinements, as necessary.	GAA	Approved	Implemented	Recommended to be continued
OM-4	Establish a Pilot/Community Awareness Program.	GAA	Approved	Not Implemented	Recommended to be continued
OM-5	Publication of Instrument Departure Procedures for Runways 1, 10, and 25.	GAA	Approved	Not Implemented	Recommended to be continued
OM-6	Update airport information in the Airport Facilities Directory.	GAA	Approved	Implemented	Recommended to be continued





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Program Management Screening Analysis

Description	Benefits	Drawbacks	Evaluation & Recommendation
Formal logging of noise complaints	The measure would provide airport staff with data on potential or emerging noise issues around the airport.	Costs for staff to maintain website, respond to telephone complaints and/or logging complaints in a formal manner.	Airport staff should continue to receive noise complaints on an as-requested basis. Due to the low level of noise complaints, acquiring a noise complaint system is not recommended. However, a more formal system of complaint logging should be used by airport staff and the information used as a basis for future meetings. As a result, it is <b>RECOMMENDED</b> that the present system of logging noise complaints be continued with modification and should be included in the NCP <b>Modification to CM-3</b> .
Install noise monitoring program	The measure would provide the airport with information regarding aircraft noise levels to the public.	Costs to purchase, run, and maintain permanent noise monitoring system or portable noise monitors including staff costs to run the system and to analyze the data.	Due to the low level of noise complaints and the cost to implement and maintain a noise monitoring system/program, this alternative is <b>NOT RECOMMENDED</b> for further analysis.



## Program Management Recommendations

- *Five (5) previously approved Program Management Measures are recommended for continuation*
- *One (1) Measure is recommended for continuation with modification*





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Program Management Estimated Costs

Type Of Measure	Direct Cost (Total)	Direct Cost To FAA (20% Share)	Direct Cost To Airport (20% Share)	Direct Cost To Local Government	Direct Cost To Users
<b>Program Management Measures</b>					
Continue Logging of Noise Complaints	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
Initiate Community Roundtable or Noise Abatement Committee	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
<b>Perform Regular Updates to the NEMs and Review of NCP</b>					
Update NEM ONLY	\$350,000 to \$400,000	\$280,000 to \$320,000	\$70,000 to \$80,000	None	None
Or					
Update NEM & NCP	\$650,000 to \$750,000	\$520,000 to \$600,000	\$130,000 to \$150,000		
Subtotal	\$300,000 to \$750,000 plus administrative costs	\$280,000 to \$600,000 plus administrative costs	\$70,000 to \$150,000 plus administrative costs	None	None



Program Management Recommendations | 37

## Next Steps

- Gather Input and Acceptance of Noise Abatement, Land Use Mitigation, Program Management Measures
  - Gather input from advisory committee
  - Gather input from public
  - Gather input from GRAA
  - Gather input from ATC / FAA
  - GRAA acceptance of NCP recommendations
- Prepare Materials for Next AC meeting and Public Hearing/Workshop
- Prepare Draft NEM and NCP documentation
- Gather Comments on Preliminary Draft documentation



Next Steps | 38



## Advisory Committee Meeting #3 TBD

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- AC Meeting Announcement
- Presentation

Note: Meeting presentation and recording of meeting are available on the study website at <https://www.airportprojects.net/rfd-part150/home/advisory-committee/>



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority



## Public Workshop #1 November 17, 2022

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- Public Workshop Announcement
- Presentation

Note: Meeting presentation and recording of meeting are available on the study website at <https://www.airportprojects.net/rfd-part150/home/public-meetings/>



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## PUBLIC WORKSHOP ANNOUNCEMENT



### PUBLIC INFORMATION WORKSHOP ANNOUNCEMENT

Where: Online

When: December 15<sup>th</sup>, 6:00 p.m. – 8:00 p.m.

The Greater Rockford Airport Authority (GRAA) is currently conducting a study to document the noise effects from aircraft operations at Chicago Rockford International Airport (RFD). The study is commonly referred to as a Part 150 Noise Compatibility Study (Part 150 Study). The purpose for conducting a Part 150 Study is to develop a balanced and cost-effective plan to reduce current noise impacts, where practical, and to limit the potential for future noise impacts.

An important element of a successful Part 150 Study at RFD is for the airport staff and consulting team to hear from residents of the communities in the vicinity of the airport that are most affected by aircraft noise levels. To make this possible, a Public Information Workshop will take place on **December 15<sup>th</sup>, 2021, from 6:00 p.m. – 8:00 p.m.** This will be the first of 3 public information workshops held during the course of the study.

The workshop will be held **virtually online**, and will include a presentation followed by a question and answer session with the study team. A link to register for the workshop is located on the study website:

<https://www.airportprojects.net/rfd-part150/>

Residents and, business owners, are encouraged to attend the workshop to provide input, ask questions, and gain an understanding of the scope and purpose of the study.

The GRAA has contracted with Landrum & Brown, an internationally-recognized aviation planning firm, to conduct this study.

We value and look forward to your input and participation in this process.

Sincerely,

Zach Oakley  
Deputy Director of Operations and Planning



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## PUBLIC WORKSHOP PRESENTATION

# 14 CFR Part 150 Noise Compatibility Study Update

Public Information Workshop | December 2021






## Comments & Questions

- All meeting attendees are muted
- Questions will be addressed during Question and Answer breaks
- Questions can be submitted through
  - Q&A  : Attendee can type questions or comments
  - Raise Hand  : Attendee can "Raise Hand", the attendee will be unmuted in order to verbally ask their question or make a comment
  - Study Website: Comments and questions can also be submitted via the study website contact page:  
<https://www.airportprojects.net/rfd-part150/contact/>





## Agenda

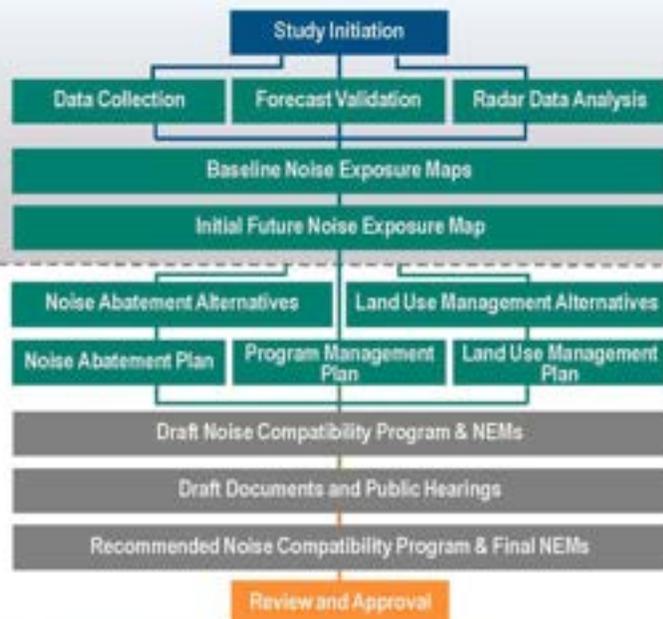


- Introduction
- History of Noise Abatement Planning
- Part 150 Study Overview, Process & Elements
- Public Involvement
- Noise Modeling Input Data Collection
- Baseline Noise Exposure Contours
- Next Steps



## Part 150 Study Overview

WE ARE HERE







# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### Previous Studies

Established existing noise abatement measures in place at RFD

- 1990 Part 150 Study
- 1995 Part 150 Study
- 2003 Part 150 Study
- 2012 NEM Update

## History of Noise Compatibility Planning at RFD



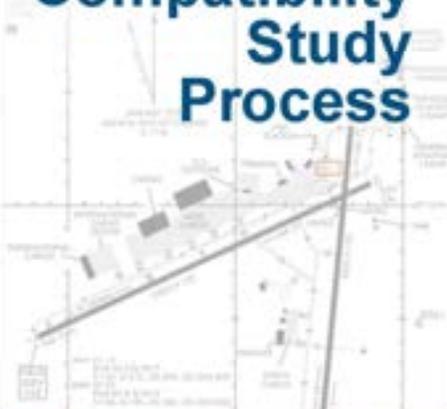
### This Part 150 Update will...

- Update Noise Exposure Maps for Existing (2020) and Future (2027) Baseline conditions
- Review existing NCP
- Modify existing NCP measures where necessary
- Recommend new noise abatement and/or land use mitigation measures based on land use incompatibilities within the 65+ DNL noise contour



History of Noise Compatibility Planning at RFD | 7

## Part 150 Noise Compatibility Study Process



### Overview

- **Code of Federal Regulations (14 CFR) Part 150**
  - Established requirements for airport owners who choose to submit noise exposure maps and develop noise compatibility planning programs for FAA review and approval
  - Part 150 Studies undertake an in depth and public oriented approach to noise and compatible land use
- **Part 150 Studies Are Planning Studies**
  - Identify noise and land use impacts that exist today and in the future
  - Work to develop solutions within the FAA's framework
- **Part 150 Studies can open funding sources**
  - Following 14 CFR Part 150 guidelines makes airport eligible to apply for grants for implementing recommendations of the study
  - Funding is subject to availability and not guaranteed
- **Part 150 Studies Do Not:**
  - Recommend closing an airport or implementing mandatory restrictions on aircraft
  - Give environmental approval for implementing noise abatement or land use programs



Part 150 Noise Compatibility Study Process | 8



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### Noise Exposure Maps

- Description of the noise levels for existing and future (+5 years) conditions
- Future condition should take into account any changes (physical or operational) that may have an effect on the noise levels around the airport
  - Examples of physical changes may include: runway threshold relocation, changes in terminal/gate layout, new aircraft parking facilities
  - Examples of operational changes may include: changes in aircraft operating levels, and fleet mix, new flight tracks, new destinations

## Essential Elements of a Part 150 Study

### Noise Compatibility Program

- Recommendations for reducing, minimizing, and/or mitigating aircraft noise and land use conflicts
  - Noise Abatement
  - Land Use Mitigation
  - Program Management

Essential Elements of a Part 150 Study | 9

## Public Involvement

### Public Involvement Opportunities

- **Advisory Committee** – Group of stakeholders affected by, or having oversight responsibilities for, issues covered by the Part 150 Study Update
  - Airport Authority Officials
  - Aircraft Operators
  - Government Officials / Land Use Planners
  - Community Groups
  - Air Traffic Controllers
- **Public Workshops** - Open house, informational meetings to discuss and gather comments on potential aviation noise, land use, and other mitigation measures
- **Public Hearings** - to receive comments (either oral or written) from the public on the Draft Part 150 Study Update document
- **Project Website / Social Media**
  - Project website and social media will be updated with study information, including images and documents pertinent to the study - <https://www.airportprojects.net/rd-part150/>
  - Posting of all meeting notices
  - Posting of study process and draft findings

Public Involvement | 10



## Questions & Answers



Please raise hand to ask question



## AEDT Input Data

### Data Sources

- Airport Layout Plan
- Radar Data
- ATCT Counts
- Forecasted Operations



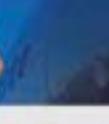
### Input Data

- Runway Layout
- Operating Levels
- Fleet Mix
- Runway Use
- Flight Tracks
- Flight Profiles



Aviation Environmental Design Tool (AEDT)

- Aircraft Database (over 5000 aircraft)
- Aircraft Performance Data
- Aircraft Noise Data



Noise Contours

Tabular Reports

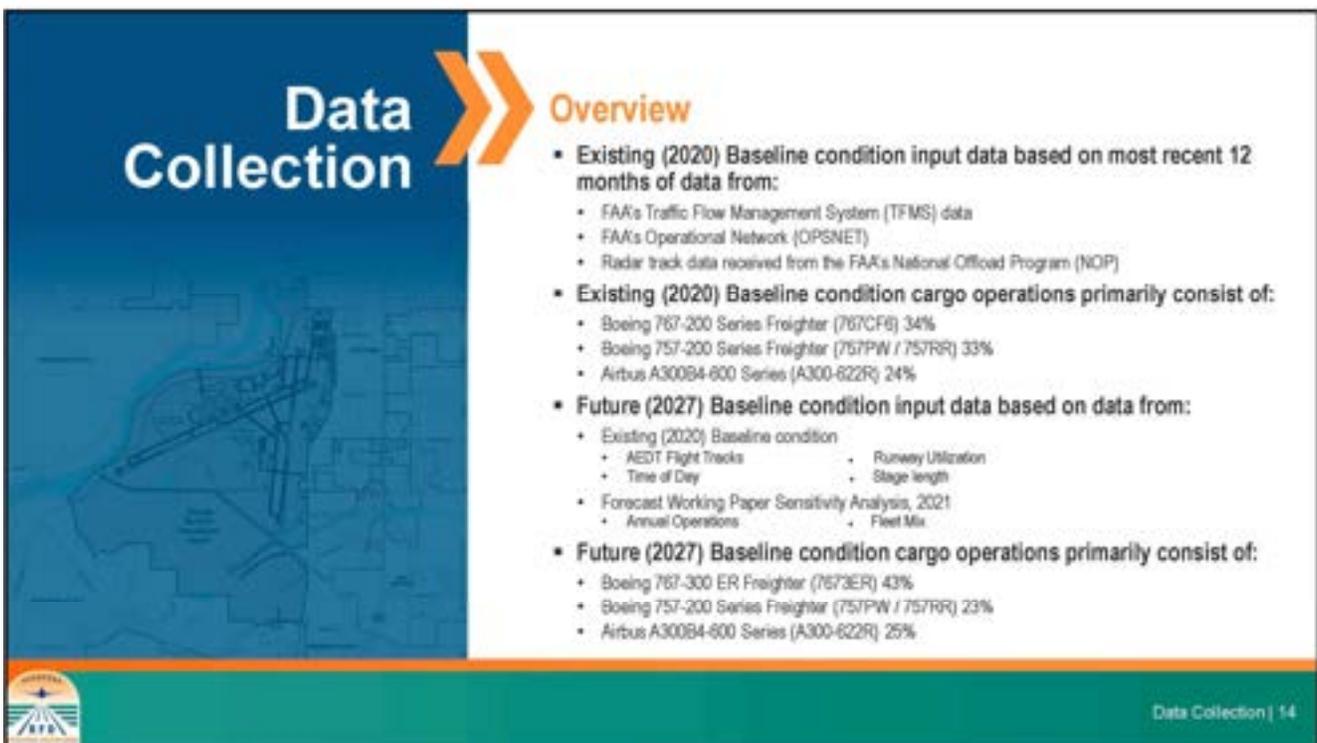
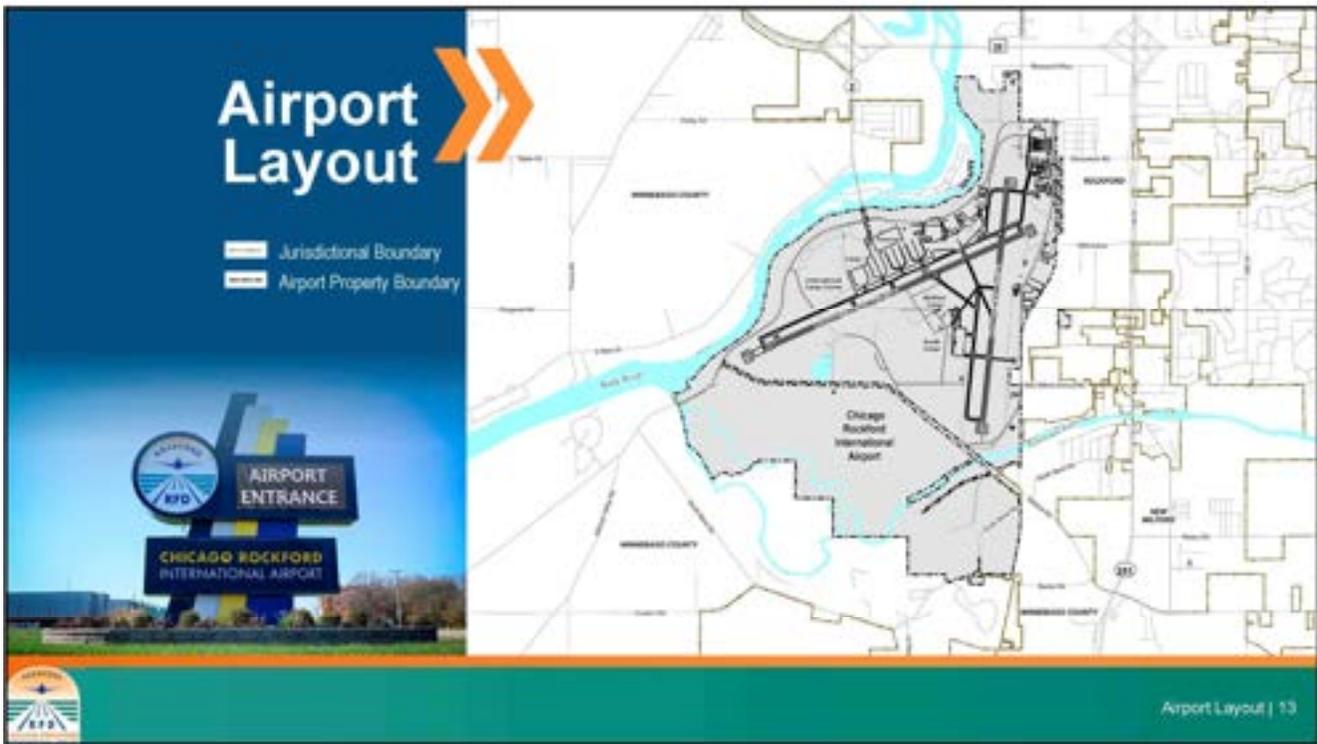
Grid Point Analysis





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Data Collection

### Existing (2020) Baseline Condition Aircraft Operations

Aircraft Type	2020 Annual Operations	2020 Average Annual Day			Percent of Total
		Day	Night	Total	
Cargo Aircraft	17,494.8	18.4	29.5	47.9	40.9%
Commercial Aircraft	4,885.2	10.1	3.3	13.4	11.4%
General Aviation Jets	2,006.0	5.2	0.3	5.5	4.7%
General Aviation Props	17,286.9	46.2	1.2	47.4	40.4%
General Aviation Helicopter	57.1	0.1	0.1	0.2	0.1%
Military Aircraft	1,031.0	2.8	—	2.8	2.4%
<b>Grand Total</b>	<b>42,781</b>	<b>82.7</b>	<b>34.4</b>	<b>117.2</b>	<b>100.0%</b>



Data Collection | 15

## Data Collection

### Future (2027) Baseline Condition Forecasted Aircraft Operations

Aircraft Type	2027 Annual Operations	2027 Average Annual Day			Percent of Total
		Day	Night	Total	
Cargo Aircraft	29,936.0	34.6	47.4	82.0	48.0%
Commercial Aircraft	4,394.0	11.4	0.7	12.0	7.0%
General Aviation Jets	10,096.1	25.7	2.0	27.7	16.2%
General Aviation Props	16,189.3	42.6	1.7	44.4	26.0%
General Aviation Helicopter	57.0	0.1	0.1	0.2	0.1%
Military Aircraft	1,670.0	4.6	—	4.6	2.7%
<b>Grand Total</b>	<b>62,342.4</b>	<b>118.0</b>	<b>51.8</b>	<b>170.8</b>	<b>100.0%</b>



Data Collection | 16



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Data Collection

### Existing (2020) & Future (2027) Baseline Condition Arrival Runway Utilization

Aircraft Category	Runway End						Total
	01	07	19	25	H1	H2	
<b>Daytime Arrivals</b>							
Cargo Jets	21.8%	25.9%	14.8%	37.7%	--	--	100.0%
Commercial Jets	21.4%	23.6%	16.6%	38.4%	--	--	100.0%
General Aviation Jets	24.3%	26.5%	10.1%	39.2%	--	--	100.0%
General Aviation Props	27.2%	17.2%	19.4%	36.2%	--	--	100.0%
General Aviation Helicopter	--	--	--	--	--	100.0%	100.0%
Military Aircraft	--	54.8%	5.5%	39.7%	--	--	100.0%
Military Helicopter	--	(50.0%)	(10.4%)	(39.6%)	--	--	100.0%
<b>Nighttime Arrivals</b>							
Cargo Jets	26.1%	40.1%	7.2%	26.6%	--	--	100.0%
Commercial Jets	22.8%	29.0%	4.3%	43.8%	--	--	100.0%
General Aviation Jets	28.6%	21.4%	14.3%	35.7%	--	--	100.0%
General Aviation Props	11.5%	29.9%	15.4%	43.2%	--	--	100.0%
General Aviation Helicopter	--	--	--	--	--	100.0%	100.0%
Military Aircraft	--	--	--	--	--	--	--
Military Helicopter	--	--	--	--	--	--	--

Data Collection | 17

## Data Collection

### Existing (2020) & Future (2027) Baseline Condition Departure Runway Utilization

Aircraft Category	Runway End						Total
	01	07	19	25	H1	H2	
<b>Daytime Departures</b>							
Cargo Jets	6.7%	21.8%	16.9%	54.7%	--	--	100.0%
Commercial Jets	12.9%	23.6%	23.0%	40.5%	--	--	100.0%
General Aviation Jets	14.5%	17.9%	24.9%	42.8%	--	--	100.0%
General Aviation Props	18.2%	18.1%	27.8%	37.9%	--	--	100.0%
General Aviation Helicopter	--	--	--	--	--	100.0%	100.0%
Military Aircraft	11.8%	11.8%	31.7%	44.8%	--	--	100.0%
Military Helicopter	(6.7%)	(6.7%)	(38.6%)	(47.9%)	--	--	100.0%
<b>Nighttime Departures</b>							
Cargo Jets	2.3%	13.6%	24.4%	59.7%	--	--	100.0%
Commercial Jets	3.0%	43.8%	14.2%	39.1%	--	--	100.0%
General Aviation Jets	--	10.0%	30.0%	60.0%	--	--	100.0%
General Aviation Props	--	15.2%	40.6%	40.6%	--	--	100.0%
General Aviation Helicopter	--	--	--	--	--	100.0%	100.0%
Military Aircraft	--	--	--	--	--	--	--
Military Helicopter	--	--	--	--	--	--	--

Data Collection | 18



## Data Collection

### Flight Tracks

- Flight tracks are lines that represent the path of an aircraft as it arrives or departs the airport
- AEDT applies a 3-dimensional profile to each track that includes altitude, speed, thrust, and flap settings to calculate aircraft noise along each flight route
- Radar data was collected from the FAA for the year 2020
  - Sixteen (16) weeks of radar data, two (2) weeks from 8 different months in 2020
  - May through September excluded due to Runway 07/25 closure
- Representative tracks were created in the AEDT to model operations



## Data Collection

### Flight Profiles

- All arrivals are categorized Stage Length 1
- All general aviation prop/helicopter and military departures are categorized Stage Length 1
- Cargo, commercial and general aviation jets are categorized by distance to destination from RFD

Stage Length	Distance (nautical miles)	Typical Destinations
1	0-500	BOE, MRP, MCI
2	501-1,000	DFW, BWI, DEN
3	1,001-1,500	ONT, MIA, SEA
4	1,501-2,500	OAK, ANC
5	2,501-3,500	International
6	3,501-4,500	International
7	4,501-5,500	International

Aircraft Category	Stage Length							Total
	1	2	3	4	5	6	7	
<b>Daytime Departures</b>								
Cargo Jets	26.5%	15.9%	56.3%	0.7%	--	0.6%	0.0%	100.0%
Commercial Jets	2.9%	78.6%	19.1%	1.4%	--	0.1%	--	100.0%
General Aviation Jets	99.2%	0.8%	--	--	--	--	--	100.0%
<b>Nighttime Departures</b>								
Cargo Jets	33.8%	29.0%	25.8%	11.0%	0.0%	0.4%	--	100.0%
Commercial Jets	43.6%	28.6%	27.7%	0.2%	--	--	--	100.0%
General Aviation Jets	100.0%	--	--	--	--	--	--	100.0%









## Noise Exposure Contours

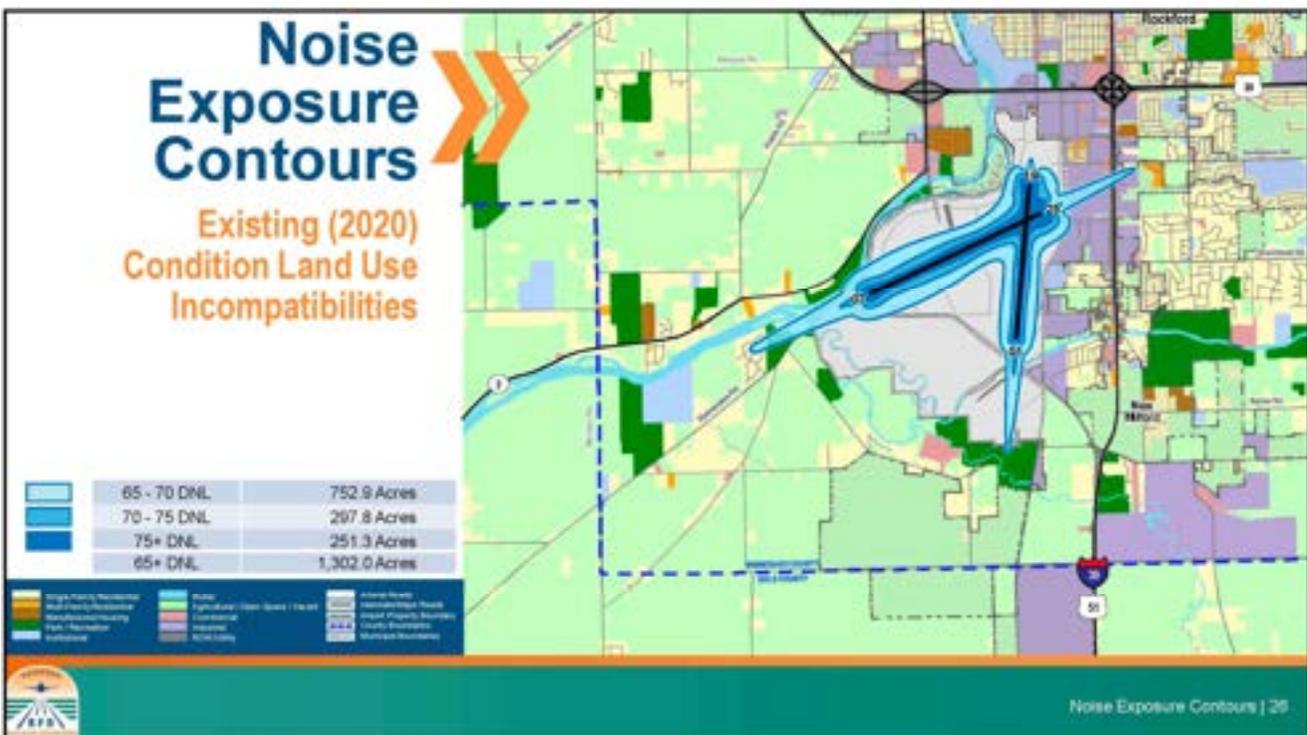


### Technical Requirements

- Represents an annual-average day (1 year of operations/365 days)
- Described with a set of continuous lines that represent equal levels of noise
- Prepared using the FAA's Airport Environmental Design Tool (AEDT) Ver 3d
- Must use specific noise metric: Day-Night Average Sound Level (DNL)
  - DNL represents 24-hour average noise level
  - Penalty for nighttime (10:00 p.m. - 6:59 a.m.) flights (x 10)
  - National standard for all Federal agencies
  - 65 DNL identified as threshold for impact to noise sensitive land uses



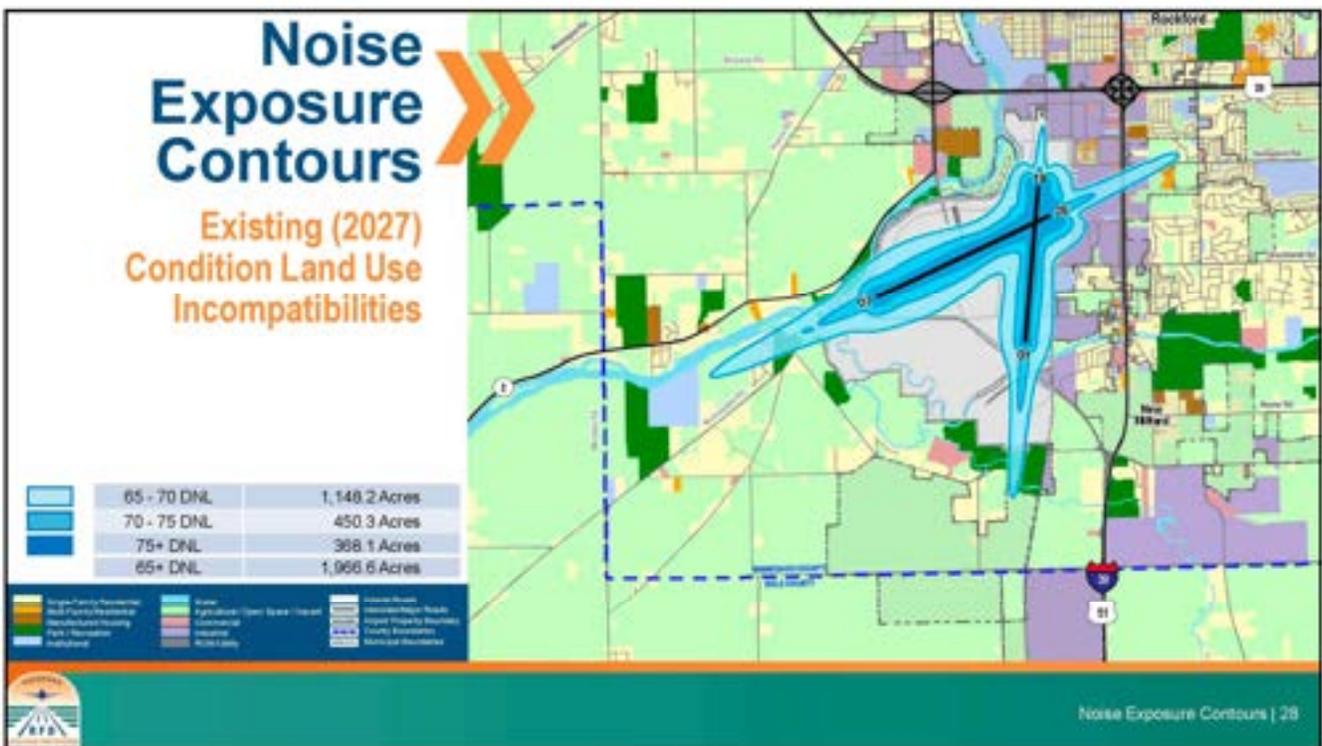
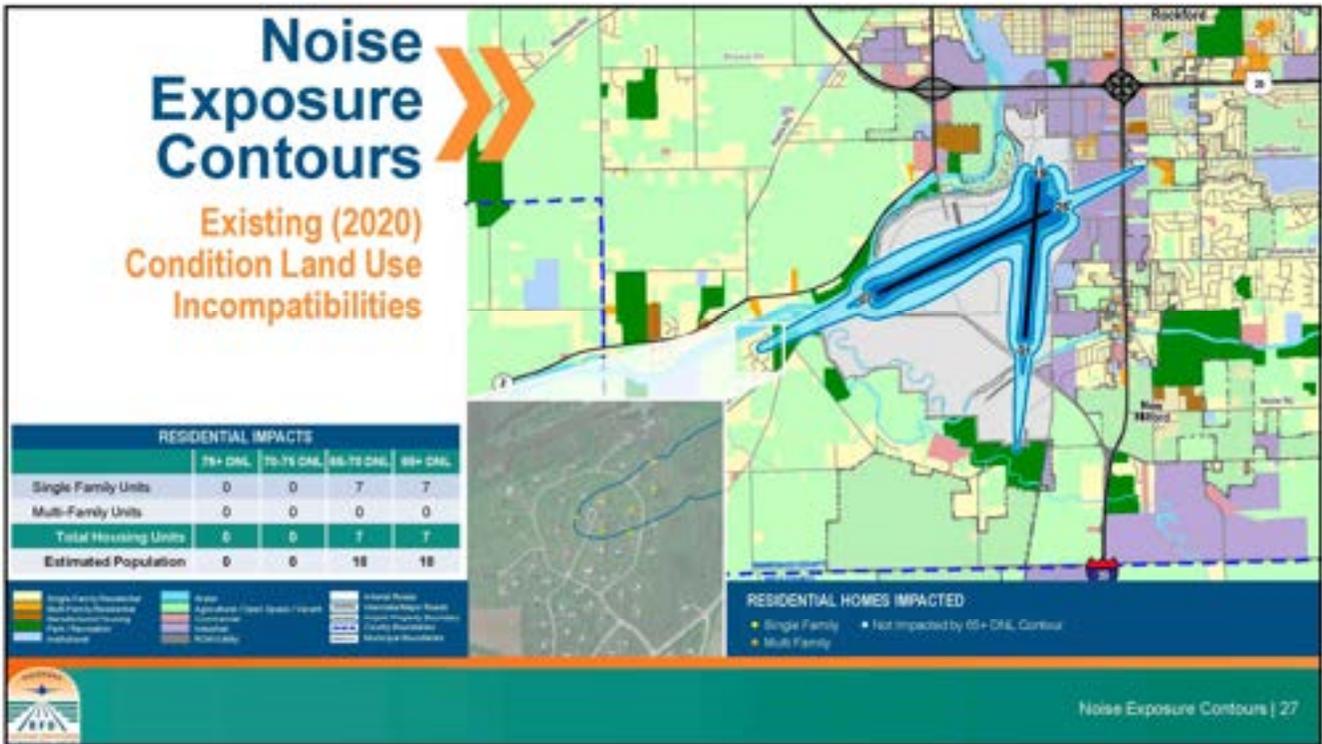
Noise Exposure Contours | 25





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

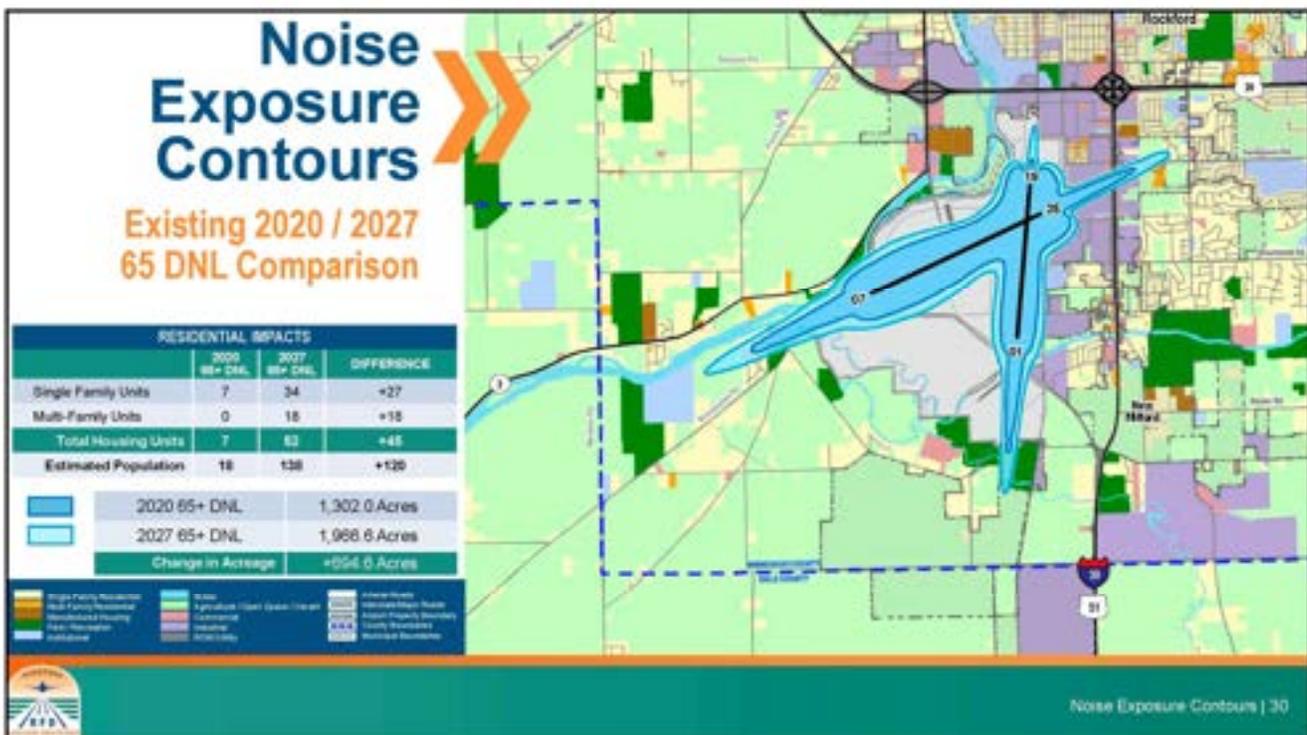
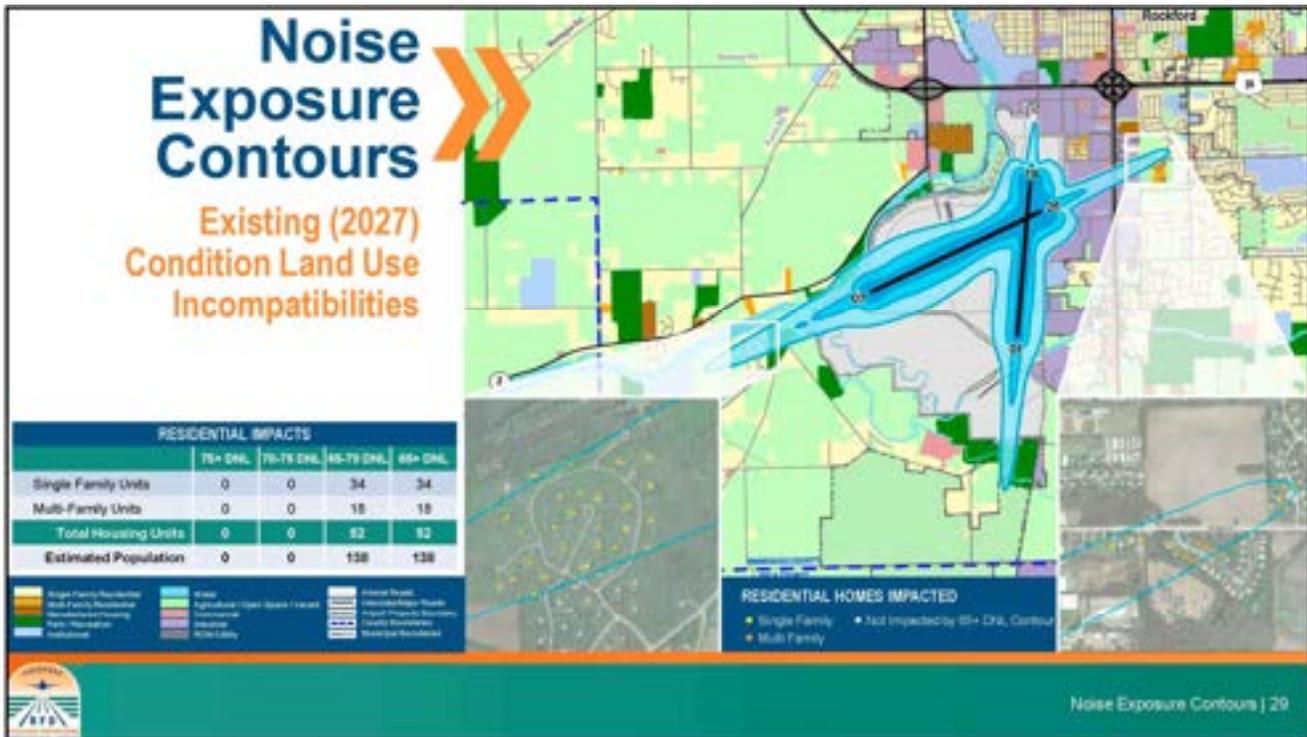
Greater Rockford Airport Authority





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority





## Questions & Answers



Please raise hand to ask question



## Next Steps



• Noise Compatibility Program (NCP) Alternatives Analysis

• Noise Abatement Alternatives

*Purpose: To **ABATE** noise levels in surrounding communities*

• Land Use Mitigation Alternatives

*Purpose: To **MITIGATE** noise levels in surrounding communities*

• Program Management Alternatives

*Purpose: To **PROVIDE** administrative and management actions to allow the airport to maintain land use compatibility in surrounding communities*

• Develop Recommended NCP Measures & Program Map





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Public Comments



Please submit comments on the Study Website contact page:  
<https://www.airportprojects.net/rfd-part150/contact/>



Public Comments | 33

## Contacts



**Jesse Baker**

1-816-225-8346

[jbaker@landrum-brown.com](mailto:jbaker@landrum-brown.com)

**Jesse Baker, will be the Project Manager for this Part 150 Study.** Jesse has over 18 years of experience in environmental analysis and modeling. Jesse began his career with L&B and provided noise and air quality data analysis for numerous large-scale projects, including the EIS for the New York / New Jersey / Philadelphia Airspace Re-design and the EIS for the relocation of St. George Municipal Airport. Jesse also participated in Part 150 Studies at Kansas City International and Albany International Airports.

Jesse's technical background, while focused on environmental analysis, and modeling of airport design, airspace design, and air traffic control procedures also includes serving on the Aviation Environmental Design Tool (AEDT) and Aviation Environmental Screening Tool (AEST) development team as a Quality Assurance Lead and Subject Matter Expert, and providing technical support and guidance to the FAA Environmental Policy Team Office (ATO-AJV-114) and the FAA Office of Environmental and Energy Research and Development (FAA-AEE).

Through his work on the development of AEDT, Jesse has become one of the foremost experts on the use of the program for aviation noise and air quality analysis. His expertise will be of great benefit to the Part 150 Study at RFD.



Contacts | 34



## Public Workshop #2 December 5, 2022

---

- Public Workshop Announcement
- Presentation

Note: Meeting presentation and recording of meeting are available on the study website at <https://www.airportprojects.net/rfd-part150/home/public-meetings/>



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## PUBLIC WORKSHOP ANNOUNCEMENT



### PUBLIC INFORMATION WORKSHOP ANNOUNCEMENT

**Where: Online Zoom Meeting**

**When: December 8<sup>th</sup> from 6:00 p.m. to 8:00 p.m.**

The Greater Rockford Airport Authority (GAAA) is presenting an online Virtual Public Information Workshop on December 8<sup>th</sup>, 2022, from 6:00 p.m. to 8:00 p.m. for the Part 150 Noise Compatibility Study it is currently conducting at the Chicago Rockford International Airport (RFD). The study is commonly referred to as a Part 150 Noise Compatibility Study (Part 150 Study).

The purpose for conducting a Part 150 Study is to develop a balanced and cost-effective plan to reduce current noise impacts, where practical, and to limit the potential for future noise impacts. The Noise Compatibility Study is conducted under guidance provided in Title 14 Code of Federal Regulations (CFR) Part 150. The first component of the study is to identify Noise Exposure Maps (NEMs) and the second is to develop a Noise Compatibility Program (NCP).

For this public workshop, the materials presented will review the Proposed 2027 NEM contours presented at the first workshop and the recommended noise abatement and land use mitigation measures within the RFD NCP. The recommended measures included in the NCP are designed to minimize the impacts of aviation noise to the surrounding community and enhance the administration of the overall noise compatibility program for RFD. The meeting will also give an overview of the next steps in the Part 150 Study process and how to provide public comments on the study and information presented in the presentation. If you were unable to attend the first public workshop, a recording of the workshop can be found on the study website listed below.

An important element of a successful Part 150 Study at RFD is for the airport staff and consulting team to hear from residents of the communities in the vicinity of the airport that are most affected by aircraft noise levels. To make this possible, residents, business owners, and concerned citizens are encouraged to participate in the workshop and provide input, ask questions, and gain an understanding of the scope and purpose of the study.

A link to register for the public information workshop is located on the study website:

<https://www.airportprojects.net/rfd-part150/>

Public comments can be submitted during the public information workshop and will be accepted for a period of 30 days following the workshop. Comments on the study and materials presented during the public information workshop can be submitted via the study website : <https://www.airportprojects.net/rfd-part150/contact/>

We value and look forward to your input and participation in this process.

Sincerely,

Zach Oakley  
Deputy Director of Operations and Planning

60 AIRPORT DR ROCKFORD, IL 61109-2902 PHONE 815 969-4000 FLYRFD.com FOREIGN-TRADE ZONE (FTZ) #176



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## PUBLIC WORKSHOP PRESENTATION



# 14 CFR Part 150 Noise Compatibility Study Update

Greater Rockford Airport Authority (GRAA)

Public Information Workshop | December 2022

# Comments & Questions

- All meeting attendees are muted
- Questions will be addressed during Question and Answer breaks
- Questions can be submitted through
  - Q&A  : Attendee can type questions or comments
  - Raise Hand  : Attendee can "Raise Hand", the attendee will be unmuted in order to verbally ask their question or make a comment
  - Study Website: Comments and questions can also be submitted via the study website contact page: <https://www.airportprojects.net/rfd-part150/contact/>

Comments & Questions | 2



# Agenda

- Part 150 Study Overview
- Public Involvement
- Future 2027 Noise Compatibility Program (NCP) Noise Contour
- Elements of a Noise Compatibility Program
- Noise Abatement Measures
- Land Use Mitigation Measures
  - Remedial / Corrective
  - Preventative
- Program Management Measures
- Next Steps

Agenda | 3

### Overview

- **Part 150 Studies Are Planning Studies**
  - Identify noise and land use impacts that exist today and in the future
  - Work to develop solutions within the FAA's framework
- **Part 150 Studies can open funding sources**
  - Following 14 CFR Part 150 guidelines makes airport eligible to apply for grants for implementing recommendations of the study
  - Funding is subject to availability and not guaranteed
- **Part 150 Studies Do Not:**
  - Recommend closing an airport or implementing mandatory restrictions on aircraft
  - Give environmental approval for implementing noise abatement or land use programs

## Part 150 Study Overview

### Noise Compatibility Planning at RFD

### Previous Studies

Established existing noise abatement measures in place at RFD

- 1990 Part 150 Study
- 1995 Part 150 Study
- 2003 Part 150 Study
- 2012 NEM Update

Part 150 Study Overview | 4



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

### Noise Exposure Maps

- Description of the noise levels for existing and future (+5 years) conditions
- Future condition should take into account any changes (physical or operational) that may have an effect on the noise levels around the airport
  - Examples of physical changes may include: runway threshold relocation, changes in terminal/gate layout, new aircraft parking facilities
  - Examples of operational changes may include: changes in aircraft operating levels, and fleet mix, new flight tracks, new destinations

## Part 150 Study Overview

# Elements of a Part 150 Study

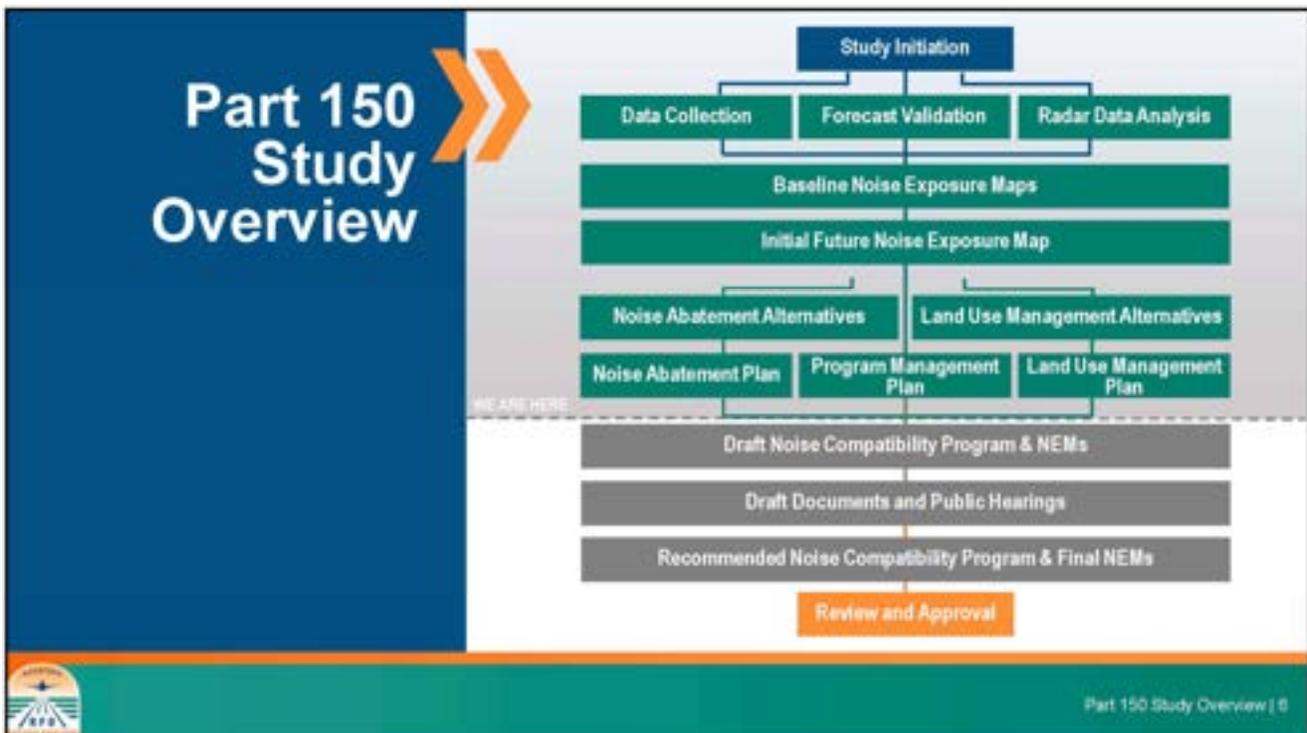


### Noise Compatibility Program

- Recommendations for reducing, minimizing, and/or mitigating aircraft noise and land use conflicts
  - Noise Abatement
  - Land Use Mitigation
  - Program Management



Essential Elements of a Part 150 Study | 5





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Public Involvement



### Public Involvement Opportunities

- **Advisory Committee** – Group of stakeholders affected by, or having oversight responsibilities for, issues covered by the Part 150 Study Update
  - Airport Authority Officials
  - Aircraft Operators
  - Government Officials / Land Use Planners
  - Community Groups
  - Air Traffic Controllers
- **Public Workshops** - Open house, informational meetings to discuss and gather comments on potential aviation noise, land use, and other mitigation measures
- **Public Hearings** - to receive comments (either oral or written) from the public on the Draft Part 150 Study Update document
- **Project Website**
  - Project website will be updated with study information, including images and documents pertinent to the study - <https://www.airportprojects.net/rfd-part150/>
  - Posting of all meeting notices
  - Posting of study process and draft findings



Public Involvement | 7

## Questions & Answers

Please raise hand to ask question

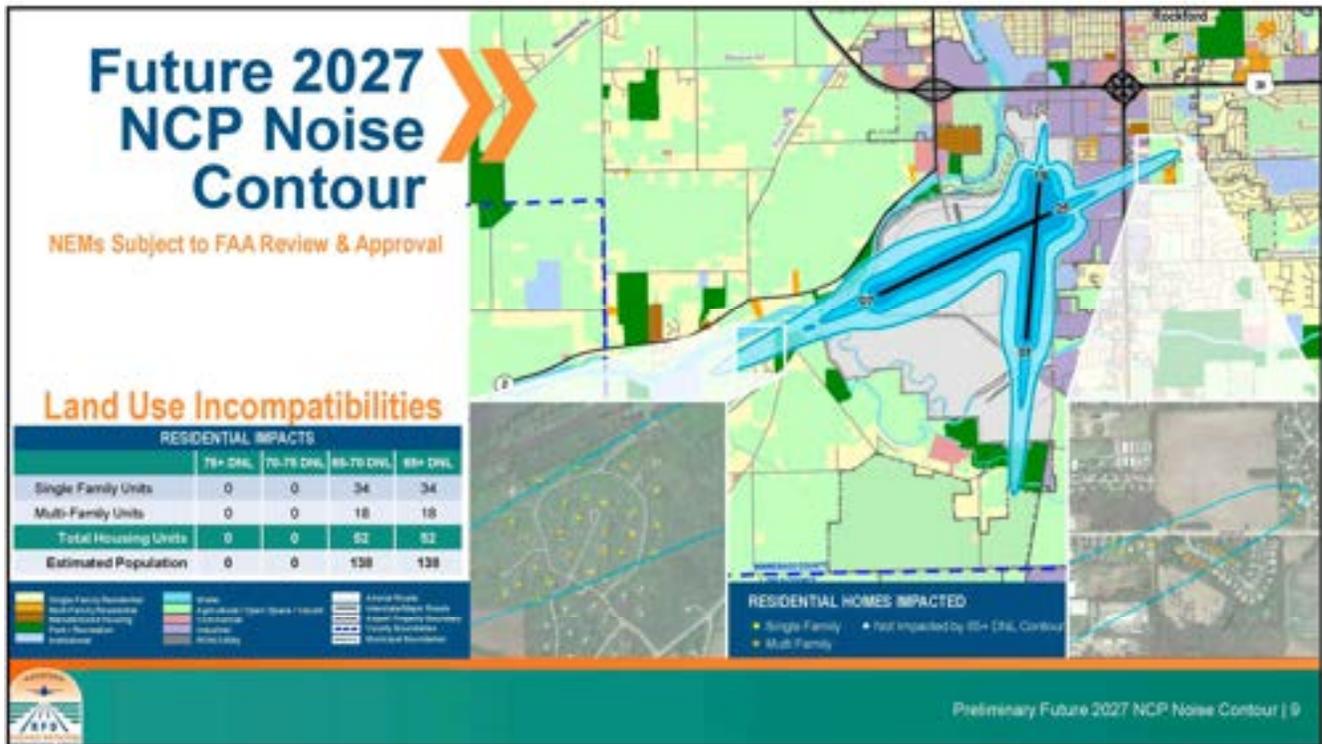


Questions &amp; Answers | 8



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority



## Elements of a Noise Compatibility Program

### Types Of NCP Measures:

- Noise Abatement**  
*Purpose: To abate noise levels in surrounding communities*
  - Flight Track Location
  - Runway Use
  - Flight Management
  - Ground Activity Restrictions
  - Facility Modification
- Land Use Mitigation**  
*Purpose: To mitigate noise levels in surrounding communities*
  - Preventive
  - Remedial / Corrective
- Program Management**  
*Purpose: To provide administrative and management actions to allow the airport to maintain land use compatibility in surrounding communities*
  - Noise Complaint Protocols
  - Management of Noise Program
  - Updates to NEM/NCP

Elements of a Noise Compatibility Program | 10



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

Previously Approved Noise Abatement Measures

Measure	Description	Responsible Party	2003 Status	Current Status	2022 NCP Recommendation
Approved Noise Abatement Measures					
NA-1	Maintain existing noise abatement procedures per Tower Order of June 15, 1984.	Air Traffic Control Tower (ATCT), Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be withdrawn
NA-3	All aircraft departing on Runway 7 should be fanned along three departure tracks: Left, Right, and Center.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued
NA-4	Direct pilots of C-130s to turn as tightly as practicable when training on Runway 19.	ATCT, Airlines, GRAA	Approved as Voluntary	Not Applicable	Recommended to be withdrawn
NA-7 / NA-12	During daytime and nighttime hours all aircraft over 12,500 lbs. departing Runway 25 having departure courses of 250 degrees clockwise through 090 degrees inclusive turn right on course to the Dubuque (DUB) or the Indiana (IDN) navigational fix as soon as practicable.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued with modifications
NA-8 / NA-13	During daytime and nighttime hours all aircraft over 12,500 lbs. departing Runway 25 having departure courses 070 degrees clockwise through 240 degrees inclusive maintain 20-degree left turn and maintain heading until reaching 3,000 feet mean sea level (MSL).	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued with modifications
NA-9	During nighttime hours all aircraft over 12,500 lbs. departing Runway 19 having departure courses of 0 degrees clockwise through 190 degrees maintain runway heading until reaching 3,000 feet MSL, before turning on course.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued with modifications

Previously Approved Noise Abatement Measures | 11

Previously Approved Noise Abatement Measures

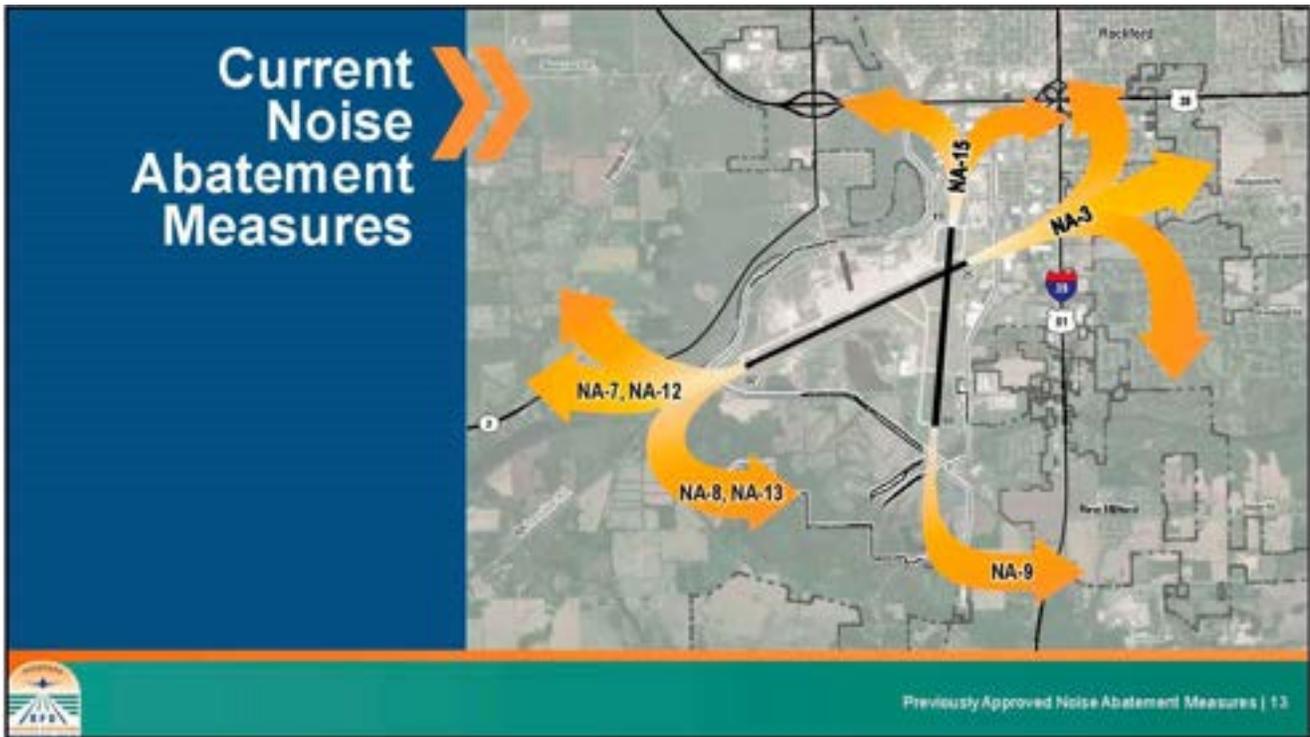
Measure	Description	Responsible Party	2003 Status	Current Status	2022 NCP Recommendation
Approved Noise Abatement Measures					
NA-10	Establish an informal preferential runway use plan for all daytime and nighttime operations after Runway 25 is extended.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued
NA-11	For all aircraft requiring more than 5,000 feet certified takeoff length, Runway 25 preferred.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued
NA-14	Aircraft weighing more than 12,500 lbs. conduct touch and go and low approach training activity on the south side of the airport when using Runway 7 or 25.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued with modifications
NA-15	During nighttime hours all aircraft over 12,500 lbs. departing Runway 1, maintain runway heading until reaching 3,000 feet MSL, before turning on course.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued
NA-16	Encourage the use of noise abating construction standards for all new on-airport structures/facilities and use those structures as noise barriers/buffers to adjacent off-airport land uses.	ATCT, Airlines, GRAA	Approved as Voluntary	Implemented as Conditions Allow	Recommended to be continued

Previously Approved Noise Abatement Measures | 12



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority



## Questions & Answers

Please raise hand to ask question

Questions & Answers | 14



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

## Greater Rockford Airport Authority

### Noise Abatement Screening Analysis

Description	Benefits	Drawbacks	Evaluation And Recommendation
<b>Flight Track Modifications</b>			
Modify arrival and departure flight tracks to reduce noise within the 65 DNL noise contour	In some circumstances may reduce noise within the 65+ DNL contour	Impacted areas northwest of Runway End 25 are primarily impacted by arrival operations on final approach. These flight track locations can not be adjusted. ATC currently depose departure operations with left and right turns based on destination.  Areas to the southwest of Runway End 7, are impacted by both arrival and departure operations. The arrival tracks could not be modified as the aircraft are on final approach near the impacted homes. Departures are currently depose with left and right turns as soon as practical.	Due to the inability to provide benefits to the homes impacted within the 65+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.  Several currently approved voluntary measures address departure flight track dispersion and turn locations and are recommended to be continued. (NA-1, NA-3, NA-4, NA-7, NA-8, NA-9, NA-12, NA-13, NA-14 and NA-15)
<b>Runway Use Modifications</b>			
Increase usage of Runway 07/25	Could reduce noise levels for the areas within the 65+ DNL noise contours to the northeast and southwest of Runway 07/25	Based on the RFD fleet, the majority of operations will require the use of Runway 7/25 due to the length of the runway. The amount of traffic required to provide substantial noise reduction benefits in impacted areas would not be achievable based on current wind, weather and operational necessities to operate aircraft safely.  Increasing the arrivals to Runway End 1 and Departures from Runway End 19 could potentially impact areas in dense urban areas, offsetting any benefits in the reduction of homes in the 65+ DNL to the northeast and southwest of the airport.	Due to the inability to provide benefits to the homes impacted within the 65+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.



Noise Abatement Screening Analysis | 15

### Noise Abatement Screening Analysis

Description	Benefits	Drawbacks	Evaluation And Recommendation
<b>Aircraft Operational Procedure Modifications</b>			
Optimized Profile Descent Approach procedure	Optimized Profile Descent (OPD) procedures (previously known as continuous descent approach (CDA)) have been used at some airports to reduce approach noise at a distance from the airport. Generally, their most notable effect relates to reduced fuel burn and corresponding air emissions.	Potential noise reduction benefits would be limited to areas outside DNL, 65+ noise contour. Due to the impacted homes location, implementing OPD's would have no significant noise benefit for impacted homes.	Due to the inability to provide benefits to the homes impacted within the 65+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
Implement Distant Noise Abatement Departure Profile (NADP)	Implementing Distant NADPs can potentially reduce noise for areas further away from the runway end (greater than three miles).	Distant NADPs can potentially increase noise for areas closer to the runway end. Due to the impacted homes location, implementing NADPs would have no significant noise benefit for impacted homes.	Due to the inability to provide benefits to the homes impacted within the 65+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
Implement Close-in Noise Abatement Departure Profile (NADP)	Implementing Close-in NADPs can potentially reduce noise for areas in close proximity to the runway end (less than three miles).	Close-in NADPs can potentially increase noise for areas further away from the runway end. Due to the fleet mix at RFD many of the aircraft would not have the capabilities to execute Close-in NADPs.	Due to the inability to provide benefits to the homes impacted within the 65+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
Moderate Reverse Thrust on Landing	Reduces the amount of noise from the application of reverse thrust after landing.	Reverse thrust can not be eliminated altogether and would be up to the discretion of the pilot. Due to the location of the homes and the anticipated participation, significant reductions in the number of impacted homes in the 65+ DNL are unlikely.	Due to the inability to provide benefits to the homes impacted within the 65+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.



Noise Abatement Screening Analysis | 16



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Noise Abatement Screening Analysis

Description	Benefits	Drawbacks	Evaluation And Recommendation
<b>Airport Facility Modifications</b>			
Extend Runway 170	Additional aircraft in the RFD fleet may be able to utilize Runway 170, potentially reducing the utilization of Runway 705.	New residential areas to the north and south of the airport could be impacted by increasing utilization of Runway 170. Existing buildings and roadways to the north and the Kishwaukee River and existing railroad to the south limit the potential length of Runway 170.  The cost benefit of such a project is not practical.	Due to the cost of this measure and limitations to the final runway length the alternative is <b>NOT RECOMMENDED</b> to be continued for further analysis.
Ground Run-up Enclosures (GRE)	Can reduce jet run-up noise levels by up to 20 dB.	Currently there are no significant jet aircraft maintenance activities that would justify the cost-benefit of constructing GRE's.	Due to the inability to provide benefits to the noise impacted within the 65-DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
<b>Airport Facility Restrictions</b>			
Implement Airport Operational Restrictions (Part 151 Restrictions) such as: noise-fee-based landing fees, airport capacity restrictions based on relative "business", aircraft type restrictions based on "business"	Can resolve noise annoyance issues with certain loud aircraft events or aircraft types operating at RFD.	Such restrictions would be subject to the costly and time-consuming analytical requirements under Federal Aviation Regulations Part 151. The FAA has never officially approved such measures.  Would have severe financial ramifications both to the Airport and the region.	Restrictions on access to an airport are measures of last resort for use in the most extreme cases of noise impact. This alternative is <b>NOT RECOMMENDED</b> for further analysis.

Noise Abatement Screening Analysis | 17

## Noise Abatement Recommendations

The currently implemented noise abatement measures reduce noise impacts within the 65+ DNL noise contour to the fullest extent possible

Existing Noise Abatement Measures

Five (5) measures recommended to continue

Six (6) measures recommended to continue with modifications

Two (2) measures recommended to be withdrawn

Noise Abatement Recommendations | 18



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Questions & Answers

Please raise hand to ask question



## Previously Approved Land Use Mitigation Measures

Measure	Description	Responsible Party	2003 Status	Current Status	2022 NCP Recommendation
<b>Approved Land Use Measures</b>					
LU-2	Adopt noise overlay zoning prohibiting development of selected noise-sensitive land uses within the 60-62 DNL noise contour of the 2003 Noise Exposure Map (NEM) Noise Compatibility Program (NCP)	GRAA, City of Rockford, Winnebago County, Ogle County	Approved	To date only Ogle County zoning ordinances have incorporated the RFD NCP. These ordinances were updated in 2021 but continue to reference the 1994 NCP.	Recommended to be continued with modification to include the new 2022/2027 NEM.
LU-4	Amend local comprehensive plans by adopting the updated Part 150 NCP as their noise compatibility elements for the City of Rockford and Ogle and Winnebago Counties.	GRAA, City of Rockford, Winnebago County, Ogle County	Approved	To date only Ogle County Comprehensive Plans have historically incorporated the RFD NCP, however this language is no longer included in the 2012 Comprehensive Plan. Language related to continuing an active presence in RFD activities is included.	Recommended to be continued with modification to include the new 2022/2027 NEM.
LU-5	Adopt guidelines for discretionary review of development projects for the City of Rockford, Winnebago County, Ogle County, and the GRAA	GRAA, City of Rockford, Winnebago County, Ogle County	Approved	Implemented as needed	Recommended to be continued with modification to include the new 2022/2027 NEM.
LU-8	Voluntary acquisition of single-family residences on Blackhawk Island	GRAA	Approved	Fully Implemented	Recommended to be withdrawn from NCP
LU-9	Redevelop airport-owned land parcels located along Kishwaukee Street south of Research Parkway	GRAA	Approved	The implementation of this measure pending, dependent upon the interest of a potential developer and the availability of funding.	Recommended to be continued





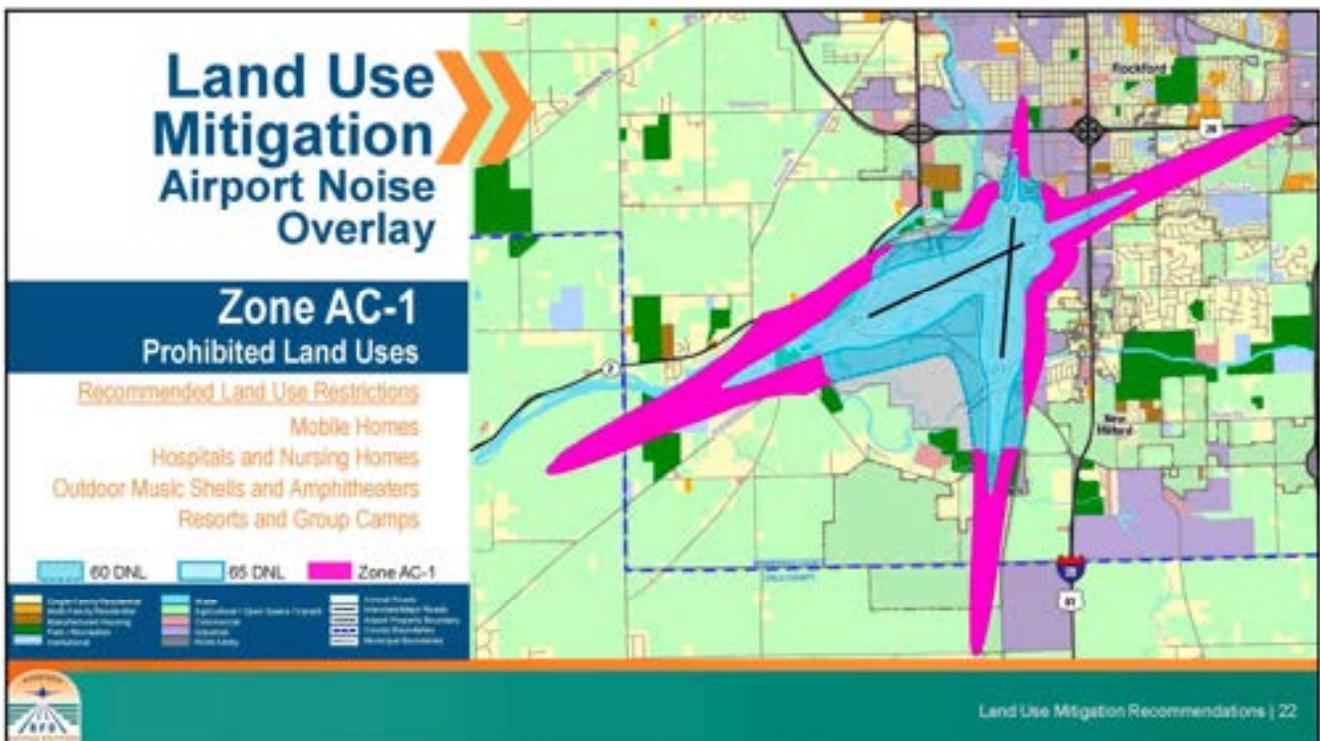
# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Previously Approved Land Use Mitigation Measures

Measure	Description	Responsible Party	2003 Status	Current Status	2022 NCP Recommendation
Approved Land Use Measures					
LU-11	Acquire development and oversight rights via purchase of land use and aviation easement over undeveloped parcel in Runway 7 approach	GRAA	Approved	Fully Implemented	Recommended to be withdrawn from NCP
LU-12	Offer options of voluntary sale to GRAA or sound insulation to owner of one (1) single-family residence south of the airport in the 65 DNL contour of the 1993 NCP	GRAA	Approved	This measure was implemented with the voluntary sale of one (1) single-family home	Recommended to be withdrawn as acquisition of the single-family home was completed
LU-13	Encourage the City of Rockford and Winnebago County to require plat notes on new subdivision plats and to record the notes on deeds for new subdivisions within the Airport Noise Overlay Zones	GRAA, City of Rockford, Winnebago County	Approved	To date, the airport noise contours are not referenced in any local subdivision ordinance	Recommended to be continued with modification to include the new 2022/2027 NEMs
LU-14	Encourage Winnebago County, the City of Rockford, the Village of New Milford, and the Village of Davis Junction not to allow an increase in the residential density in the Agricultural Priority (AG) or Rural Residential (RR) zoning districts (Winnebago County) in the 2008 NEM/NCP 60+ DNL noise contour	GRAA, City of Rockford, Winnebago County, Ogle County and Villages of New Milford and Davis Junction	Approved	To date based on zoning ordinances the allowable residential densities allowed in these zones has been increased	Recommended to be continued with modification to include the new 2022/2027 NEMs

Previously Approved Land Use Measures | 21







## Questions & Answers



Please raise hand to ask question



## Land Use Mitigation Screening Analysis



Description	Benefits	Drawbacks	Evaluation & Recommendation
<b>Corrective / Remedial</b>			
Offer Residential Sound Insulation Program for Single- and Multi-Family Homes within the 65+ DNL Noise Contour and in the defined Block Rounding Area Outside of the 65+ DNL Noise Contour.	Would reduce interior noise levels for the homes impacted within the 65+ DNL contour and in the block rounding area outside of the 65+ DNL noise contour.	Final eligibility for each property would have to be determined. Final cost would still have to be determined based on participation rates and local costs to implement.	This measure has the ability to provide benefits to the homes impacted by the 65+ DNL noise contour and in the block rounding area outside the 65+ DNL noise contour. Therefore, this alternative is <b>RECOMMENDED</b> for inclusion in the NCP.
Offer Avigation Easements to Owner-Occupied Single- and Multi-Family Homes if Sound Insulation is declined by property owner.	Has the potential to convert owner-occupied residential housing units into compatible uses. Properties would remain as usable land.	Final eligibility for each property would have to be determined. Final cost dependent on participants that decline sound insulation.	This measure has the ability to convert impacted properties to compatible uses. Therefore, this alternative is <b>RECOMMENDED</b> for inclusion in the NCP.





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Land Use Mitigation Screening Analysis

Description	Benefits	Drawbacks	Evaluation & Recommendation
<b>Presentatives</b>			
Adopt Improved Building Codes	This alternative would recommend updating existing building codes to ensure that new residential construction meets current FAA criteria for sound insulation within AC-1 and AC-2 zones.	The alternative would likely increase the overall cost of residential construction.	This measure will require potential builders to use higher quality materials during construction to reduce noise within residential structures within the 60+ DNL noise contour. Therefore, this alternative is <b>RECOMMENDED</b> for inclusion in the NCP.
Develop a Voluntary Fair Disclosure Program for Retail Properties	Will disclose through regulations on the seller or their representatives at the time of sale that an existing property could be subjected to aircraft noise. Potential buyers will be made aware before they purchase the property that it is within AC-1 and AC-2 zones.	Will need to seek cooperation from the City of Rockford and Winnebago County along with the local Rockford realtors to participate.	This measure will notify potential buyers that they may be subjected to aircraft noise within the 60+ DNL noise contour. This alternative is <b>RECOMMENDED</b> for inclusion in the NCP.
Re-zoning of parcels within AC-1 and AC-2 zones	This measure would attempt to prevent future non-compatible development and land uses within AC-1 and AC-2 zones.	Potential loss of tax base dependent on future zoning designations. Based on local land use regulations and ordinances, residential and other incompatible land uses are permitted within compatible zoning such as commercial and industrial.	This measure fails to meet FAA guidance for effectively preventing incompatible land use due to local land use guidelines. Therefore, this alternative is <b>NOT RECOMMENDED</b> for inclusion in the NCP.

Land Use Mitigation Screening Analysis | 27

## Land Use Mitigation Recommendations

- *Eight (5) Measures are recommended for continuation with modification*
- *One (1) Measure is recommended for continuation*
- *Three (3) Measures are recommended to be withdrawn*
- *Four (4) new Measures are recommended for inclusion in the 2022 NCP*

Land Use Mitigation Recommendations | 28



## Questions & Answers



Please raise hand to ask question



## New Remedial Land Use Mitigation Recommendations



- Two (2) new corrective / remedial land use mitigation measures are recommended

LU-15: Sound Insulation of residential properties is recommended within defined boundaries known as **Noise Mitigation Program Area's (NMPA)**

- Not all properties will meet eligibility requirements for sound insulation, based on interior sound level reduction tests performed during the program.

LU-16: Offer Avigation Easements to owner-occupied single- and multi-family homes within NMPA #1 if sound insulation is declined and or eligibility requirements are not met.

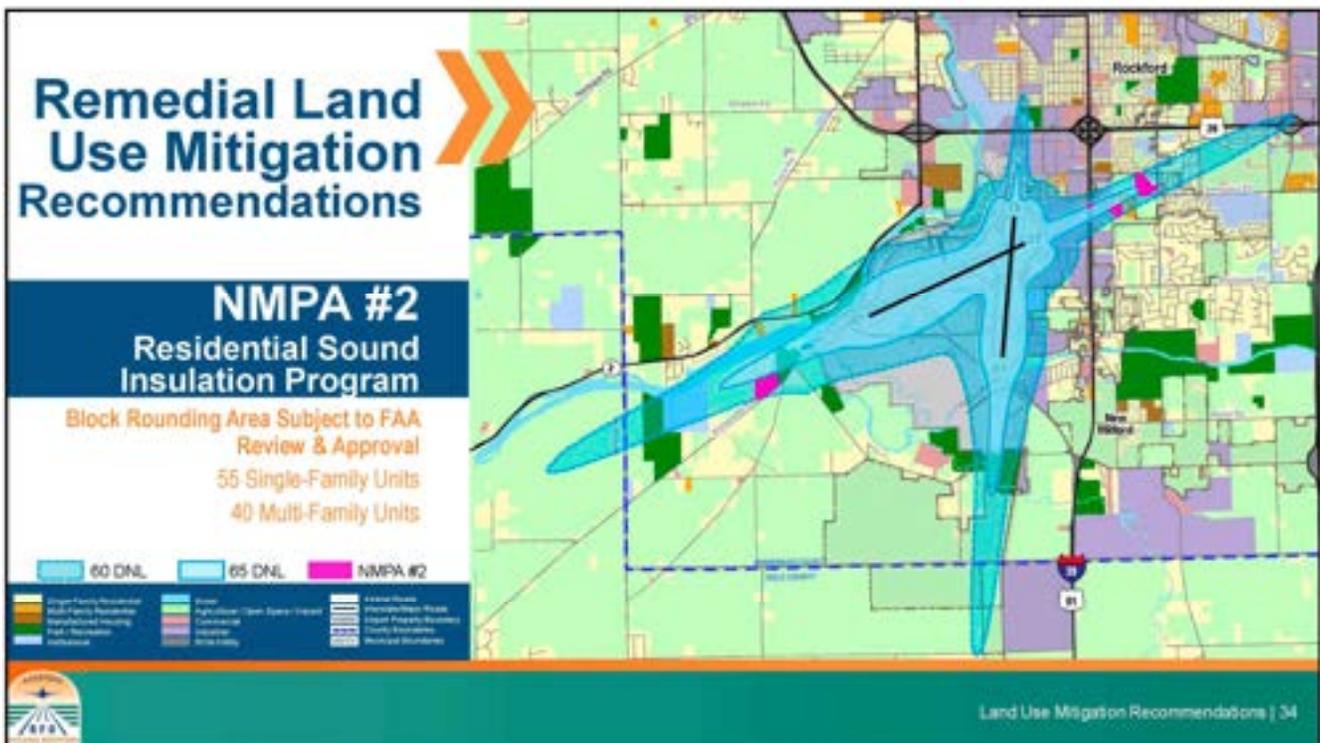






# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

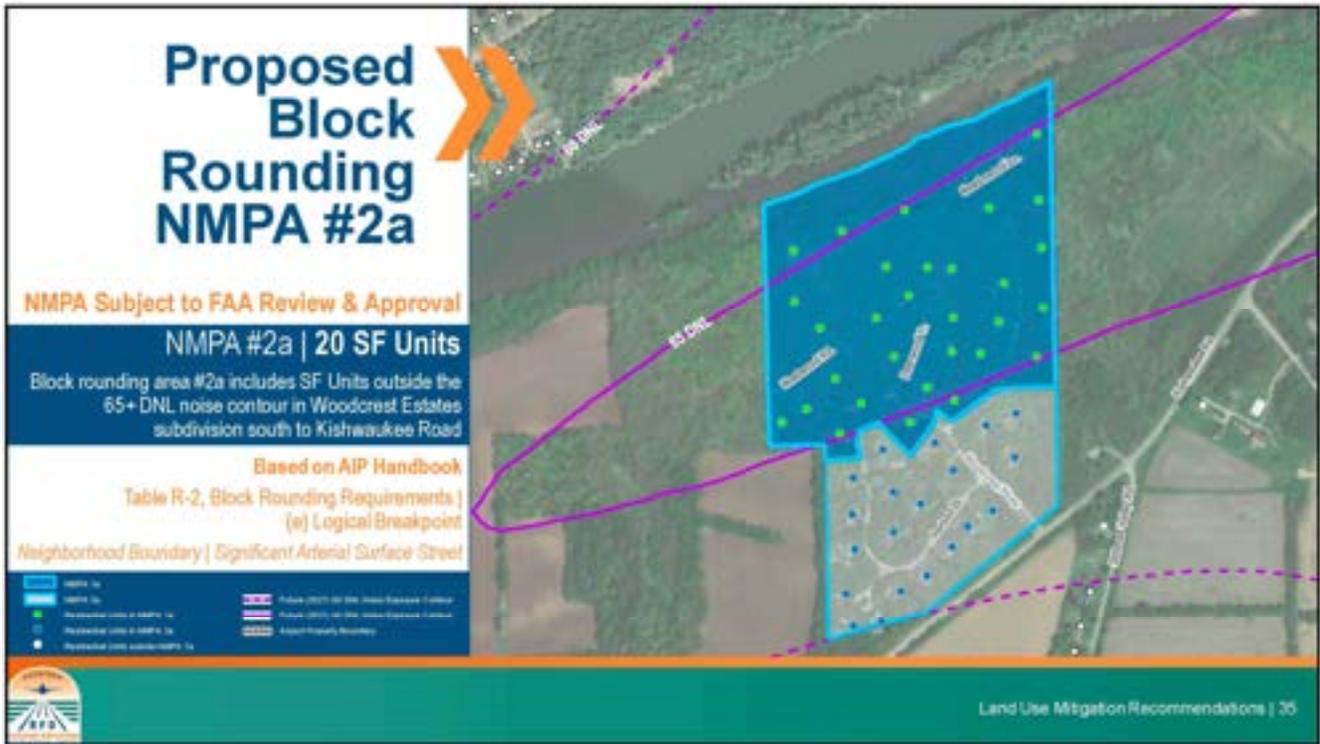
Greater Rockford Airport Authority





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NMPA Housing Units and Population Counts

Land Use	NMPA #1		NMPA #2		Total	
	Total Housing Units	Population	Total Housing Units	Population	Total Housing Units	Population
<b>Runway 7 Approach End – Southwest of Airport</b>						
SF Residential	30	76	20	51	50	127
MF Residential	0	0	0	0	0	0
<b>Runway 25 Approach End – Northeast of Airport</b>						
SF Residential	7	19	35	97	42	116
MF Residential	16	44	40	110	56	154
<b>Total</b>	<b>53</b>	<b>139</b>	<b>95</b>	<b>258</b>	<b>148</b>	<b>397</b>



## Corrective Land Use Mitigation Estimated Cost

Measure Id	Type Of Measure	Direct Cost (Total)	Direct Cost To FAA (88% Share)	Direct Cost To Airport (28% Share)
<b>Residential Sound Insulation Program</b>				
LU-15 <sup>(1)</sup>	Offer Residential Sound Insulation to 53 Residential Units within the 65 DNL Noise Contour (NMPA 1a & 1b) and 95 Residential Units outside the 65 DNL Noise Contour (NMPA 2a, 2b, 2c, & 2d)	\$9,187,500 <sup>(2)</sup> (\$82,500 per home)	\$7,350,000	\$1,837,500

Notes:  
 (1) Property owners who decline sound insulation would be offered mitigation easements as part of measure LU-16. Estimated costs of mitigation easements \$1,000 per home.  
 (2) Total cost for LU-15 mitigation measure is the maximum possible mitigation cost and assumes 100 percent participation in program by eligible property owners. Property owners participating would also have to ensure they meet both the eligibility requirements for interior noise levels and the year the property was built. In addition, some property owners may choose one measure over another which would reduce overall costs. All costs are based on 2021 cost projections.

NMPA	Housing Counts	Direct Cost (Total)	Direct Cost To FAA (88% Share)	Direct Cost To Airport (28% Share)
1a/1b	Residential Units inside 65 DNL – 53 SF & MF units	\$3,312,500	\$2,650,000	\$662,500
2a	Residential Units outside 65 DNL – 20 SF units	\$1,250,000	\$1,000,000	\$250,000
2b	Residential Units outside 65 DNL – 4 SF units	\$250,000	\$200,000	\$50,000
2c	Residential Units outside 65 DNL – 40 MF units	\$2,500,000	\$2,000,000	\$500,000
2d	Residential Units outside 65 DNL – 30 SF units	\$1,875,000	\$1,500,000	\$375,000





## Questions & Answers



Please raise hand to ask question



## New Preventative Land Use Mitigation Recommendations



- Two (2) new preventative land use mitigation measures are recommended

### LU-17: Improved Building Codes

- Update existing building codes to meet current sound insulation guidelines
- Reduces interior noise levels
- For new development or major remodeling

### LU-18: Voluntary Fair Disclosure Program

- Property sales subjected to notification
- Probability of safety or aircraft noise impacts
- Formal measure would require recording of a notice at time of sale
- Informal measure could be mailings of disclosure notices within community





## Preventative Land Use Mitigation Estimated Costs

Type Of Measure	Direct Cost (Total)	Direct Cost To FAA (80% Share)	Direct Cost To Airport (20% Share)	Direct Cost To Local Government	Direct Cost To Users
<b>Mitigation Measures (Preventative)</b>					
Adopt Improved Building Codes	\$25,000	\$20,000	\$5,000	Minimal	None
Develop A Voluntary Fair Disclosure Program	\$25,000	—	\$25,000	Minimal	None
<b>Subtotal</b>	<b>\$50,000 Plus Administrative Costs</b>	<b>\$20,000 Plus Administrative Costs</b>	<b>\$30,000 Plus Administrative Costs</b>	<b>Minimal Administrative Costs; Plus Potential Loss Of Tax Base</b>	<b>None</b>



## Questions & Answers



Please raise hand to ask question





# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Previously Approved Program Management Measures

Measure	Description	Responsible Party	2003 Status	Current Status	2022 NCP Recommendation
<b>Approved Program Management Measures</b>					
OM-1	Monitoring compliance with recommended Noise Abatement Measures, contour updating (five-year cycle), and land use implementation assistance.	Greater Rockford Airport Authority (GRAA)	Approved	Implemented	Recommended to be continued
OM-2	Noise complaint response system and computer database	GRAA	Approved	Partially Implemented	Recommended to be continued with modifications
OM-3	Plan review and evaluation (GRAA staff periodically review the NCP and consider revisions and refinements, as necessary)	GRAA	Approved	Implemented	Recommended to be continued
OM-4	Establish a Pilot/Community Awareness Program	GRAA	Approved	Not Implemented	Recommended to be continued
OM-5	Publication of Instrument Departure Procedures for Runways 1, 13, and 25.	GRAA	Approved	Not Implemented	Recommended to be continued
OM-6	Update airport information in the Airport Facilities Directory	GRAA	Approved	Implemented	Recommended to be continued



Previously Approved Program Management Measures | 43

## Program Management Screening Analysis

Description	Benefits	Drawbacks	Evaluation & Recommendation
Formal logging of noise complaints	This measure would provide airport staff with data on potential or emerging noise issues around the airport.	Costs for staff to maintain website, respond to telephone complaints and/or logging complaints in a formal manner.	Airport staff should continue to receive noise complaints on an as-required basis. Due to the low level of noise complaints, acquiring a noise complaint system is not recommended. However, a more formal system of complaint logging should be used by airport staff and the information used as a basis for future meetings. As a result, it is <b>RECOMMENDED</b> that the present system of logging noise complaints be continued with modification and should be included in the NCP. <b>Modification to OM-2</b>
Install noise monitoring program	This measure would provide the airport with information regarding aircraft noise levels to the public.	Costs to purchase, run, and maintain permanent noise monitoring systems or portable noise monitors including staff costs to run the system and to analyze the data.	Due to the low level of noise complaints and the cost to implement and maintain a noise monitoring system program, this alternative is <b>NOT RECOMMENDED</b> for further analysis.



Program Management Screening Analysis | 44



## Program Management Recommendations

- *Five (5) previously approved Program Management Measures are recommended for continuation*
- *One (1) Measure is recommended for continuation with modification*



## Program Management Estimated Costs

Type Of Measure	Direct Cost (Total)	Direct Cost To FAA (90% Share)	Direct Cost To Airport (20% Share)	Direct Cost To Local Government	Direct Cost To Users
<b>Program Management Measures</b>					
Continue Logging of Noise Complaints	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
Institute Community Roundtable or Noise Abatement Committee	Minimal Administrative Costs	None	Minimal Administrative Costs	None	None
<b>Perform Regular Updates to the NEMs and Review of NCP</b>					
Update NEM ONLY	\$350,000 to \$400,000	\$280,000 to \$320,000	\$70,000 to \$80,000	None	None
Or					
Update NEM & NCP	\$650,000 to \$750,000	\$520,000 to \$600,000	\$130,000 to \$150,000		
Subtotal	\$350,000 to \$750,000 plus administrative costs	\$280,000 to \$600,000 plus administrative costs	\$70,000 to \$150,000 plus administrative costs	None	None





## Questions & Answers



Please raise hand to ask question



## Next Steps



- Gather Input and Acceptance of Noise Abatement, Land Use Mitigation, Program Management Measures
  - Gather input from advisory committee
  - Gather input from public
  - Gather input from GRAA
  - Gather input from ATC / FAA
  - GRAA acceptance of NCP recommendations
- Prepare Materials for Next Advisory Committee meeting and Public Hearing/Workshop
- Prepare Draft NEM and NCP documentation
- Gather Comments on Preliminary Draft documentation





## Questions & Answers



Please raise hand to ask question



## Public Comments



Please submit comments on the  
Study Website contact page:  
<https://www.airportprojects.net/rfd-part150/contact/>





## Public Workshop #3 & Public Hearing November 15<sup>th</sup>, 2023

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- Public Workshop/Hearing Announcement
- Public Hearing Meeting Legal Notices
- Public Workshop Presentation
- Public Hearing Transcript
- Public Hearing Comments

Note: Meeting presentation and recording of meeting are available on the study website at <https://www.airportprojects.net/rfd-part150/home/public-meetings/>



## Appendix E



# Land Use Assessment Methodology



# Appendix E Land Use Assessment Methodology

Identifying and evaluating land uses within the airport environs is an important step in the Part 150 Noise Compatibility Study (Study) process. This evaluation is necessary to identify residential and other noise-sensitive land uses that may be affected by airport noise and operations. The land use assessment includes examining land use classifications, zoning codes, and development trends within the airport environs; and applying the Federal Aviation Administration (FAA) Part 150 guidelines for land use compatibility and previous land use mitigation efforts conducted by the Greater Rockford Airport Authority (GRAA) at Chicago Rockford International Airport (RFD or Airport). A Geographic Information System (GIS) land use database was developed to facilitate the identification of land uses and existing zoning that are incompatible with airport operations.

## » E.1 Airport Environs and Study Area

The airport environs, as discussed in **Chapter 2, Affected Environment**, refers to the regional area that may experience broader effects from the noise due to aircraft operations. The airport environs for RFD is shown in **Exhibit 2-1, Airport Environs**, and depicts a 150+ square mile area that extends between five and seven miles off of each runway end and includes portions of the city of Rockford; the villages of New Milford and Cherry Valley, Rockford and Cherry Valley townships in southern Winnebago County; Marion, Byron, Scott, and Monroe townships in northeastern Ogle County; and the villages of Davis Junction and Stillman Valley. The map includes jurisdictional boundaries, local roads and major highways, the Airport property boundary, and other geographical features. The study area is defined as the area that experiences direct overflights of aircraft at lower altitudes and depicted in **Exhibit 2-2, Study Area Boundary**. The study area was determined by examining the boundaries of previous 65 day-night average sound level (DNL) noise exposure contours (the FAA-defined threshold for significant noise impacts), and by reviewing flight tracks of aircraft operating at RFD.

## » E.2 Land Use Data Collection and Mapping

Land use data was collected and incorporated into a GIS database that includes jurisdictional boundaries, roads, bodies of water, and other physical features. The database was used to identify existing land use conditions within the airport environs and to identify areas impacted by noise per FAA guidelines. This section describes the methodology for collecting and analyzing land use data within the study area.

### E.2.1 Land Use Classifications

Existing land use data was collected from Winnebago and Ogle County. Land uses within the study area were categorized in terms of the general land use classifications as outlined in 14 CFR Part 150 and shown in **Table E-1, Generalized Land Use Classifications**. These classifications include residential (single-family, multi-family and manufactured housing), commercial, industrial and utility (e.g., manufacturing and production), institutional (e.g., public use), park/recreational, agricultural/open space/vacant. These land uses were identified based on each jurisdiction’s GIS database, published land use and zoning maps, and were verified as necessary with aerial imagery. The existing land use patterns within the study area is shown in **Exhibit E-1, Generalized Existing Land Use**.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

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# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

**TABLE E-1 | GENERALIZED LAND USE CLASSIFICATIONS**

GENERALIZED LAND USE	SPECIFIC LAND USE TYPES
Agricultural / Open Space / Vacant	Vacant / Unplatted
	Property Used in Agricultural Operation <sup>1</sup>
	Surface Parking Lot
Single-Family Residential	Single-Family Residential
Multi-Family Residential	Two-Family Residential
	Condominium
	Three-Family Dwelling
	Apartments (4 to 19 Family)
	Apartments (20 to 39 Family)
	Apartments (40+ Family)
	Commercial Rooming House
	Condo (4 to 19 Units)
	Condo (20 to 39 Units)
	Condo (40+ Units)
Manufactured Home Park	Mobile Home Park
Commercial	Sales
	Services
	Retail / Grocery
	Commercial Recreation
	Car Wash
	Commercial Storage Units
	Commercial Garage
	Restaurant / Food Service
	Bank
	Office
	Hotel / Motel
	Parking Structure
	Warehouse / Shop with Office
Industrial	Distribution / Warehouse / Terminal
	Food Processing
	Foundry / Manufacturing
	Industrial Wholesale / Terminal
	Light Manufacturing
Institutional	Mining / Quarry
	Church / Place of Worship
	Day Care / Preschool
	Government Building / Facility



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

GENERALIZED LAND USE	SPECIFIC LAND USE TYPES
	Hospital
	Libraries
	Nursing Home / Care Facility
Park / Recreation	Golf Course
	Park
Utility	Utilities
	Government non-Institutional

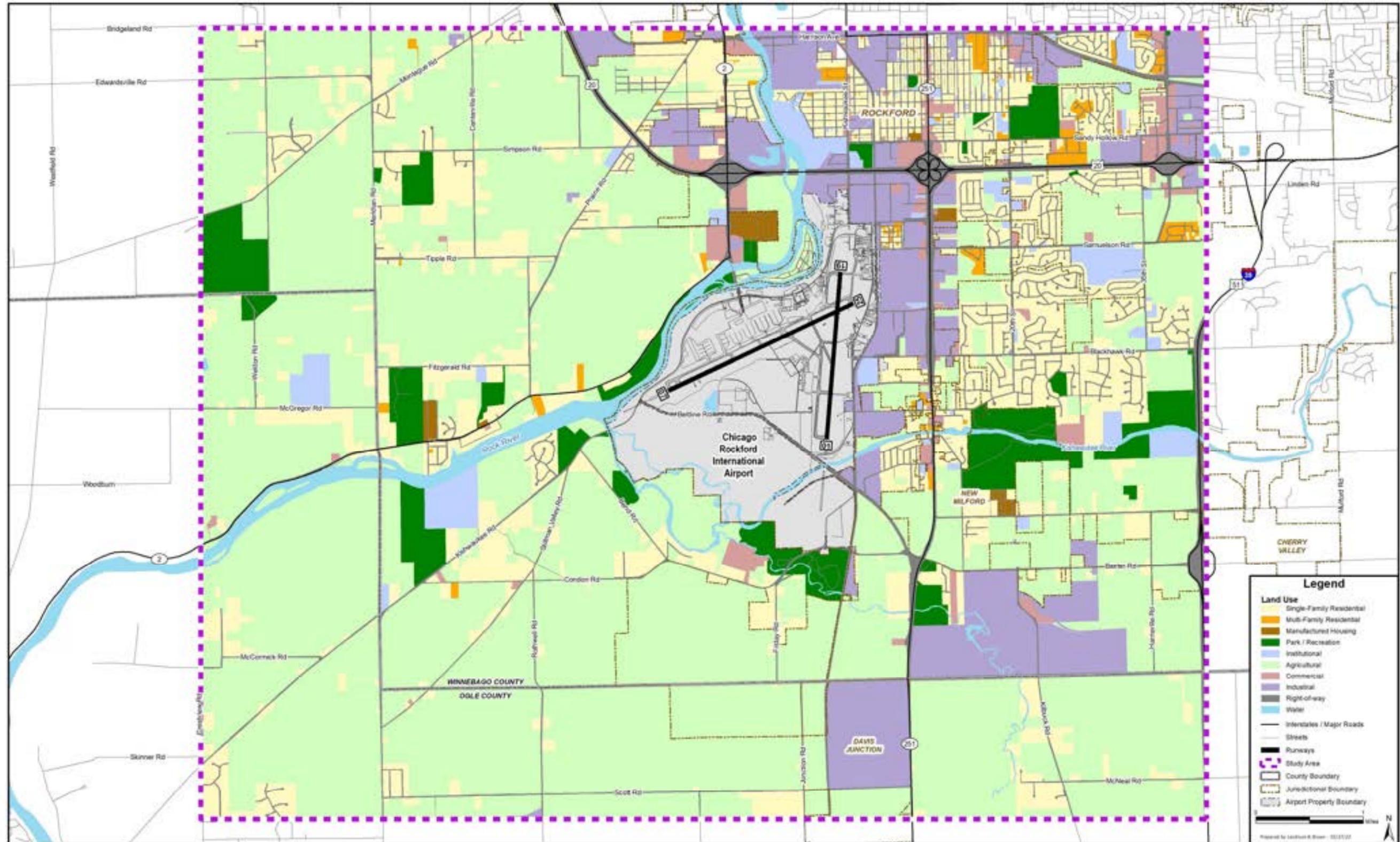
Notes: Agricultural uses are classified as Manufacturing and Production under 14 CFR Part 150 Guidelines but are identified separately for this Study for ease of understanding the land uses near the Airport.

Source: Winnebago County, Illinois; WinGIS Parcel database; <https://agis.wingis.org/>

Ogle County, Illinois, Map Server (Beacon); [https://www.oglecounty.org/departments/gis/beacon\\_map\\_server.php](https://www.oglecounty.org/departments/gis/beacon_map_server.php)  
Landrum & Brown analysis, 2023.



EXHIBIT E-1 | GENERALIZED EXISTING LAND USES



Source: Winnebago & Ogle County GIS data, 2022, Landrum & Brown analysis, 2023.



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## E.2.2 GIS Data Compilation

Base mapping information; including roads, county and municipal boundaries, and land use; were compiled using ArcMap, version 10.7. ArcMap is an analytical software program that allows manipulation and analysis of spatial data from a variety of sources. The base map information is used for comparison to aircraft noise and operational data analyzed for this study. Flight track data obtained for this Study as described in **Appendix C, Noise Modeling Methodology**, was overlaid onto the land use base map. Noise contours generated by the Aviation Environmental Design Tool (AEDT) were superimposed over the land use base map to produce the Noise Exposure Maps (NEMs) for this Study.

Land parcel and facility data was obtained from Winnebago and Ogle County in 2021. This data was updated over the course of the project based on each jurisdiction's online portals, to account for changes in land use over the course of the project.

The parcel data was used to identify land uses that would be considered noise-sensitive land per FAA guidelines. The 2010 U.S. Census data, at the tract and block level, was combined with the parcel data to calculate total population based on average household size. An estimated ratio of persons per household was determined based on US Census data and that ratio was applied to each parcel to estimate the population within each housing unit. The housing and population incompatibilities within each of the noise contours were determined by overlaying the noise contour and the parcel data using GIS software. The number of residential parcels/structures and population within each DNL noise contour level were then determined by an automated count using the GIS software's built-in capabilities.

### E.2.2.1 Noise-Sensitive Public Facilities

Land uses that could be considered incompatible with airport operations include more than just residential uses. FAA guidelines define certain public facilities as noise-sensitive: places of worship, schools (and daycare facilities at which licensed education occurs), nursing homes, libraries, and hospitals. Detailed information on noise-sensitive facilities was collected within the study area. A variety of sources were used to obtain GIS data showing the locations of noise-sensitive public facilities within the study area, including GIS data from Winnebago and Ogle counties, aerial imagery and past studies at RFD.

Within the study area there are 9 schools and 49 places of worship as shown on **Exhibit 2-5, Existing Noise-Sensitive Public Facilities** and defined in **Table E-1, Existing Noise-sensitive Public Facilities**.

### E.2.2.2 Existing Historic Sites

Historic properties on or eligible for inclusion in the National Register of Historic Places (NRHP) should be identified on the NEMs per 14 CFR Part 150. The NRHP is the official list of historic places worthy of preservation in the U.S. as authorized by the National Historic Preservation Act of 1966. Within the study area, there is one location, the Indian Hill Manor and Farmhouse Historic District, listed on or determined eligible for the NRHP. This site is located at the intersection of Kishwaukee Rd. and Bend Rd. and depicted on **Exhibit 2-5, Existing Noise-Sensitive Facilities**.



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**TABLE E-2 | EXISTING NOISE-SENSITIVE PUBLIC FACILITIES**

ID	TYPE	NAME	ADDRESS
C1	Place of Worship	Abundant Life Tabernacle	3015 S. 4th Street, Rockford, IL 61109
C2	Place of Worship	Apostolic Pentecostal Church of Rockford	840 Mattis Avenue, Rockford, IL 61109
C3	Place of Worship	Bethel Baptist Church	724 Harrison Avenue, Rockford, IL 61104
C4	Place of Worship	Bethlehem Lutheran Church	4620 20th Street, Rockford, IL 61109
C5	Place of Worship	Bishop Lane Retreat Center	7708 E McGregor Road, Rockford, IL 61102
C6	Place of Worship	Brooke Road United Methodist Church	1404 Brooke Road, Rockford, IL 61109
C7	Place of Worship	Calvary Church	2715 N. Alpine Road, Rockford, IL 61114
C8	Place of Worship	Cathedral Baptist Church	5622 35th Street, Rockford, IL 61109
C9	Place of Worship	Christ the Savior Orthodox Church	1802 Pershing Avenue, Rockford, IL 61109
C10	Place of Worship	Christian Faith Community Church	3312 Harrison Avenue, Rockford, IL 61108
C11	Place of Worship	Church of Christ	3227 Kishwaukee Street, Rockford, IL 61109
C12	Place of Worship	Church of Christ East Side	3529 20th Street, Rockford, IL 61109
C13	Place of Worship	Church of God of Prophecy	2610 S. 5th Street, Rockford, IL 61109
C14	Place of Worship	Community Bible Church	5950 35th Street, Rockford, IL 61109
C15	Place of Worship	Faith Center	4721 S. Main Street, Rockford, IL 61102
C16	Place of Worship	Gentle Shepherd Fellowship	2905 Bildahl Street, Rockford, IL 61109
C17	Place of Worship	Highway to Heaven Full Gospel	3202 Potter Street, Rockford, IL 61109
C18	Place of Worship	House Of God Church	840 Brooke Road, Rockford, IL 61109
C19	Place of Worship	International Rock Church	4761 20th Street, Rockford, IL 61109
C20	Place of Worship	Jehovah's Witnesses - Central	2916 Chadwick Drive, Rockford, IL 61109
C21	Place of Worship	Kishwaukee Baptist Church	2742 9th Street, Rockford, IL 61108
C22	Place of Worship	Kishwaukee Presbyterian Church	8195 Kishwaukee Road, Stillman Valley, IL 61084
C23	Place of Worship	Lao Evangelical Free Church	5881 35th Street, Rockford, IL 61109
C24	Place of Worship	Life Church - South Campus	4312 20th Street, Rockford, IL 61109
C25	Place of Worship	Lighthouse Temple Pentecostal Church	2638 9th Street, Rockford, IL 61109



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ID	TYPE	NAME	ADDRESS
C26	Place of Worship	Maywood Evangelical Free Church	3621 Samuelson Road, Rockford, IL 61109
C27	Place of Worship	New Covenant Christian Fellowship	621 South Avenue, Rockford, IL 61109
C28	Place of Worship	New Milford United Methodist	7102 Cindy Drive, Rockford, IL 61109
C29	Place of Worship	Next Level Community Church	3844 Sandy Hollow Road, Rockford, IL 61109
C30	Place of Worship	Pelley Road Christian Fellowship	3800 Pelley Road, Rockford, IL 61102
C31	Place of Worship	Prairie Road Baptist Church	3990 Prairie Road, Rockford, IL 61102
C32	Place of Worship	Prayer Tabernacle Church	2907 S 4th Street, Rockford, IL 61109
C33	Place of Worship	Ratanarma Buddhist Temple	4502 35th Street, Rockford, IL 61109
C34	Place of Worship	Rockford Korean Presbyterian Church	5512 35th Street, Rockford, IL 61109
C35	Place of Worship	Rockford Pentecostal Church of God	2904 18th Street, Rockford, IL 61109
C36	Place of Worship	Rockford Slavic Baptist Church	3046 16th Street, Rockford, IL 61109
C37	Place of Worship	Rockford South Church of God	2622 19th Street, Rockford, IL 61109
C38	Place of Worship	Rockford United General Baptist	3126 Marshall Street, Rockford, IL 61109
C39	Place of Worship	Samuelson Road Church - Nazarene	3183 Samuelson Road, Rockford, IL 61109
C40	Place of Worship	Silver Hill Pentecostal Church	4401 20th Street, Rockford, IL 61109
C41	Place of Worship	Souls Harbor Church	2802 11th Street, Rockford, IL 61109
C42	Place of Worship	St Edwards Catholic Church	3004 11th Street, Rockford, IL 61109
C43	Place of Worship	St Luke Missionary Baptist Church	2919 19th Street, Rockford, IL 61109
C44	Place of Worship	Templo Pentecostal El Calvario	1022 Brooke Road, Rockford, IL 61109
C45	Place of Worship	Twentieth Street Missionary Baptist	5820 20th Street, Rockford, IL 61109
C46	Place of Worship	Unity of Rockford Spiritual Center	4381 Manchester Drive, Rockford, IL 61109
C47	Place of Worship	Victory Baptist Church	7028 Rydberg Road, Rockford, IL 61109
C48	Place of Worship	Water of Life Ministries	2420 New Milford Church Road, Rockford, IL 61109
C49	Place of Worship	Woodside General Baptist Church	3022 18th Street, Rockford, IL 61109
S1	School	Bernard W Flinn Middle School	2525 Ohio Parjway, Rockford, IL 61108
S2	School	Cathedral Baptist School	5622 35th Street, Rockford, IL 61109



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ID	TYPE	NAME	ADDRESS
S3	School	Froberg Elementary School	4555 20th Street, Rockford, IL 61109
S4	School	Galapagos Rockford Charter School	3051 Rotary Road, Rockford, IL 61109
S5	School	Jefferson High School	4145 Samuelson Road, Rockford, IL 61109
S6	School	Legacy Academy of Excellence Charter School	4029 Prairie Road, Rockford, IL 61102
S7	School	Riverdahl Elementary School	3520 Kishwaukee Street, Rockford, IL 61109
S8	School	Swan Hillman Elementary School	3701 Green Dale Drive, Rockford, IL 61109
S9	School	William Nashold Early Childhood Center	3303 20th Street, Rockford, IL 61109

Source: Winnebago County, Illinois; WinGIS Parcel database; <https://agis.wingis.org/>  
 Ogle County, Illinois, Map Server (Beacon); [https://www.oglecounty.org/departments/gis/beacon\\_map\\_server.php](https://www.oglecounty.org/departments/gis/beacon_map_server.php)  
 Landrum & Brown analysis, 2023.



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## » E.3 Preventative Local Land Use Mitigation Alternatives

The evaluation of land use planning techniques is intended to address the potential for future development in areas located inside and in the vicinity of the DNL 65 decibel (dB) noise exposure contour where aircraft overflights continue.<sup>1</sup> The responsibility for controlling and managing the development and redevelopment of land outside the airport boundary is the responsibility of each community. Therefore, it is incumbent upon the local planning and elected officials to monitor and plan for new development in a manner that is compatible with aircraft operations.

According to an FAA land use guidance manual, *Land Use Compatibility and Airports*,<sup>2</sup> the FAA recognizes that aircraft noise does not stop at the DNL 65 dB noise exposure contour.

*“While the FAA can provide assistance and funding to encourage compatible land development around airports, it has no regulatory authority for controlling land uses that would protect airport capacity. The FAA recognizes that state and local governments are responsible for land use planning, zoning and regulation, including that necessary to provide land use compatibility with airport operations. However, pursuant to the Federal Airport and Airway Development Act, as a condition precedent to approval of an FAA-funded airport development project, the airport sponsor 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...”*

*FAA has required the phasing out of noisy Stage 1 and Stage 2 aircraft consequently, the aviation industry has spent substantial monies to meet this requirement. To assist in the compatible land use efforts, the FAA, local airport sponsors, and state aviation agencies have expended significant funds related to airport planning and off-airport noise and land use compatibility planning throughout the United States. Airport master plans have been prepared to identify the near-term and long-range projections for airport activity and the development necessary to meet these activity demands. In addition, noise and land use studies (Part 150 studies) have been conducted to evaluate ways to minimize impacts of aircraft noise, and the FAA and airport sponsors have financed land acquisitions and other noise compatibility measures throughout the United States.”*

Therefore, the FAA encourages airport sponsors and local governments to work together to establish local land use controls in areas adjacent to an airport and within the flight corridors that extend beyond the DNL 65 dB contour.<sup>3</sup> A brief discussion of typical preventive land use management techniques, and their application by the jurisdictions within the Airport Environs, is provided in the following sections.

### E.3.1 Comprehensive Planning

A comprehensive plan sets the land use and development policies and goals for a community and is the guide for land use policy implementation. Winnebago and Ogle counties and the communities surrounding RFD have adopted future land use plans to guide development.

<sup>1</sup> Note that per Part 150 regulations, all land uses are compatible with outdoor noise levels below DNL 65 dB; however, local planning efforts may, at the discretion of local jurisdictions, consider noise below DNL 65 dB independent of the Part 150 process.

<sup>2</sup> *Land Use Compatibility and Airports: A Guide for Effective Land Use Planning*, FAA Airports Division, Southern Region Office, Atlanta, Georgia, Jacqueline Sweatt-Essick, et al, July 1999.  
[http://www.faa.gov/about/office\\_org/headquarters\\_offices/aep/planning\\_toolkit/media/III.B.pdf](http://www.faa.gov/about/office_org/headquarters_offices/aep/planning_toolkit/media/III.B.pdf)

<sup>3</sup> Note that per Part 150 regulations, all land uses are compatible with outdoor noise levels below DNL 65 dB; however, local planning efforts may, at the discretion of local jurisdictions, consider noise below DNL 65 dB independent of the Part 150 process.



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The State of Illinois adopted the Local Land Resource Management Planning Act of 1985 as an Illinois Compiled Statute (ICLS) [50 ILCS 805/], the statute provides authority for land planning at the county level. The statute encourages Illinois counties to adopt a comprehensive land use plan and related policies and objectives. In 2002 the Local Planning Technical Assistance Act [20 ILCS 662] was adopted to provide technical assistance to local governments that request assistance in the development of comprehensive plans and to encourage local governments to engage in planning, regulatory, and development approaches that promote and encourage comprehensive planning.

A comprehensive plan in and of itself does not and cannot control development or relieve noise impacts/incompatibilities without implementing a development plan, but there are other tools available, which are subsequently discussed below.

### E.3.2 Land Use Planning

The formal adoption of a local land use plan by the jurisdictions within the airport environs provides the basis for zoning determinations and evaluations regarding the suitability of various development proposals for implementation. The land use plan element of the comprehensive community plan should take into account the compatibility of proposed development and the identification of developable lands taking into account the existing and anticipated aircraft noise levels and plan future land uses accordingly. The land use plan should serve as the basis to guide the development of the community's Capital Improvement Program (CIP).

### E.3.3 General Purpose Zoning

Zoning is one of the primary tools available to local communities to ensure land use compatibility. Zoning ordinances and regulations are intended to promote public health, safety, and welfare by regulating the use of the land within a jurisdiction based on factors such as land use compatibility and existing and expected socioeconomic conditions. The regulation of land through a zoning ordinance is premised as part of the police power inherent in the state and delegated to the local jurisdiction through state enabling legislation. Winnebago and Ogle Counties and various communities surrounding RFD do have the statutory authority to adopt zoning ordinances and maps. The jurisdictions surrounding RFD have adopted zoning ordinances and do control the land use within their respective boundaries.

Zoning is useful for controlling land use development and promoting compatibility while supporting private land ownership. Zoning cannot be relied upon as a "corrective land use management measure" as it can only be applied prospectively and not retroactively. Also, because zoning is a creature of a political body and subject to changing conditions and situations, the zoning classification of any particular tract of land is always subject to change and its implementation and enforcement must be monitored to ensure continuing compatibility.

#### E.3.3.1 Master Planned Development District

A Master Planned Development (MPD) district is intended to accommodate development that may be difficult if not impossible to carry out under otherwise applicable zoning district standards. Examples of MPD include Enhanced Protection of Natural Resources Areas, in which a planned development offers enhanced protection of natural resources and sensitive environmental features, and Mixed-use Development Areas, in which developments contain a complementary mix of residential and nonresidential uses. The different types of MPDs are intended to promote different planning goals. In general, MPDs are intended to promote flexibility and creativity in responding to changing social, economic, and market conditions and could result in greater public benefits than could be achieved using conventional zoning and development regulations. MPD zoning is typically for proposed developments that cannot be reasonably accommodated by other available regulations of a development ordinance, and would result in a greater benefit to the city as a whole than would development under conventional zoning district regulations. Such greater benefit may include the implementation of adopted



planning policies, neighborhood/community amenities, urban design, natural resource preservation, or a general level of development quality.

#### *E.3.3.2 Airport Land Use Management District*

An Airport Land Use Management District (ALUMD) establishes a set of development guidelines on areas designated as highly sensitive to aircraft noise. Such a district would lie as an overlay of the underlying land use zoning and would impose various guidelines on the development of land within its boundaries. These constraints may include a requirement for the sound insulation of new or rehabilitated properties, disclosure of the susceptibility of the property to elevated aircraft noise levels, the dedication of an aviation easement for new development, the requirement of development densities for incompatible uses in concordance with the level of noise exposure, the coordinated review of development proposals, etc. The boundaries of the district may be established by the local jurisdiction having land use control at any level deemed to be appropriate to the management of the risk of adverse effects and incompatibility between aircraft and noise-sensitive development.

### **E.3.4 Coordinated Project Review Process**

The coordinated review of proposals for zoning changes, subdivision development, or building permits may be activated as a means for consideration of the potential effects of aircraft noise on proposed development actions. The coordination assumes the review by both airport and land use management personnel of project compatibility, and may result in a report on each item under consideration which is attached to the project file and reported to the governing bodies as part of their consideration of the suitability of the project action for approval or denial. Such measures may be included in an NCP as separate measures or incorporated into a broader measure such as an ALUMD.

### **E.3.5 Full Disclosure Policy**

A program can be developed to ensure that the buyers of residential property within the airport environs receive full disclosure of the location of the property relative to the airport. This would require that the sellers of residential property in the airport environs deliver to buyers a purchase disclosure notice consisting of a copy of the ALUMD Ordinance and Map with a statement that the property is located within the ALUMD. It may also require that all advertisements and listings for sale of residentially zoned or improved property in the ALUMD include a statement about aircraft noise, such as, "Not recommended for persons who may easily be disturbed by aircraft noise." Finally, solicitation of the voluntary inclusion of the notice in the Multiple Listing Services by the real estate profession alerts potential buyers of property to aircraft noise conditions.

### **E.3.6 Subdivision Regulations**

Subdivision regulations apply in cases where a parcel of land is proposed to be divided into lots or tracts. They are established to ensure the proper arrangement of streets, adequate and convenient open space, efficient movement of traffic, adequate and properly-located utilities, access for fire-fighting apparatus, avoidance of congestion, and the orderly and efficient layout and use of land.

Subdivision regulations can be used to enhance noise-compatible land development by requiring developers to plat and develop land so as to minimize noise impacts or reduce the noise sensitivity of new development. The regulations can also be used to protect the airport proprietor from litigation for noise impacts at a later date. The most common requirement is the dedication of a noise or aviation easement to the local government by the land subdivider as a condition of the development approval. The easement authorizes overflights of the property with the noise levels attendant to such operations. Subdivision regulations may also require the developer to disclose the aircraft noise levels over the property or to provide information on noise insulation criteria to be used in the construction of any building on the property.



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Subdivision regulations for each of the jurisdictions within the study area for RFD were examined. None of the jurisdictions require notice of any kind on subdivision plats that the subdivision is within the vicinity of an airport and may experience aircraft noise and/or overflight. In addition, there is no requirement to grant an aviation easement for aircraft overflights as a condition of approval for land subdivision/development in any of the subdivision regulations.

### E.3.7 Building Codes

Building codes regulate building construction and construction practices ensuring that all safety standards are met and resulting in the issuance of a building permit from the local governing body. (A building code is most easily enforced through a local building permit process.) Sound insulation may be required in new homes, offices, and institutional buildings to mitigate the effects of high aircraft noise levels. Building code requirements intended for energy efficiency may also provide acoustical insulation benefits. Caulking of joints, continuous sheathing, dead air spaces, ceiling and wall insulation, solid core doors, and double-pane windows can attenuate aircraft noise while conserving energy used for home heating and cooling.

Not all sound insulation needs are met by typical energy-conserving building methods. For example, field research has found that some modern and highly energy-efficient storm window designs are less efficient for sound insulation than some older designs that allow for larger dead air spaces. Other sound insulation measures that may not be justifiable for energy efficiency are vent baffling and year-round, closed-window ventilation systems.

Building codes apply to existing buildings only when remodeling or expansion is contemplated. Amendments to building codes do not help to correct noise problems in developed areas. The State of Illinois has not adopted statewide building codes, instead local governments are allowed to adopt codes of their choice based on the most current version of the Illinois Energy Conservation Code, Illinois Accessibility Code and the Illinois Plumbing Code.

### E.3.8 Transfer of Development Rights

The Transfer of Development Rights (TDR) is a land use regulatory tool under which development rights can be severed from a tract of land and sold in a market transaction. The parcel from which the rights are transferred is then permanently restricted as to future development, and the purchaser of the rights may assign them to a different parcel to gain additional density. A TDR program would allow landowners in a designated “sending” area to transfer the development rights assigned to their property to a landowner in a designated “receiving” area where the community would like to concentrate development. In this case, the designated “sending” district would be residentially-zoned land located in areas substantially affected by aircraft noise. The designated “receiving” district would be in a location not greatly affected by airport noise. The designated “receiving” area would be allowed to develop at a higher density than would be permitted by the underlying zoning. Though the community defines the requirements and parameters associated with establishing the sending and receiving districts, any actual transfer is negotiated between the landowner in the sending district and landowner in the receiving district.

### E.3.9 Capital Improvement Programs

CIPs are multi-year plans typically covering five or six years that list major capital improvements planned to be undertaken during each year. Most capital improvements have no direct bearing on noise compatibility; few municipal capital improvements are noise-sensitive. The obvious exceptions to this are schools and, in certain circumstances, libraries, medical facilities, and cultural/ recreational facilities.



Some capital improvements may have an indirect, but more profound, relationship to noise compatibility. For instance, the development of new sewer and water facilities may open up large vacant areas for the private development of noise-sensitive residential uses.

In contrast, the same types of facilities, sized for industrial users, could commit to industrial development in a noise-impacted area that might otherwise be attractive for residential development.

### E.3.10 Growth Risk Assessment

Before evaluating the impact of aircraft noise within the airport environs, it is important to understand the likelihood for the future development of residential and other noise-sensitive land uses, especially in the planning timeframe. Understanding development trends in the airport vicinity is of critical importance in noise compatibility planning, because future residential growth can potentially constrain airport operations, if that growth occurs beneath aircraft flight tracks and within areas subject to high noise levels.

The growth risk analysis focuses primarily on undeveloped land which is planned and zoned for residential use. It is recognized that additional development may occur through in-filling and redevelopment of currently developed areas.

The methodology for analyzing potential growth risk is as follows:

- Identify all vacant, unplatted tracts of land zoned for future residential development with the greatest potential for being developed within the next five years.
- Calculate the area of the tracts; apply a factor accounting for development inefficiencies and the platting of streets; multiply by dwelling unit densities specified in the zoning ordinance; and multiply by household size to obtain the population holding capacity of presently vacant, unplatted land.
- Sum the above population holding levels to determine the total population holding capacity of the study area.

The final step in the growth risk analysis is to estimate whether the development is likely to occur before or after the year for which future noise exposure has been calculated. This tends to be quite speculative and should be regarded only as a general indicator of the potential risk of increases in land use incompatibility.

## » E.4 Corrective Land Use Mitigation Alternatives

Corrective or remedial land use mitigation measures are intended to convert existing, non-compatible uses to compatible uses. Generally, corrective uses fall into two categories: modify existing use, and maintain existing use. The following is a brief discussion of typical corrective or remedial land use mitigation alternatives included in Part 150 studies.

### E.4.1 Modify Existing Land Use

#### E.4.1.1 Land Acquisition to Change Land Use

If the acquisition of property results in a change in land use, from incompatible to compatible with airport operations (e.g., airport/transportation, commercial, or industrial), the property owner would be eligible for relocation assistance and moving expenses, consistent with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act*. The property would be acquired, residents would be relocated, and the property would be converted to compatible land use. This would prevent further development of incompatible land uses. The land acquisition program should ensure that the subsequent land use is consistent with local land use plans and



policies, including compatibility with noise exposure levels in the area. Because the acquisition is to result in a change in land use, the local jurisdiction may decide to apply its power of eminent domain.

## E.4.2 Maintain Existing Land Use

The Airport Improvement Program (AIP) Handbook<sup>4</sup> provides guidance and sets forth policy and procedures used in the administration of the AIP. Appendix R, *Noise Compatibility Planning/Projects* of the AIP Handbook, provides guidance and eligibility requirements for airport noise mitigation programs. The following sections provide the general steps for determining eligibility for mitigation under AIP guidelines.

### E.4.2.1 Sound Insulation of Homes

A program for sound insulation of residences is always voluntary on part of the homeowner and is generally focused on residences located in a 65 DNL to 70 DNL noise contour. Other than the obvious benefit of reducing interior noise levels, a sound insulation program maintains the land use of the area and generally increases the value of the properties. Unfortunately, sound insulation treatments do not reduce the noise outside the residence and as such the benefits of the treatments are reduced when doors and windows are open.

### E.4.2.2 Land Acquisition without Change to Land Use

The acquisition of incompatible property where no change in land use would result would be a “voluntary” acquisition program, where participation in the program would be voluntary on the part of the property owner. The reason for such a voluntary program is most often due to the owner’s inability to sell the property at fair market value. Acquisition procedures would be implemented in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act* and relocation benefits would not apply.

### E.4.2.3 Purchase Guarantee

Purchase guarantee is a program whereby the airport sponsor agrees to purchase a residence for fair market value should the owner be unable to sell the property on the open market because of noise impacts. Participation in this program is voluntary on the part of the property owner and is implemented in areas where the land use is not going to change. In order to protect potential buyers a stipulation of this program requires that the seller disclose to the buyer the airport noise exposure on the property and the intention of the airport sponsor to retain an easement on the property. Acquisition procedures would be implemented in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act* and relocation benefits would not apply.

### E.4.2.4 Sales Assistance

The airport sponsor guarantees that the property owner will receive the appraised value, or some increment thereof, regardless of final sales value that is negotiated with a buyer. However, unlike purchase guarantee, the airport sponsor does not take ownership of the property in the event that it does not sell. In return for the assistance, the airport sponsor retains an avigation easement on the property and will typically require sound insulation before the sale.

### E.4.2.5 Avigation Easements

Acquisition of avigation easements should be used to alleviate conflicts if no other land use controls are viable or in some cases, in lieu of outright acquisition of the land. The easement would be noted on the property deed and passed on to any subsequent owners of the property.

<sup>4</sup> U.S. Department of Transportation, Federal Aviation Administration, Order 5100.38D, Change 1, February 26, 2019.



Amending local zoning and subdivision regulations to provide for the dedication of an easement to the airport sponsor as a condition of approval for residential rezoning or subdivision plats within the 65 DNL noise contour would alert developers, lenders, and prospective purchasers to the proximity of the airport and to the existence of a potential noise issue. The aviation easement would also protect the airport from future litigation by purchasers of the rezoned or subdivided property.

There is a constitutional issue raised by requiring dedication of an easement as well as imposing more vigorous and expensive standards for construction within the airport environs. Government may not require a person to give up a constitutional right (i.e., a public use) in exchange for a discretionary benefit conferred by the government unless there is a reasonable relationship between a legitimate governmental objective and the condition that is imposed on the developer. Moreover, the exaction demanded by the permit or condition must be in proportion to the impact of the proposed development that is sought to be alleviated. Whether that balance exists requires an individualized determination. If it were determined not to meet these standards, then the legislation would either be unenforceable, or its enforcement would constitute a taking requiring the payment of just compensation.

## » E.5 Role of Local Jurisdictions and Planning Organizations in Noise Compatibility Planning

Local planners and elected officials are typically responsible for local land use zoning and control. These entities and individuals prepare comprehensive plans, as well as review and implement zoning and land use regulations in a manner that may consider the effect of those actions as they relate to aviation activity and noise exposure.

The responsibility of regulating land use around an airport, in order to minimize existing land use incompatibilities and prevent future land use incompatibilities, is traditionally delegated to state and local governments. In addition to regulating land uses, local municipalities may facilitate the acquisition of property or the initiation of sound insulation programs as a means to mitigate and prevent future incompatible land uses resulting from airport noise. At airports with an approved Part 150 Study, an airport sponsor may apply directly to the FAA for funding of noise mitigation projects.

Local land use planners and elected officials were included in the membership of the Advisory Committee (AC) and participated in the study throughout the process. **Appendix D, *Public Involvement***, includes a summary of coordination with the land use planners and elected officials.

### E.5.1 Zoning Data Compilation

Specific zoning information for the City of Rockford, Winnebago and Ogle Counties was collected and reviewed in order to identify tools for prohibiting incompatible development and encouraging compatible development near the airport. **Exhibit E-2, *Generalized Existing Zoning***, graphically depicts the generalized zoning districts within the study area around RFD. **Table E-3, *City of Rockford - Zoning Districts***, **Table E-4, *Winnebago County - Zoning Districts*** and **Table E-5, *Ogle County - Zoning Districts*** shows the generalized zoning categories, and the specific zoning classifications included in each generalized category for each jurisdiction within the study area with current zoning ordinances.



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**TABLE E-3 | CITY OF ROCKFORD – ZONING DISTRICTS**

GENERALIZED ZONING	ZONING DISTRICT CODE
Commercial	C-1: Limited Office District
	C-2: Limited Commercial District
	C-3: General Commercial District
	C-4: Urban Mixed Use District
Industrial	I-1: Light Industrial
	I-2: General Industrial
	I-3 Airport Industrial
Open Space / Parks	HDO: Historic District and National Register Overlay
	RRO: Rock River Overlay
	Wellhead Setback Overlay Districts
	Arts and Cultural Overlay Districts
Single-Family Residential	RE: Rural Estate
	R-1: Single-Family Residential
	R-1U: Single-Family Residential, Urban
Multi-Family Residential	R-2: Two-Family Residential
	R-3: Multi-Family Residential
	R-4: Multi-Family Residential

Source: City of Rockford, Illinois; Zoning Ordinance, August 31, 2020.  
Landrum & Brown analysis, 2023.

**TABLE E-4 WINNEBAGO COUNTY – ZONING DISTRICTS**

GENERALIZED ZONING	ZONING DISTRICT CODE
Commercial	C-N: Neighborhood Commercial District
	C-C: Community Commercial District
	C-G: General Commercial District
	OP: Office Park District
Industrial	I-L: Light Industrial District
	I-G: General Industrial District
	I-H: Heavy Industrial District
Open Space / Parks	AG: Agricultural Priority District
	A1: Agricultural District
	A-2: Agriculture-Related Business District
	OS: Open Space District
	FP: Flood Plain Overlay District
Single-Family Residential	CD: Conservation Design District
	R-A: Rural Agricultural Residential District
	R-1: Single-Family Residential District
Multi-Family Residential	R-2: Single-Family and Two-Family Residential District



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GENERALIZED ZONING	ZONING DISTRICT CODE
	R-3: Multi-Family Residential District
	R-4: Multi-Family Residential district
	R-MH: Manufactured Home Park and Residential District

Source: WinGIS Parcel database; <https://agis.wingis.org/>; Winnebago County, Illinois, Code of Ordinances, Chapter 90, Unified Development Ordinance; [https://library.municode.com/il/winnebago\\_county/codes/code\\_of\\_ordinances?nodeId=COCO\\_CH90UNDEOR](https://library.municode.com/il/winnebago_county/codes/code_of_ordinances?nodeId=COCO_CH90UNDEOR) Landrum & Brown analysis, 2023.

**TABLE E-5 | OGLE COUNTY – ZONING DISTRICTS**

GENERALIZED ZONING	ZONING DISTRICT CODE
Commercial	B-1: Business District
	B-2: Business Recreation District
	B-3: Restricted Interstate Highway Area Business District
Industrial	I-1: Industrial District
Open Space / Parks	AG-1: Agricultural District
	IA: Immediate Agricultural District
	PD: Planned Development District
Single-Family Residential	R-1: Rural Residential District
	R-2: Single-Family Residential District
Multi-Family Residential	R-3: Mobile Home Subdivision District
	R-4: Mobile Home Park District
	R-4: Multi-Family Residential district
	R-MH: Manufactured Home Park and Residential District

Source: Ogle County, Illinois, Amendatory Zoning Ordinance, Chapter 16 of the Ogle County Code, September 2017; [https://www.oglecounty.org/departments/planning\\_and\\_zoning/zoning\\_ordinance.php](https://www.oglecounty.org/departments/planning_and_zoning/zoning_ordinance.php) Map Server (Beacon); [https://www.oglecounty.org/departments/gis/beacon\\_map\\_server.php](https://www.oglecounty.org/departments/gis/beacon_map_server.php) Landrum & Brown analysis, 2023.

## » E.6 FAA Land Use Planning Guidelines

While the FAA can provide assistance and funding to encourage compatible land development around airports, it has no regulatory authority for controlling land uses to protect airport capacity. The FAA recognizes that state and local governments are responsible for land use planning, zoning, and regulation including that necessary to provide land use compatibility with airport operations. However, pursuant to the Federal Airport and Airway Development Act, as a condition precedent to approval of an FAA-funded airport development project, the airport sponsor 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 landing and takeoff of aircraft...”<sup>5</sup> The Federal Government has enacted regulations and the FAA has implemented policies designed to improve airport land use compatibility as described in **Appendix A, FAA Policies, Guidance and Regulations**.

<sup>5</sup> 49 U.S.C. § 47107(a)(10), formerly Section 511(a)(5) of the 1982 Airport Act



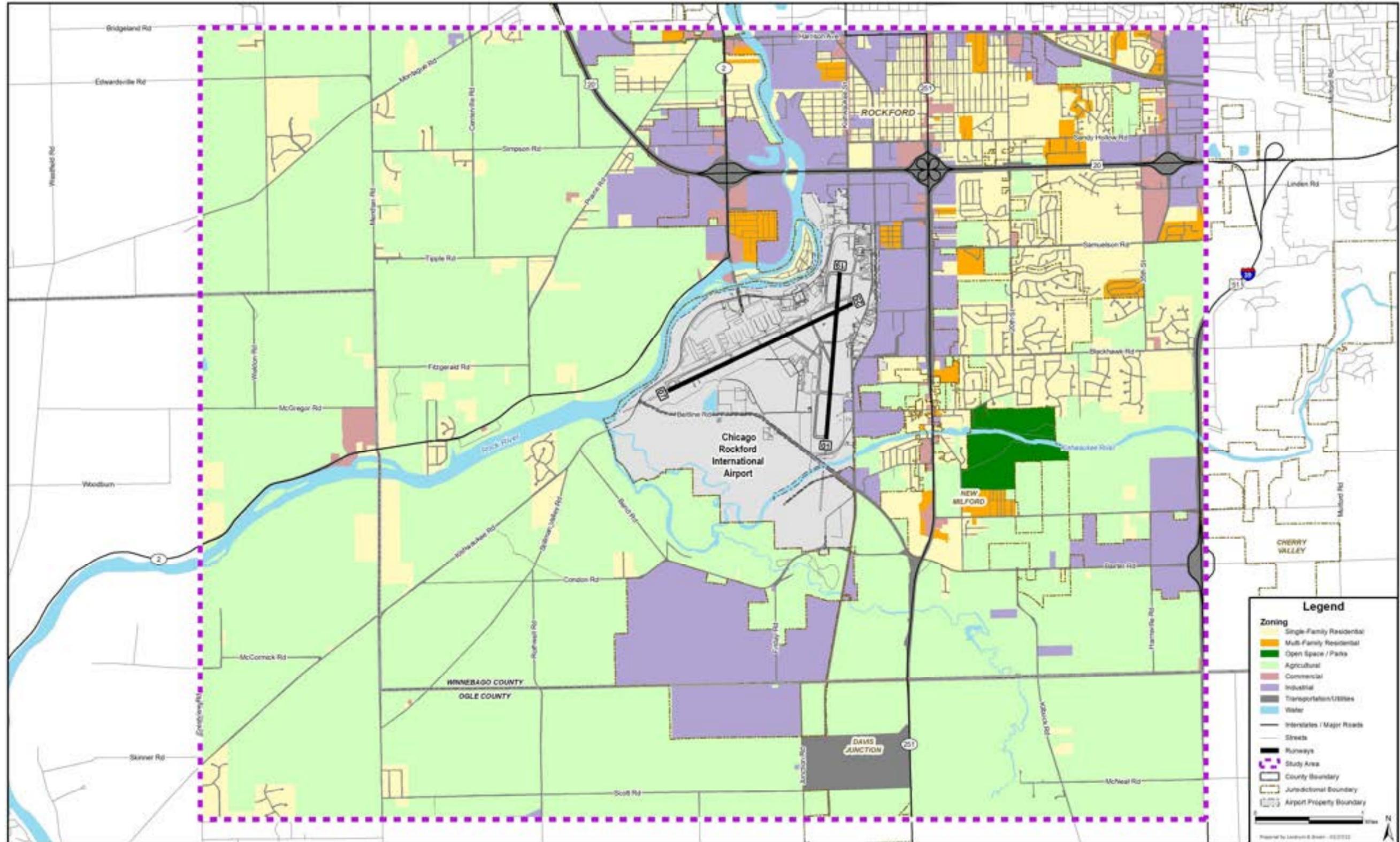
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EXHIBIT E-2 GENERALIZED EXISTING ZONING



Source: Winnebago & Ogle County GIS data, 2022, Landrum & Brown analysis, 2023.



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## Appendix F



# Noise Abatement Alternatives



## Appendix F Noise Abatement Alternatives

This appendix presents the range of the noise abatement alternatives that were considered in this Part 150 Noise Compatibility Study (Part 150 Study) to mitigate noise impacts of aircraft operations at the Chicago-Rockford International Airport (RFD or Airport). The proposed measures were evaluated for the anticipated benefits and costs associated with its implementation. Each recommended measure was reviewed with the membership of the Advisory Committee (AC). Local planning professionals from the surrounding communities were invited to meet with the project team to discuss the types of measures that were evaluated and recommended. Copies of all of the materials that were sent are located in **Appendix G, Public Involvement**.

Those alternatives that are recommended for inclusion in the RFD 2023 Noise Compatibility Program (NCP) are included in **Chapter Four, Noise Compatibility Program**.

### » F.1 Noise Abatement Alternatives

This section discusses the consideration and evaluation of potential new noise abatement alternatives for possible inclusion in the RFD 2023 Noise Compatibility Program (NCP). The concept of noise abatement generally focuses on measures that may be able to affect the source of the noise such that the receivers of noise (residential areas etc.) are exposed to less noise. Thus, abatement measures generally are concerned with actions that would alter the use or configuration of air space, flight tracks, airport facilities, or aircraft operations, so as to reduce or shift the location of noise. The evaluation of a number of these alternatives is required under Title 14 of the Code of Federal Regulations (14 CFR) Part 150, even though they may have little utility for local application at RFD. These measures tend to fall into one of the five general categories listed below.

- Runway Use Modifications
- Flight Routing Modifications
- Aircraft Operational Procedure Modifications
- Airport Facility Modifications
- Airport Regulations and Facility Restrictions

The consideration of the various potential noise abatement techniques must be undertaken in the context of the current 2023 NCP at RFD as well as the policies of the Federal Aviation Administration (FAA) under 14 CFR Part 150. There were several noise abatement measures that were approved as voluntary in the RFD 2003 NCP. These noise abatement measures are discussed further in **Section F.1.1**.

In order to evaluate each noise abatement alternative, a set of evaluation criteria was established and used to identify the benefits and drawbacks of each alternative. The criteria include feasibility, safety, operational considerations, and noise reduction. After it was determined that an alternative was feasible, safe, and had no major operational drawbacks, an assessment of the benefits in terms of noise and land use compatibility was conducted. Because a decrease in one area may result in an increase in another area, priorities were developed to clarify the evaluation process. The noise impact priorities were as follows:

- Reductions in the 65+ DNL noise contours (most important).
- Sensitivity to shifting noise from one area to another (important).
- Ensuring that the tradeoffs of increased versus decreased noise are understood before making a decision.



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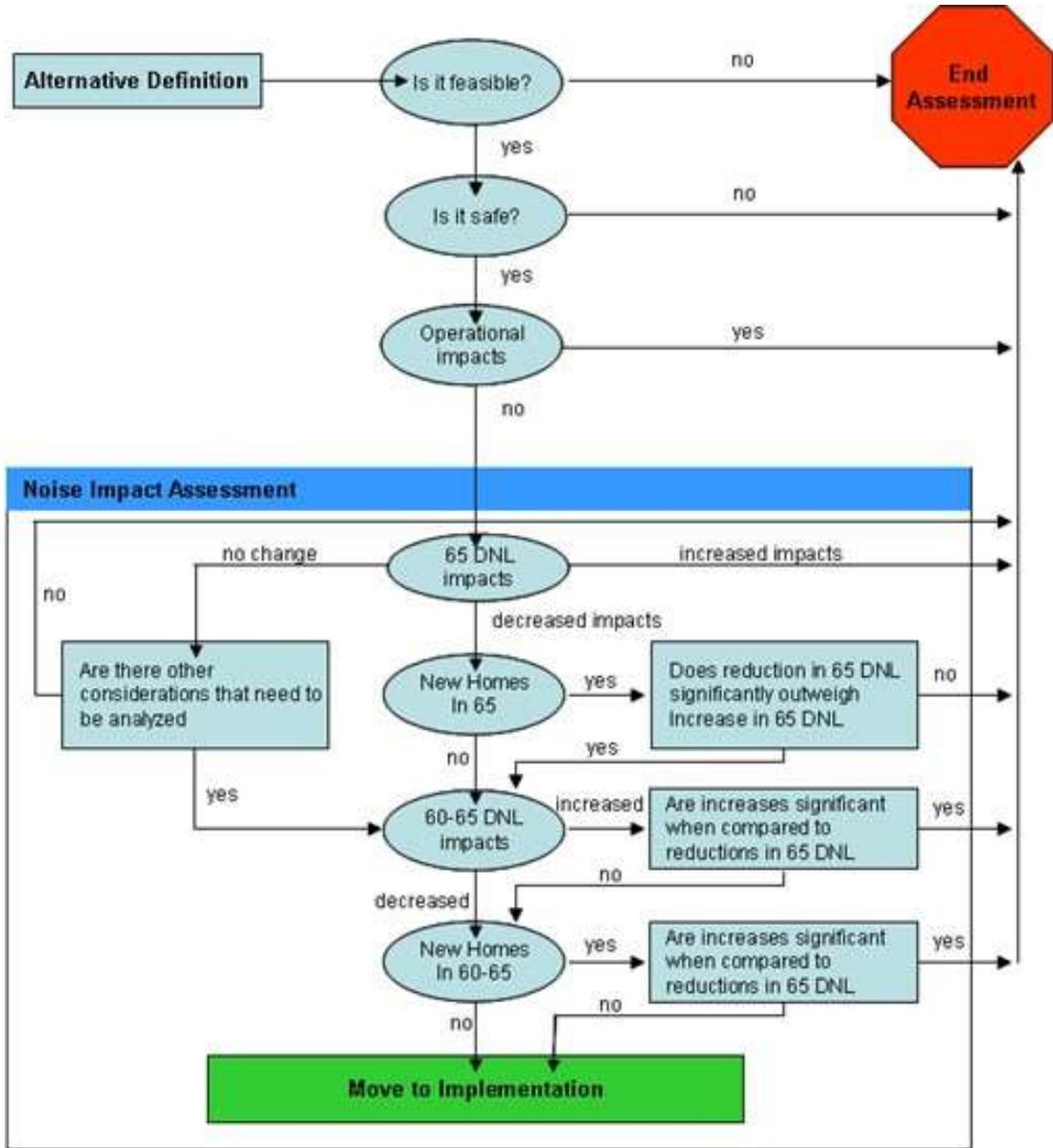
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- Recognizing that an alternative may have a net reduction in noise impacts, but may be eliminated because those impacts are a result of decreases in one area with a similar level of increases in another.

**Exhibit F-1, Noise Abatement Alternative Evaluation Process**, graphically depicts the steps of the evaluation process for abatement alternatives.

Within the aforementioned context, a two-step evaluation method was conducted for potential new abatement alternatives. First, a qualitative screening analysis was conducted on the full range of potential new abatement alternatives for RFD to determine whether or not they were feasible, and safe, and whether or not they would cause operational impacts. The noise abatement screening analysis is provided in **Section F.1.2**. Secondly, those alternatives that were determined to be feasible were then subjected to a quantitative analysis, including, where applicable, an analysis of the benefits or drawbacks and potential implementation costs (see **Table F.1**).

### EXHIBIT F-1 | NOISE ABATEMENT ALTERNATIVE EVALUATION PROCESS





## F.1.1 Previously Approved Noise Abatement Measures

This section provides a review of the abatement measures that were recommended and approved as voluntary noise abatement measures in the 2003 RFD NCP. Provided for each measure is a description, the current status, and the recommendation for this NCP Update. These previous noise abatement measures are either recommended to be continued, continued with modification or withdrawn.

### Measure NA-1

Description: Recommends maintaining existing noise abatement procedures per a Tower Order of June 15, 1984. This order states that touch and go operations (when aircraft traffic land and depart without stopping or exiting the runway for the purposes of pilot training) or traffic pattern activity (the flow prescribed for landing, or takeoff, in this case used for the purposes of pilot training) on Runways 1/19 shall be directed to turn so as to keep aircraft west of the airport. Aircraft over 12,500 pounds shall be directed to climb to 2,500 feet MSL (1,750 feet above field elevation) whenever traffic permits. Aircraft making circling approaches shall be kept west of the airport and shall not be permitted to make passes over the airport. For late night training, as winds permit, full stop landings should be made on Runway 1 and takeoffs should be made on Runway 19.

Status: Approved as Voluntary

Recommendation: **Recommended to be withdrawn.** The original intent of this measure was to abate the effects of nighttime aircraft noise and overflight that would occur during airline pilot training between the hours of 10:00 p.m. to 7:00 a.m. The airport no longer has pilot training occurring at the airport, that would warrant this abatement measure.

### Measure NA-3

Description: Recommends that all aircraft departing on Runway 7 be fanned along three departure tracks: Left, Right, and Center. The aircraft are routed due east on the center track, to the southwest on the track turning to the right, and to the northwest on the track turning to the left.

Status: Approved as Voluntary, Implemented

Recommendation: **Recommended to be continued.**

### Measure NA-4

Description: Recommends that pilots of C-130 aircraft practicing short-field landings and takeoffs (using a short amount of runway length) on Runway 19 be directed to turn as soon and as tightly as practicable after takeoff. The aircraft should remain as close to the airport as possible when flying through the pattern, provided aircraft maintain pattern altitude of 2,500 feet MSL per existing Tower Order.

Status: Approved as Voluntary

Recommendation: **Recommended to be withdrawn.** The original intent of this measure is to direct aircraft traffic to the northwest and away from residential areas southwest of the airport, including the Woodcrest Estates subdivision and the area north of the Rock River near Woodcrest Estates. In addition, the floodplain northwest and adjacent to the airport is a broad, noise-compatible area, and it would be desirable for the C-130s to remain over this area to the extent practical. The airport currently experiences no transient C-130s that do training at the airport.

### Measure NA-7

Description: Recommends during nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses of 250 degrees clockwise through 069 degrees inclusive turn right on course to the Dubuque (DBQ) or the Nodine (ODI) navigational fix as soon as practicable.



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Status: Approved as Voluntary, Implemented

Recommendation: **Recommended to be continued with modifications.** The original intent of this noise abatement measure was to minimize the noise impacts to residential properties (Woodcrest Estates) from Runway 25 departures that turn right on course after departure. It is recommended that the headings and fixes be removed from the measure.

New Description: During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a right turn after departure, to turn right on course to navigational fix or heading as soon as practicable.

### Measure NA-8

Description: Recommends during daytime hours (7:00 a.m. to 10:00 p.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses 070 degrees clockwise through 249 degrees inclusive retain 20-degree left turn and maintain heading until reaching 3,000 feet MSL.

Status: Approved as Voluntary, Implemented

Recommendation: **Recommended to be continued with modifications.** The original intent of this noise abatement measure was to minimize the noise impacts to residential properties (Woodcrest Estates) from Runway 25 departures that turn left on course after departure. It is recommended that the headings and fixes be removed from the measure.

New Description: During daytime hours (7:00 a.m. to 10:00 p.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a left turn after departure, to turn left on course to navigational fix or heading as soon as practicable.

### Measure NA-9

Description: Recommends during nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 19 having departure courses of 0 degrees clockwise through 190 degrees maintain runway heading until reaching 3,000 feet MSL before turning on course.

Status: Approved as Voluntary, Implemented

Recommendation: **Recommended to be continued with modifications.** The original intent of this noise abatement measure was to minimize the noise impacts to residential areas east and southeast of the airport. It is recommended that the headings and fixes be removed from the measure.

New Description: During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 19 having departure courses requiring a left turn based on destination to maintain runway heading until reaching 3,000 feet MSL before turning on course.

### Measure NA-10

Description: Recommends an informal runway use program to delineate the preferred runway use and order of runway selection to reduce aircraft noise impacts.

#### Departures

- Runway 19 preferred for all departures.
- Runway 25 would be used for departures when use of Runway 19 could not be used due to wind, weather, or operational necessity.
- Runway 1 would be used for departures when both Runway 19 and Runway 25 could not be used due to wind, weather, or operational necessity.



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### Daytime Arrivals

- The runway that would maximize traffic flow would be used for arrivals.

### Nighttime Arrivals

- Runway 1 preferred for all arrivals.
- Runway 7 would be used for arrivals when use of Runway 1 could not be used due to wind, weather, or operational necessity.

Status: Approved as Voluntary, Implemented

Recommendation: **Recommended to be continued.** The original intent of this measure is to result in a large proportion of departures and arrivals being made to and from the south or west of the airport and taking advantage of the most compatible land uses.

### Measure NA-11

Description: Recommends that all aircraft requiring more than 8,000 feet certified take-off length use Runway 25. Measure NA-11 was implemented after Runway 7/25 was extended by 3,500 feet to its current length of 10,000 feet. Occasionally fully-loaded large aircraft may not be able to safely take off on an 8,000-foot runway (Runway 1/19 is 8,199 feet long). When these circumstances preclude the use of Runway 19, the preferred runway for takeoff, Runway 25 should be used.

Status: Approved as Voluntary, Implemented

Recommendation: **Recommended to be continued**

### Measure NA-12

Description: Recommends during daytime hours (7:00 a.m. to 10:00 p.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses of 250 degrees clockwise through 069 degrees inclusive turn right on course to the Dubuque (DBQ) or the Nodine (ODI) navigational fix as soon as practicable

Status: Approved as Voluntary, Implemented

Recommendation: **Recommended to be continued with modifications.** The original intent of this noise abatement measure was to minimize the noise impacts to residential properties (Woodcrest Estates) from Runway 25 departures that turn right on course after departure. It is recommended that the headings and fixes be removed from the measure.

New Description: During daytime hours (7:00 a.m. to 10:00 p.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a right turn after departure, to turn right on course to navigational fix or heading as soon as practicable.

### Measure NA-13

Description: Recommends during nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses 070 degrees clockwise through 249 degrees inclusive turn to a heading of 200 degrees as soon as practicable and maintain heading until reaching 3,000 feet MSL

Status: Approved as Voluntary, Implemented

Recommendation: **Recommended to be continued with modifications.** The original intent of this noise abatement measure was to minimize the noise impacts to residential properties (Woodcrest Estates) from Runway 25 departures that turn left on course after departure. It is recommended that the headings and fixes be removed from the measure.



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**New Description:** During nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 25 having departure courses that would require a left turn after departure, to turn left on course to navigational fix or heading as soon as practicable.

### Measure NA-14

**Description:** Recommends aircraft weighing more than 12,500 pounds conduct touch and go and low approach training activity on the south side of the airport when using Runways 7 or 25.

**Status:** Approved as Voluntary, Implemented

**Recommendation:** ***Recommended to be continued with modifications.*** The original intent of this noise abatement measure was to minimize the effects of aircraft training overflights to the more densely populated land uses to the north and east of the airport and thus reduce the potential for noise complaints to occur.

**New Description:** Recommends aircraft to conduct touch and go and low approach training activity on the south and west side of the airport, when traffic permitting.

### Measure NA-15

**Description:** Recommends during nighttime hours (10:00 p.m. to 7:00 a.m.) all aircraft over 12,500 pounds departing Runway 1, maintain runway heading until reaching 3,000 feet MSL before turning on course.

**Status:** Approved as Voluntary, Implemented

**Recommendation:** ***Recommended to be continued***

### Measure NA-16

**Description:** Recommends encouraging the use of noise attenuating construction standards for all new on-airport structures/facilities and use those structures as noise barriers/buffers to adjacent off-airport land uses.

**Status:** Approved as Voluntary, Implemented

**Recommendation:** ***Recommended to be continued***

## F.1.2 Screening of Potential New Noise Abatement Alternatives

This section summarizes the qualitative screening analysis of potential new noise abatement measures. **Table F-1, Noise Abatement Alternatives Screening summary** presents a summary of the screening of the abatement alternatives. The "Evaluation and Recommendation" column provides a brief synopsis of the issues and findings associated with each alternative and notes whether the alternative was recommended for further analysis.

The abatement alternatives that were evaluated for this NCP were as follows:

- Modification of arrival and departure flight routes,
- Increase 03/21 runway utilization for commercial traffic,
- Develop new approach and departure procedures,
- Extension of Runway 03/2,
- Construct sound barrier,
- Implement airport operations restrictions.



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TABLE F-1 | NOISE ABATEMENT ALTERNATIVES SCREENING SUMMARY

DESCRIPTION	BENEFITS	DRAWBACKS	EVALUATION AND RECOMMENDATION
<b>FLIGHT TRACK MODIFICATIONS</b>			
Modify arrival and departure flight tracks to reduce noise within the 65 DNL noise contour	Could reduce noise levels for the areas both inside and outside of the 65 DNL contour.	<p>Impacted areas northeast of Runway End 7 are primarily impacted by arrival operations on final approach. These flight track locations can not be adjusted. ATC currently disperses departure operations with left and right turns based on destination.</p> <p>Areas to the southwest of Runway End 25, are impacted by both arrival and departure operations. The arrival tracks could not be modified as the aircraft are on final approach near the impacted homes. Departures are currently dispersed with left and right turns as soon as practical.</p>	<p>Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.</p> <p>Several currently approved voluntary measures address departure flight track dispersion and turn locations and are recommended to be continued and or continued with modifications. (NA-3, NA-7, NA-8, NA-9, NA-12, NA-13, NA-14 and NA-15)</p>
<b>RUNWAY USE MODIFICATIONS</b>			
Increase usage of Runway 1/19	Could reduce noise levels for the areas within the 65 DNL noise contour to the northeast and southwest of Runway 07/25.	<p>Based on the RFD fleet, the majority of operations will require the use of Runway 7/25 due to the runway length and east west orientation of the runway. Runway 7 is also equipped with an ILS system making it the preferred arrival runway for larger/heavier aircraft. The amount of traffic required to provide substantial noise reduction benefits in impacted areas would not be achievable based on current wind, weather and operational necessities to operate aircraft safely.</p> <p>Increasing the arrivals to Runway1 and departures from Runway 19 could potentially impact residential areas south of the airport, offsetting any benefits in the reduction of homes in the 65 DNL to the northeast and southwest of the airport.</p>	<p>Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.</p>



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**TABLE F-1 | NOISE ABATEMENT ALTERNATIVES SCREENING SUMMARY (CONTINUED)**

DESCRIPTION	BENEFITS	DRAWBACKS	EVALUATION AND RECOMMENDATION
<b>AIRCRAFT OPERATIONAL PROCEDURE MODIFICATIONS</b>			
Optimized Profile Descent Approach procedure	Optimized Profile Descent (OPD) procedures (previously known as continuous descent approach [CDA]) have been used at some airports to reduce approach noise at a distance from the airport. Generally, their most notable effect relates to reduced fuel burn and corresponding air emissions.	Potential noise reduction benefits would be limited to areas outside DNL 65 dBA. Due to the location of the impacted homes, implementing OPD's would have no substantial noise benefit for impacted homes.	Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
Implement Distant Noise Abatement Departure Profiles (NADP)	Implementing Distant NADPs can potentially reduce noise for areas further away from the runway end (greater than three miles).	Distant NADPs can potentially increase noise for areas closer to the runway end. Due to the impacted homes location, implementing NADP's would have no substantial noise benefit for impacted homes and could have a negative overall impact on areas close to the airport.	Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
Implement Close-in Noise Abatement Departure Profiles (NADP)	Implementing Close-in NADPs can potentially reduce noise for areas in close proximity to the runway end (less than three miles).	Close-in NADPs can potentially increase noise for areas farther away from the runway end. Due to the fleet mix at RFD, the amount of aircraft that could safely perform and execute Close-in NADP's would be minimal, thus significant reductions to the number of impacted homes in the 65 DNL are unlikely.	Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
Moderate Reverse Thrust on Landing	Reduces the amount of noise from the application of reverse thrust after landing.	Reverse thrust can not be eliminated altogether and would be up to the discretion of the pilot. Due to the location of the homes and the anticipated participation from pilots, significant reductions to the number of impacted homes in the 65 DNL are unlikely.	Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.



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**TABLE F-1 | NOISE ABATEMENT ALTERNATIVES SCREENING SUMMARY (CONTINUED)**

DESCRIPTION	BENEFITS	DRAWBACKS	EVALUATION AND RECOMMENDATION
<b>AIRPORT FACILITY MODIFICATIONS</b>			
Extend Runway 1/19	Additional aircraft in the RFD fleet mix would be able utilize Runway 1/19, potentially reducing the utilization of Runway 7/25.	New residential areas to the north and south of the airport could be impacted by increasing utilization of Runway 1/19. Existing building and roadways to the north and the Kishwaukee River and existing railroad to the south limit the potential length of Runway 1/19. The cost benefit of such a project is not practical.	Due to the cost of this measure and limitations to the final runway length this alternative is <b>NOT RECOMMENDED</b> to be continued for further analysis.
Ground Run-up Enclosures (GRE)	Can reduce jet run-up noise levels by up to 20 dB.	Currently there are no significant jet aircraft maintenance activities that would justify the cost-benefit of constructing GRE's.	Due to the inability to provide benefits to the homes impacted within the 65 DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
<b>AIRPORT FACILITY RESTRICTIONS</b>			
Implement Airport Operational Restrictions (Part 161 Restrictions) such as: noise-/time-based landing fees, airport capacity restrictions based on relative "noisiness", aircraft type restrictions based on "noisiness"	Can resolve noise annoyance issues with certain loud aircraft events or aircraft types operating at RFD.	Such restrictions would be subject to the costly and time-consuming analytical requirements under FAR Part 161 (Part 161). The FAA has never officially approved such measures.  Would have severe financial ramifications both to the Airport and the region.	Restrictions on access to an airport are measures of last resort for use in the most extreme cases of noise impact. This alternative is <b>NOT RECOMMENDED</b> for further analysis.

Source: Landrum & Brown analysis, 2023.



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### **F.1.3 Noise Abatement Measure Screening Summary**

In summary, based on the qualitative analysis described in section F.1 and F.1.2 the currently approved noise abatement measures reduce impacts within the 65+ DNL contour to the fullest extent. Of the thirteen (13) approved voluntary noise abatement measures five (5) are recommended to be continued and six (6) are recommended to be continued with modifications. Two (2) previously approved voluntary noise abatement measures are recommended to be withdrawn.

Six (6) previously approved voluntary noise abatement measures were recommended for continuation with modifications. Five (5) of these measures were recommended to have course headings and fix names removed, while focusing on the true intent of the measures to abate noise within the areas impacted by the 65+ DNL contour. One (1) measure address touch and go and low approach training activity at the airport, this measure was modified to include both runways, while focusing on the true intent of the measure to direct this type of aircraft activity to less densely populated areas to the south and west of the airport, when traffic permits. These six (6) measures will need to have written reapproval from the FAA as voluntary noise abatement measures.

Measures NA-1 and NA-4 are recommended to be withdrawn as they are no longer applicable at RFD. Both measures address civilian and military pilot training at RFD, the airport no longer has transient C-130 military operations as in the past, and there are no significant pilot training activities occurring at the airport. The standard pattern for both Runway 1/19 and 7/25 is a traffic pattern which keeps aircraft to the south and west of the airport, when traffic permits, which was the original intent of both noise abatement measures. In addition touch and go and low approach training activities are addressed in Measure NA-14, and will be further addressed in the modified measure for this NCP.



## Appendix G



# Land Use Mitigation Alternatives



# Appendix G Land Use Mitigation Alternatives

This appendix presents the range of the land use mitigation alternatives that were considered in this Part 150 Noise Compatibility Study (Part 150 Study) to mitigate noise impacts of aircraft operations at the Chicago-Rockford International Airport (RFD or Airport). The proposed measures were evaluated for the anticipated benefits and costs associated with its implementation. Each recommended measure was reviewed with the membership of the Advisory Committee (AC). Local planning professionals from the surrounding communities were invited to meet with the project team to discuss the types of measures that were evaluated and recommended. Copies of all of the materials that were sent are located in **Appendix D, Public Involvement**.

Those alternatives that are recommended for inclusion in the RFD 2023 Noise Compatibility Program (NCP) are included in **Chapter 4, Noise Compatibility Program**.

## » G.1 Potential Land Use Controls

Land use controls fall into two categories, preventative and corrective. Preventive land use management techniques seek to prevent the introduction of additional noise-sensitive land uses within existing and future airport noise contours. Corrective or remedial measures are intended to convert existing, non-compatible uses to compatible uses. These potential measures are discussed in **Appendix E, Land Use Methodology** and summarized below:

### Preventative

- Compatible Use Zoning
- Subdivision Regulations
- Building Codes
- Capital Improvement Programs
- Growth Risk Assessment
- Fair Disclosure Policies

### Corrective

- Sound Insulation
- Land Acquisition
- Purchase Guarantee
- Avigation Easements

The following pages provide a description of each land use alternative evaluated, along with an assessment of the benefits, drawbacks, and a recommendation.

## » G.2 Land Use Mitigation Alternatives

This section provides a summary of the analysis of the previously recommended mitigation measures that were included in the revised 2003 NCP and potential new mitigation alternatives that were evaluated as part of this RFD 2023 NCP Update.



### G.2.1 Previously Approved Mitigation Measures

This section provides a review of the nine (9) previously approved land use mitigation measures that were included in the 2003 NCP<sup>1</sup>. Five (5) measures were previously withdrawn from the NCP in the 2003 NCP. The Part 150 NEM Update undertaken in 2013 resulted in no housing units or other noise-sensitive land used located within the 65 DNL noise contours. As a result, no further changes to the NCP were recommended at that time. Provided for each measure is a description, the current status, and the recommendation going forward for this RFD 2023 NCP Update.

#### Measure LU-2

Description: Adopt noise overlay zoning prohibiting development of selected noise-sensitive land uses within the 60-65 DNL noise contour, high occupancy uses in the “double-clear zone” area, and residential uses in the 65+ DNL noise contour of the 2008 NEMs/NCP within the “double-clear zone” are City of Rockford and Winnebago County.

Status: With the publication and FAA Record of Approval (ROA) of the 2003 NCP Update on November 3, 2003, this information was conveyed to the City of Rockford and Winnebago County for implementation at their discretion.

Recommendation: ***Recommended to be continued with modification to include the new 2023/2028 NEMs.***

#### Measure LU-4

Description: Amend local comprehensive plans by adopting the updated Part 150 NCP as their noise compatibility elements for the City of Rockford and Ogle and Winnebago counties.

Status: With the publication and FAA ROA of the 2003 NCP Update on November 3, 2003, this information was conveyed to the City of Rockford and Ogle and Winnebago counties for implementation at their discretion.

Recommendation: ***Recommended to be continued with modification to include the new 2023/2028 NEMs.***

#### Measure LU-5

Description: Adopt guidelines for discretionary review of development projects for the City of Rockford, Winnebago County, Ogle County, and the GRAA.

Status: With the publication and FAA ROA of the 2003 NCP Update on November 3, 2003, this information was conveyed to the City of Rockford, Winnebago County, Ogle County, and the GRAA for implementation at their discretion.

Recommendation: ***Recommended to be continued with modification to include the new 2023/2028 NEMs.***

#### Measure LU-8

Description: Voluntary acquisition of single-family residences on Blackhawk Island in the 2008 NEMs/NCP 65 DNL noise contour.

Status: The implementation of this measure was fully implemented.

Recommendation: ***Recommended to be withdrawn from 2023 NCP.***

<sup>1</sup> FAA Record of Approval issued November 3, 2003.



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### Measure LU-9

Description: Redevelop airport-owned land parcels located along Kishwaukee Street south of Research Parkway.

Status: The implementation of this is measure pending; dependent upon the interest of a potential developer and the availability of funding.

Recommendation: ***Recommended to be continued.***

### Measure LU-11

Description: Acquire development and overflight rights via purchase of land use and avigation easement over undeveloped parcel in Runway 07L approach area on south side of Kishwaukee River.

Status: This measure is currently implemented.

Recommendation: ***Recommended to be withdrawn from 2023 NCP.***

### Measure LU-12

Description: Offer options of voluntary sale to GRAA or sound insulation to owner of one (1) single-family residence south of the airport in the 65 DNL contour of the 1993 NCP.

Status: This measure is currently implemented.

Recommendation: ***Recommended to be withdrawn from 2023 NCP.***

### Measure LU-13

Description: Encourage the City of Rockford and Winnebago County to require plat notes on new subdivision plats and to record the notes on deeds for new subdivisions within the Airport Noise Overlay Zones AC-1 and AC-2.

Status: With the publication and FAA ROA of the 2003 NCP Update on November 3, 2003, this information was conveyed to the City of Rockford and Winnebago County for implementation at their discretion. To date, the airport noise contours are not referenced in any local subdivision ordinance.

Recommendation: ***Recommended to be continued with modification to include the new 2023/2028 NEMs.***

### Measure LU-14

Description: Encourage Winnebago County, the City of Rockford, the Village of New Milford, and the Village of Davis Junction not to allow an increase in the residential density in the Agricultural Priority (AG) or Rural Residential (RR) zoning districts (Winnebago County) in the 2008 NEM/NCP 60+ DNL noise contour.

Status: With the publication and FAA ROA the 2003 NCP Update on November 3, 2003, this information was conveyed to Winnebago County, the City of Rockford, the Village of New Milford, and the Village of Davis Junction for implementation at their discretion. To date, the airport noise contours are not referenced in any local zoning document.

Recommendation: ***Recommended to be continued with modification to include the new 2023/2028 NEMs.***



## G.2.2 Screening of Potential New Mitigation Alternatives

This section summarizes the qualitative screening analysis of modified or potential new noise mitigation measures. Previous noise mitigation measures that were implemented or withdrawn are not included in the screening analysis. Previous noise mitigation measures that are modified are discussed in **Chapter 4, Noise Compatibility Program. Table G-1, Mitigation Alternatives Screening Analysis Summary** presents a summary of the mitigation alternatives screening. The "Evaluation and Recommendation" column provides a brief synopsis of the issues and findings associated with each mitigation alternative and notes whether the mitigation alternative was recommended for further analysis. The mitigation alternatives are presented as either corrective or preventative. Those mitigation alternatives that were determined to warrant further analysis are discussed in greater detail in **Section G.2.3**.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

**TABLE G-1 | MITIGATION ALTERNATIVES SCREENING ANALYSIS SUMMARY**

DESCRIPTION	BENEFITS	DRAWBACKS	EVALUATION AND RECOMMENDATION
<b>CORRECTIVE</b>			
Offer Residential Sound Insulation Program for Single- and Multi-Family Homes within the 65+ DNL Noise Contour and in the defined Block Rounding Areas Outside of the 65 DNL Noise Contour.	Would reduce interior noise levels for the homes impacted within the 65 DNL contour and in the block rounding area outside of the 65 DNL noise contour.	Final eligibility for each property would have to be determined. Final cost would still have to be determined based on participation rates and local costs to implement.	This measure has the ability to provide benefits to the homes impacted by the 65+ DNL noise contour and in the block rounding area outside the 65 DNL noise contour. Therefore, this alternative is <b>RECOMMENDED</b> for further analysis.
Offer Land Acquisition Program	Has the potential to convert owner-occupied residential housing units into compatible uses. Acquired properties could potentially be utilized in future airport development.	Currently there are no noncompatible properties within the 70+ DNL noise contour.	Due to the lack of noncompatible land uses within the 70+ DNL noise contour this alternative is <b>NOT RECOMMENDED</b> for further analysis.
Offer Avigation Easements to Owner-Occupied Single- and Multi-Family Homes within Noise Mitigation Program Areas (NMPA) if Sound Insulation is Declined.	Has the potential to convert owner-occupied residential housing units into compatible uses. Properties would remain as taxable land.	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating. Major issues include that all properties would be offered sound insulation and would have to be eligible. Only owners declining either measure would be offered avigation easement.	This measure has the ability to convert impacted properties to compatible uses. Therefore, this alternative is <b>RECOMMENDED</b> for further analysis.
<b>PREVENTATIVE</b>			
Adopt Improved Building Codes.	This alternative would recommend updating existing building codes to ensure that new residential construction meets current FAA criteria for sound insulation.	This alternative would likely increase the overall cost of residential construction within the 60 DNL noise contour.	This measure will require potential builders of an increased level of construction to reduce noise within residential structures within the 60 DNL noise contours. Therefore, this alternative is <b>RECOMMENDED</b> for further analysis.
Develop a Voluntary Fair Disclosure Program.	Will disclose through regulations on the seller or their representatives at the time of sale that an existing property could be subjected to aircraft noise. Potential buyers will be made aware before they purchase the property that it is in an area that has the probability of receiving noise from aircraft.	Will need to seek cooperation from the City of Rockford and Winnebago County along with the local Rockford realtors to participate.	This measure will notify potential buyers that they may be subjected to aircraft noise within the 60 DNL noise contour. Therefore, this alternative is <b>RECOMMENDED</b> for further analysis.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

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DESCRIPTION	BENEFITS	DRAWBACKS	EVALUATION AND RECOMMENDATION
Re-zoning of parcels within 60+ DNL Contour	This measure would prevent future non-compatible development and land uses within the 60+ DNL contour.	Potential loss of tax-base dependent on future zoning designation. Based on local land use regulations and ordinances, residential and other incompatible land uses are permitted within compatible zoning, such as commercial and industrial zoning.	This measure fails to meet FAA guidance for effectively preventing incompatible land use, due to the local land use guidelines and ordinances. Therefore, this alternative is <b>NOT RECOMMENDED</b> for further analysis.

Source: Landrum & Brown analysis, 2023.



## G.2.3 Analysis of Potential New Mitigation Alternatives

The qualitative analysis described below identified two (2) corrective mitigation alternatives and two (2) preventative mitigation alternatives as recommended for inclusion in the RFD 2023 NCP. The alternative mitigation measures are analyzed in greater detail in the following pages.

The following information is provided for each alternative:

- **Title:** includes a brief descriptive title of the measure.
- **Background and Intent:** includes the intent of the measure as a means to mitigate noise impacts, and the background and setting to which the measure relates where applicable.
- **Benefits:** includes a statement of how the measure would provide land use compatibility benefits.
- **Drawbacks:** identifies any potential negative consequences of implementing the measure.
- **Cost to Implement:** identifies the potential cost to implement each measure.
- **Findings and Recommendations:** provides a recommendation as to whether or not to carry forward the alternative for further analysis and consideration.

In some cases, alternatives had drawbacks that made that alternative unfeasible or they did not provide measurable benefits and therefore no further consideration was warranted. Those alternatives that showed potential benefits were continued for further analysis, including further discussion with parties responsible for implementation (FAA, GRAA, airport users) and presented to the public for input and comment. Alternatives that are recommended for inclusion in this NCP are included in **Chapter 4, Noise Compatibility Program**.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE 1

<b>TITLE:</b>	<b>Offer Residential Sound Insulation Program for Single- and Multi-Family Homes within the 65+ DNL Noise Contour</b>
<b>BACKGROUND AND INTENT:</b>	Approximately 61 single- and multi-family residential units located inside the 65+ DNL of the Future (2028) Noise Compatibility Program Noise Exposure Map (NEM) (shown in <b>Exhibit 4-1</b> ) would be eligible for sound insulation. In addition, 87 additional single- and multi-family units are located in several proposed block rounding areas outside of the 65+ DNL noise contour. If approved, a total of 148 residential units could potentially be eligible for sound insulation. All homes that participate in the sound insulation program would be required to confer an avigation easement to the GRAA in exchange for the improvements.
<b>BENEFITS:</b>	This measure has the potential to convert owner-occupied residential housing units into compatible uses.  AIP funding, if awarded, may be available to offset costs.
<b>DRAWBACKS:</b>	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating and also pending testing to determine final eligibility.
<b>COST TO IMPLEMENT:</b>	Noise attenuation costs for a particular unit may vary extensively depending upon the size, age, condition and construction of the overall building and each individual unit. No extensive work has been done at this point to assess these factors or to develop actual detailed costs. Total cost would depend upon all of these factors and the number of units that choose to participate. In addition, costs are also based on the level of effort provided by the airport staff. Costs to implement included hard costs which is the actual construction at the property and soft costs which can include program management, architectural and engineering support, acoustical testing, construction oversight, community outreach, development of legal documents, grant applications, etc.  After a preliminary review of the housing types and size, a recommended budget of \$50,000 per home is proposed for construction which is similar to other programs in northern climates and similar housing stock. Soft costs can vary from 20% to 30% per property, depending on airport involvement. We recommend budgeting 25% or \$12,500 per property for a total of \$62,500 per property. If all 148 units in the Future (2028) NEM within the 65+ DNL, and in the block rounding area outside the 65 DNL were included in the program, the estimated cost for implementation would be approximately \$9,250,000. This would be considered a maximum cost as it is likely that not all 148 units would participate. Some units may just choose not to participate. Other units would not meet the interior eligibility requirement, and at least two (2) properties are likely to not meet the build date criteria.
<b>FINDINGS AND RECOMMENDATIONS:</b>	This alternative is <b>RECOMMENDED</b> for inclusion in the NCP.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE 2

<b>TITLE:</b>	<b>Offer Avigation Easements to owner-occupied single- and multi-family homes within Noise Mitigation Program Areas (NMPA) if sound insulation is declined.</b>
<b>BACKGROUND AND INTENT:</b>	This measure will offer a cash payment in exchange for the avigation easement in case owners decline acquisition and/or sound insulation. The avigation easement would be placed on the property and would be attached to the deed for all future owners. It ultimately deems the property as compatible land use.
<b>BENEFITS:</b>	This measure has the potential to convert owner-occupied residential housing units into compatible uses.  AIP funding, if awarded, may be available to offset costs.
<b>DRAWBACKS:</b>	The total costs are uncertain pending completion of the feasibility study to determine who is interested in participating.
<b>COST TO IMPLEMENT:</b>	Total costs would be dependent on the number of units that choose to participate and the Fair Market Value (FMV) for each unit, among other expenses.  The cost of the avigation easement is set based on a percentage of the FMV for each unit. The easement almost always does not exceed \$3,000 per unit.  For the single- and multi-family homes the avigation easement cost is estimated at \$444,000. However, that cost is based on all 148 residential units participating as they would have to decline sound insulation.
<b>FINDINGS AND RECOMMENDATIONS:</b>	This alternative is <b>RECOMMENDED</b> for inclusion in the NCP.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE 3

<b>TITLE:</b>	<b>Adopt Improved Building Codes.</b>
<b>BACKGROUND AND INTENT:</b>	Encourage the City of Rockford, Winnebago and Ogle counties to review and update existing building codes to ensure that new residential construction meets current FAA criteria for sound insulation.
<b>BENEFITS:</b>	This measure has the potential to prevent the construction of incompatible structures and to reduce interior noise levels for new development or the remodeling of residential property. It would ensure that materials for doors, windows, and insulation are installed to a certain standard to upgrade noise reduction capabilities in order to meet or exceed FAA's interior sound level reduction standards. By meeting the FAA interior noise reduction standards the property would be considered compatible.
<b>DRAWBACKS:</b>	This measure would likely increase the overall cost of residential construction within the 60+ DNL noise contours.
<b>COST TO IMPLEMENT:</b>	It is expected that there will be a minimal cost of up to \$50,000 associated with this measure. The City of Rockford and Winnebago County should review and update the local building codes and then coordinate with the local jurisdictions for incorporation into local planning documents.
<b>FINDINGS AND RECOMMENDATIONS:</b>	This alternative is <b>RECOMMENDED</b> for inclusion in the NCP.



# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## NOISE COMPATIBILITY PROGRAM - MITIGATION ALTERNATIVE 4

<b>TITLE:</b>	Develop a Voluntary Fair Disclosure Program.
<b>BACKGROUND AND INTENT:</b>	Will disclose through voluntary regulations on the seller or their representatives at the time of sale that an existing property could be subjected to aircraft noise. Notification for plats of buildable lots in a new subdivision were covered in the previous NCP in LU-13.
<b>BENEFITS:</b>	Potential buyers will be notified before they purchase that their property has the potential to be exposed to aircraft noise.
<b>DRAWBACKS:</b>	This measure will need to seek the cooperation of local realtors as well as the City of Rockford and Winnebago County. Local realtors may not actively support this measure, as it could reduce potential property sales close to the airport.
<b>COST TO IMPLEMENT:</b>	It is expected that there will be a minimal cost of up to \$50,000 associated with this measure. The local realtors and the City of Rockford and Winnebago County would need to work together to develop the final language for the disclosure program. All jurisdictions would then incorporate into local planning documents.
<b>FINDINGS AND RECOMMENDATIONS:</b>	This alternative is <b>RECOMMENDED</b> for inclusion in the NCP.

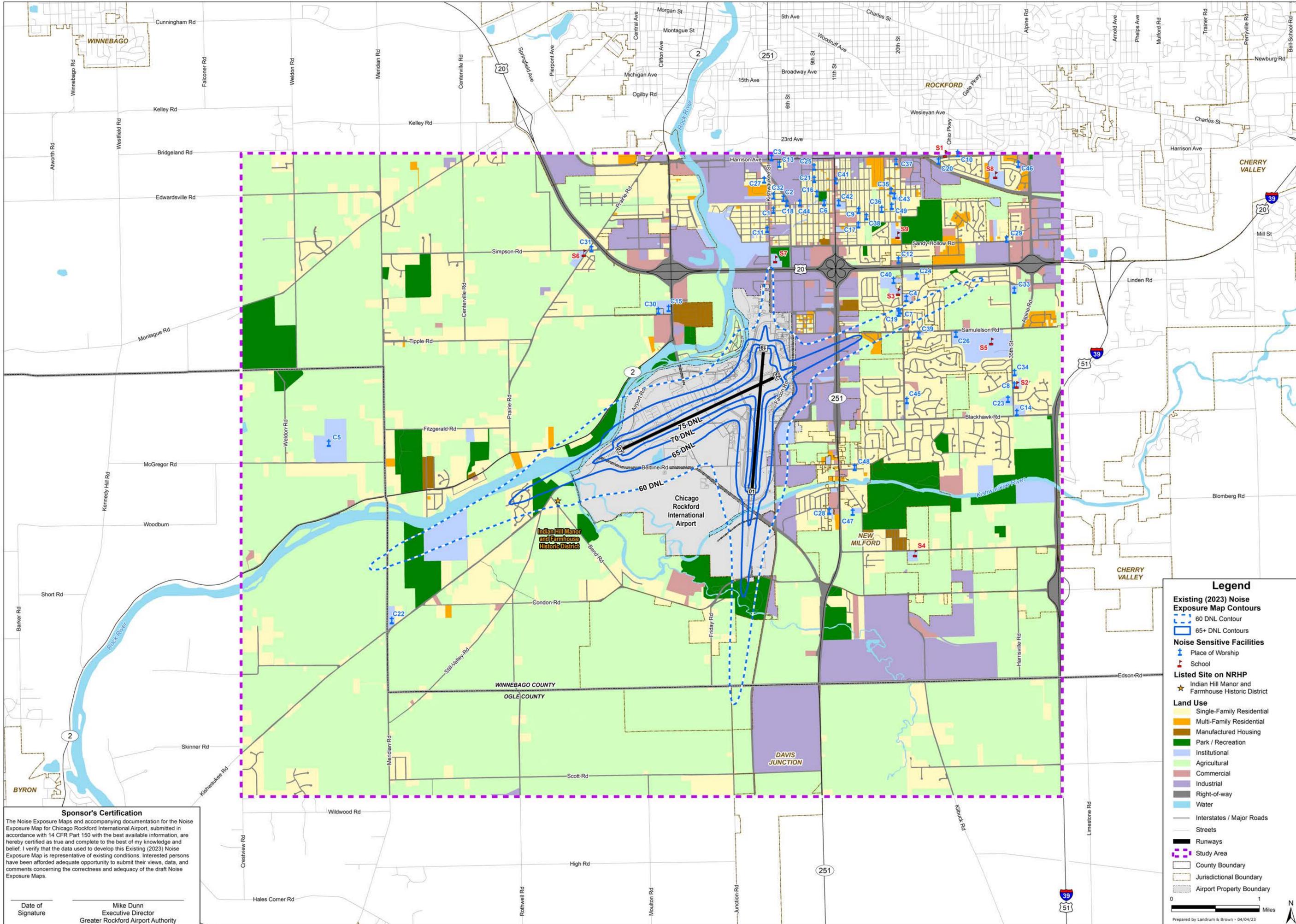


# 14 CFR PART 150 NOISE COMPATIBILITY STUDY UPDATE

Greater Rockford Airport Authority

## Noise Compatibility Program - Mitigation Alternative 5

<b>TITLE:</b>	<b>Re-zoning of parcels within 60+ DNL Contour</b>
<b>BACKGROUND AND INTENT:</b>	Approximately 200 undeveloped parcels or parcels with existing compatible land use and non-compatible zoning have been identified within the Future (2028) NEM 60+ DNL contour. Approximately 188 of these properties are located on Black Hawk Island, 13 of those properties are located within the 65+ DNL noise contour.
<b>BENEFITS:</b>	This measure could prevent future non-compatible development and land uses within the 60+ DNL contour.
<b>DRAWBACKS:</b>	Potential loss of tax-base dependent on future zoning designation. Based on local zoning regulations and ordinances, even if a parcel is reclassified as compatible land use, through special use permits, the parcel could be used for incompatible purposes still. For example, even if a parcel is zoned as commercial based on local ordinances the parcel could still be used for residential purposes.
<b>COST TO IMPLEMENT:</b>	It is expected that there will be a minimal cost of up to \$50,000 associated with this measure. The City of Rockford, Division of Community and Economic Development, Winnebago and Ogle County Planning and Zoning would need to review and approve recommended zoning designations. Cost would be incurred based on level of required participation of GRAA with each jurisdiction.
<b>FINDINGS AND RECOMMENDATIONS:</b>	This measure fails to meet FAA guidance for effectively preventing incompatible land use, due to the local land use guidelines and ordinances. Therefore, this alternative is <b>NOT RECOMMENDED</b> for inclusion in the NCP.



**Sponsor's Certification**  
 The Noise Exposure Maps and accompanying documentation for the Noise Exposure Map for Chicago Rockford International Airport, submitted in accordance with 14 CFR Part 150 with the best available information, are hereby certified as true and complete to the best of my knowledge and belief. I verify that the data used to develop this Existing (2023) Noise Exposure Map is representative of existing conditions. Interested persons have been afforded adequate opportunity to submit their views, data, and comments concerning the correctness and adequacy of the draft Noise Exposure Maps.

Date of Signature: \_\_\_\_\_  
 Mike Dunn  
 Executive Director  
 Greater Rockford Airport Authority

**Legend**

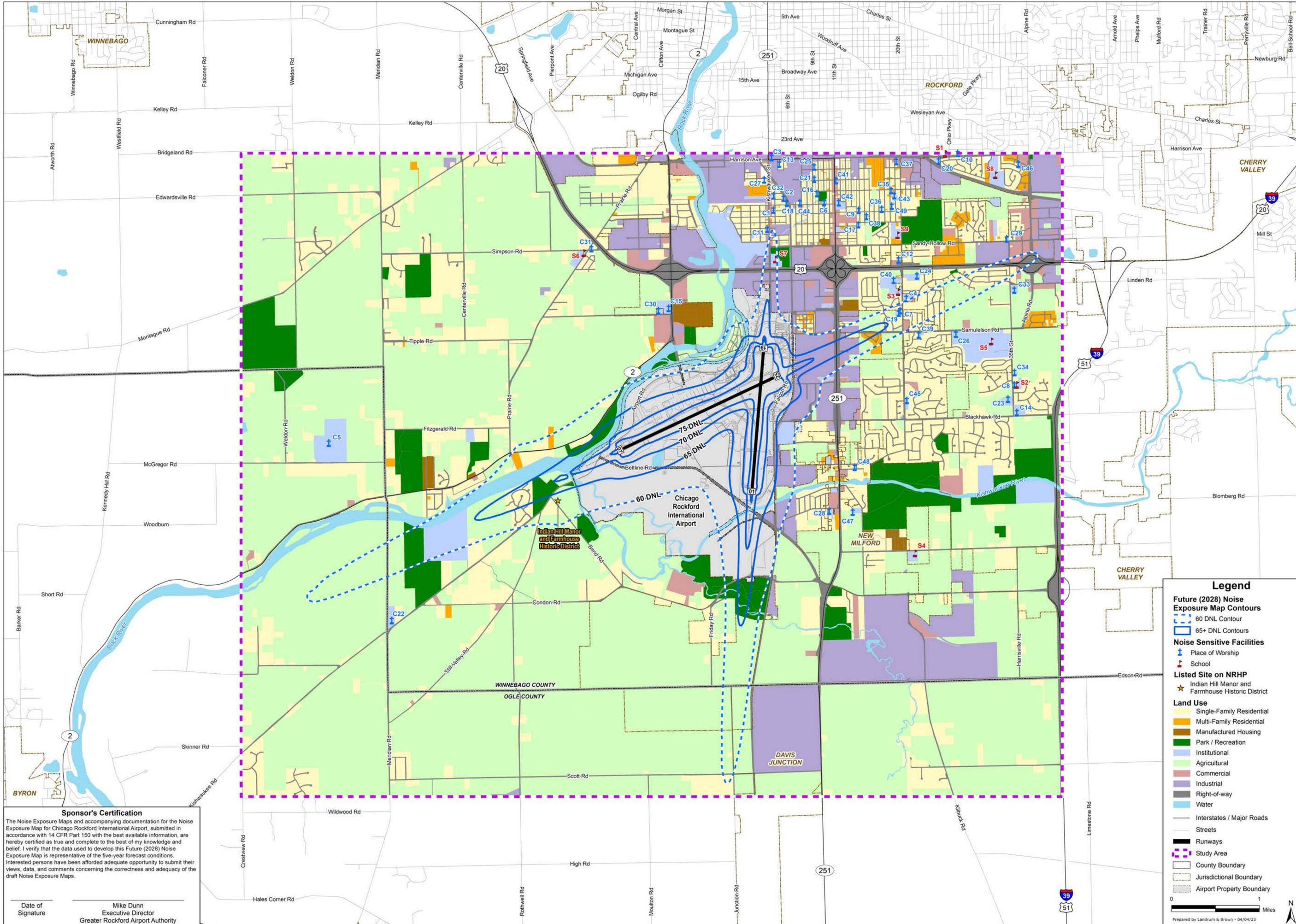
- Existing (2023) Noise Exposure Map Contours
  - 60 DNL Contour
  - 65+ DNL Contours
- Noise Sensitive Facilities
  - Place of Worship
  - School
- Listed Site on NRHP
  - Indian Hill Manor and Farmhouse Historic District
- Land Use
  - Single-Family Residential
  - Multi-Family Residential
  - Manufactured Housing
  - Park / Recreation
  - Agricultural
  - Commercial
  - Industrial
  - Right-of-way
  - Water
  - Interstates / Major Roads
  - Streets
  - Runways
- Study Area
- County Boundary
- Jurisdictional Boundary
- Airport Property Boundary

0 1 Miles  
 Prepared by Landrum & Brown - 04/04/23



**Existing (2023) Noise Exposure Map**

Filename: Y:\RFD\2021 Part 150 Update\E-LB Work\2-GIS\MXD\Exhibits\2021 P150 Protocol Document\Draft\Plots\Existing\_2023\_NEM.mxd



### Legend

**Future (2028) Noise Exposure Map Contours**

- 60 DNL Contour
- 65+ DNL Contours

**Noise Sensitive Facilities**

- Place of Worship
- School

**Listed Site on NRHP**

- Indian Hill Manor and Farmhouse Historic District

**Land Use**

- Single-Family Residential
- Multi-Family Residential
- Manufactured Housing
- Park / Recreation
- Agricultural
- Commercial
- Industrial
- Right-of-way
- Water
- Interstates / Major Roads
- Streets
- Runways
- Study Area
- County Boundary
- Jurisdictional Boundary
- Airport Property Boundary

0 1 Miles

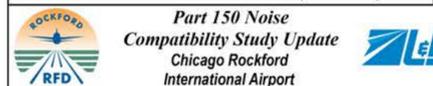
Prepared by Landrum & Brown - 04/04/23

**Sponsor's Certification**

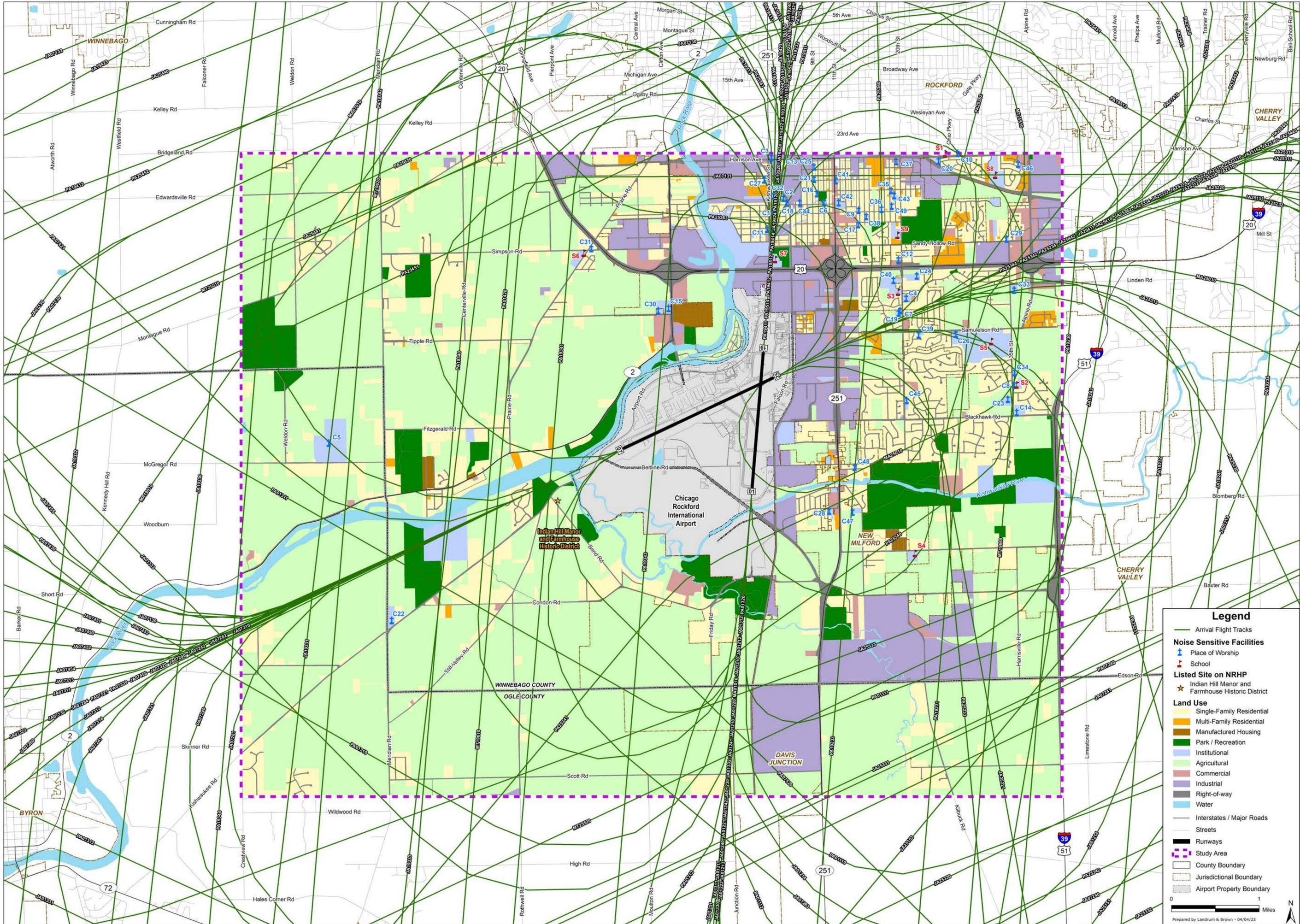
The Noise Exposure Maps and accompanying documentation for the Noise Exposure Map for Chicago Rockford International Airport, submitted in accordance with 14 CFR Part 150 with the best available information, are hereby certified as true and complete to the best of my knowledge and belief. I verify that the data used to develop this Future (2028) Noise Exposure Map is representative of the five-year forecast conditions. Interested persons have been afforded adequate opportunity to submit their views, data, and comments concerning the correctness and adequacy of the draft Noise Exposure Maps.

Date of Signature \_\_\_\_\_

Mike Dunn  
Executive Director  
Greater Rockford Airport Authority



## Future (2028) Noise Exposure Map



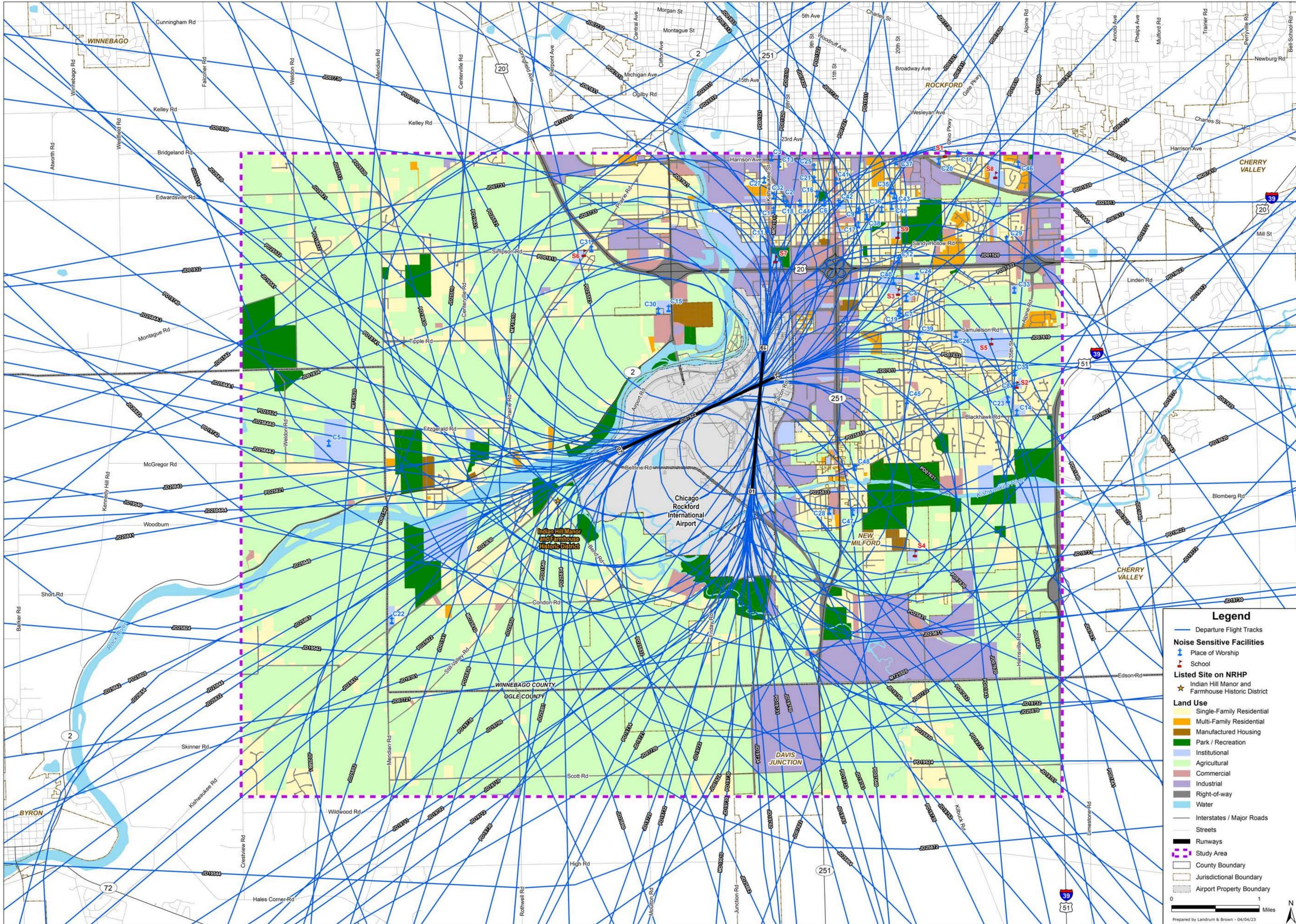
**Legend**

- Arrival Flight Tracks
- Noise Sensitive Facilities**
  - Place of Worship
  - School
- Listed Site on NRHP**
  - Indian Hill Manor and Farmhouse Historic District
- Land Use**
  - Single-Family Residential
  - Multi-Family Residential
  - Manufactured Housing
  - Park / Recreation
  - Institutional
  - Agricultural
  - Commercial
  - Industrial
  - Right-of-way
  - Water
- Interstates / Major Roads
- Streets
- Runways
- Study Area
- County Boundary
- Jurisdictional Boundary
- Airport Property Boundary

0 1 Miles

Prepared by Landrum & Brown - 04/04/23

**Arrival Flight Tracks**



**Legend**

- Departure Flight Tracks
- Noise Sensitive Facilities**
  - Place of Worship
  - School
- Listed Site on NRHP**
  - Indian Hill Manor and Farmhouse Historic District
- Land Use**
  - Single-Family Residential
  - Multi-Family Residential
  - Manufactured Housing
  - Park / Recreation
  - Institutional
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0 1 Miles

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**Departure Flight Tracks**