

14 CFR Part 150 Noise Compatibility Study Update



Advisory Committee Meeting | December 2021



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

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

- Part 150 Background Information
- Existing (2020) Noise Contours & Input Data
- Future (2027) Noise Contours & Input Data
- Incompatible Land Uses

Winter 2021

MEETING #2

- Noise Abatement Recommendations
- Land Use Mitigation Recommendations
- Program Management Recommendations

Spring 2022

MEETING #3

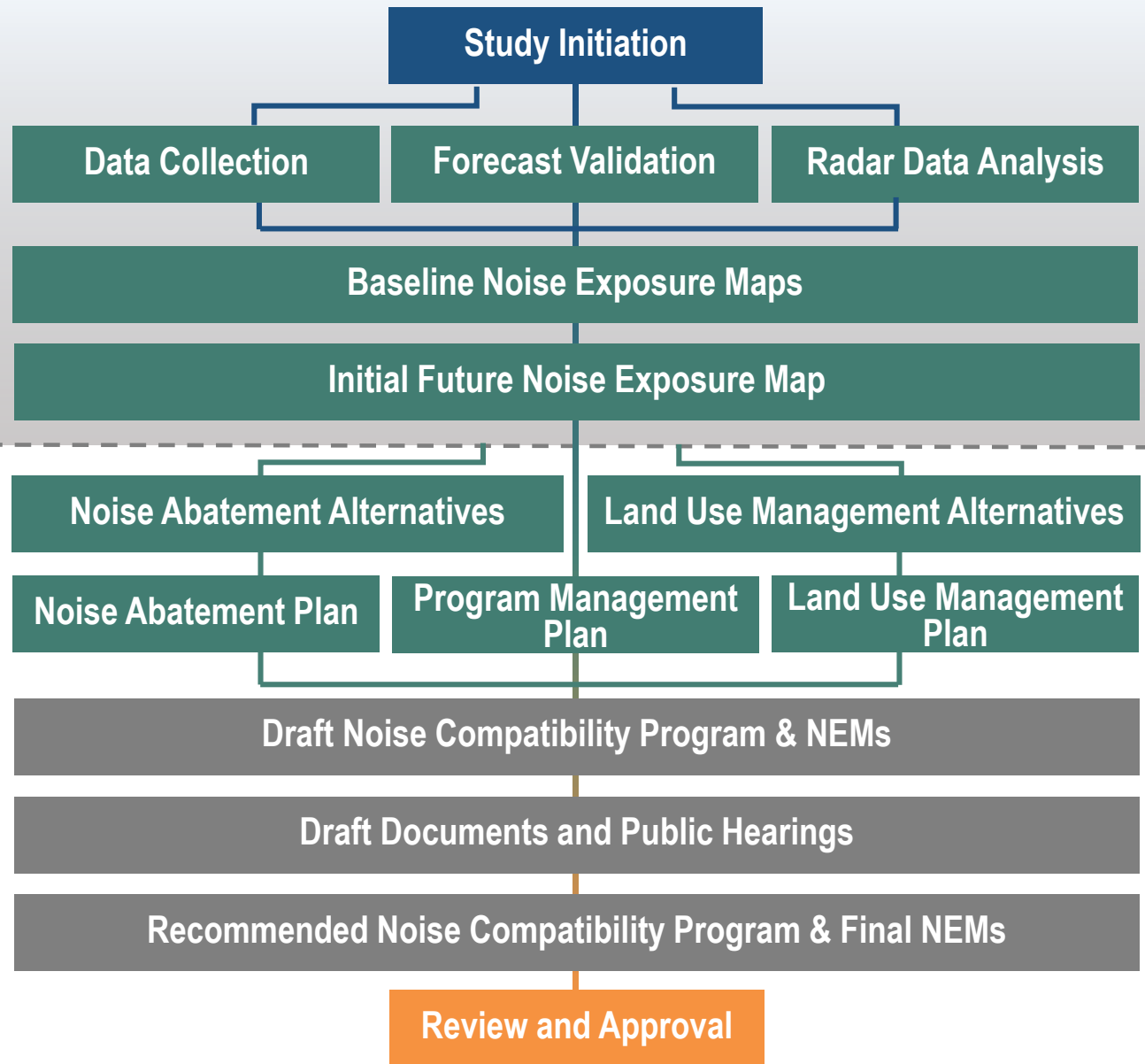
- Final Noise Compatibility Program (NCP) Measures
- Draft Document

Summer 2022

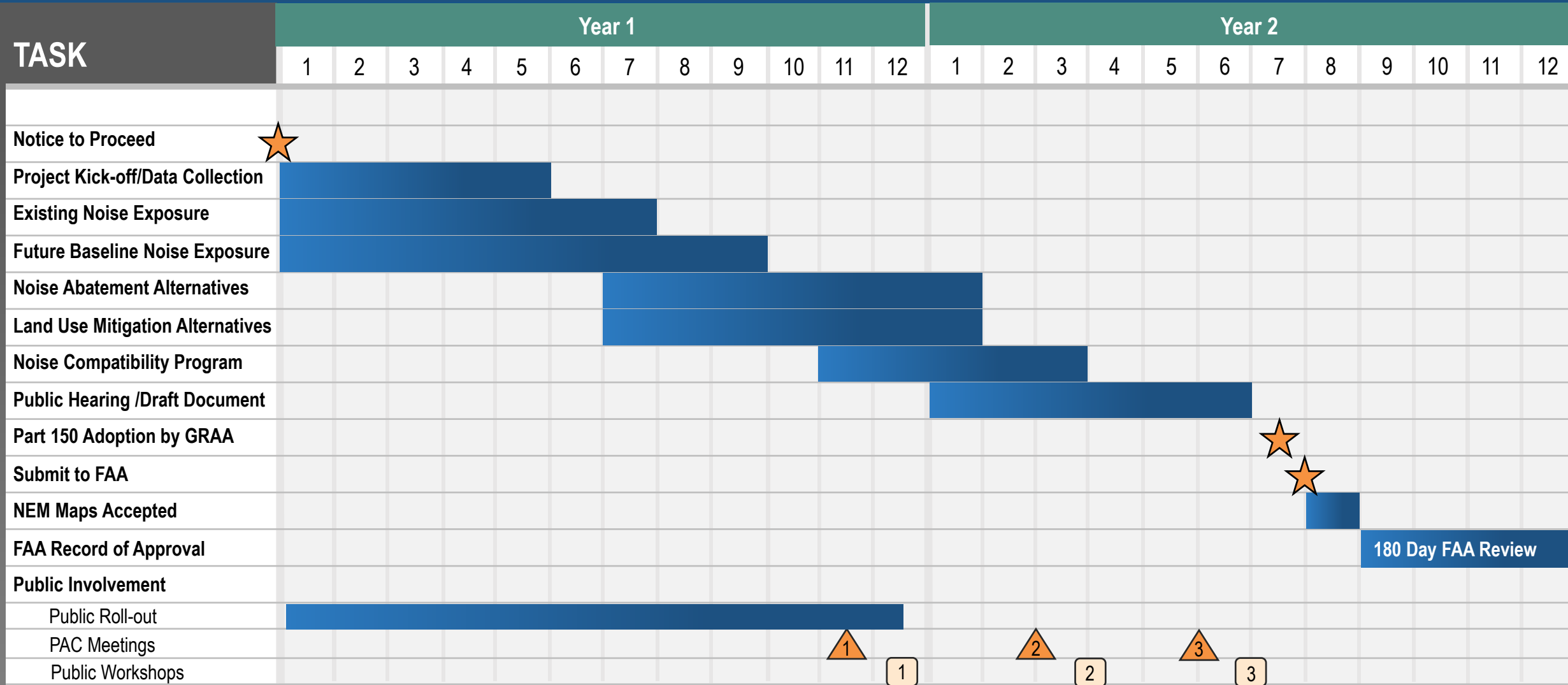
Part 150 Study Overview



WE ARE HERE



Part 150 Study Overview

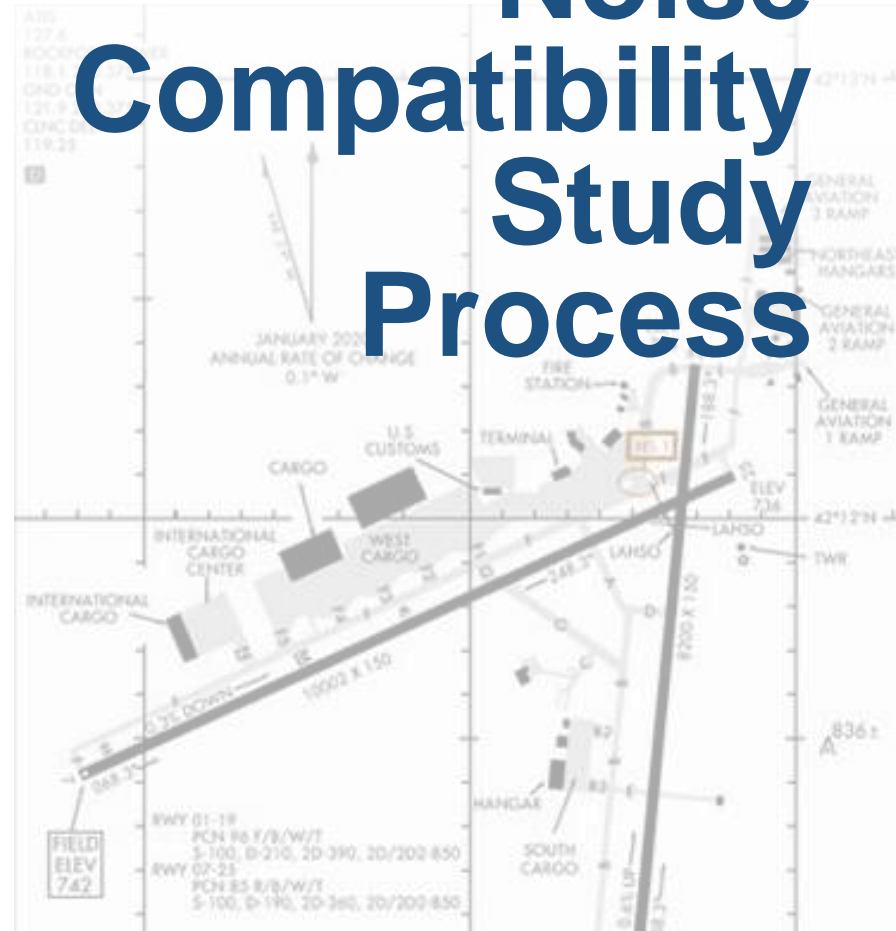


Part 150 Noise Compatibility Study Process



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



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

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



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 161 Study. (To date no Part 161 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.



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



AEDT Input Data



U.S. Department of Transportation
Federal Aviation Administration

Aviation Environmental Design Tool (AEDT)



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


- Aircraft Database (over 5000 aircraft)
- Aircraft Performance Data
- Aircraft Noise Data

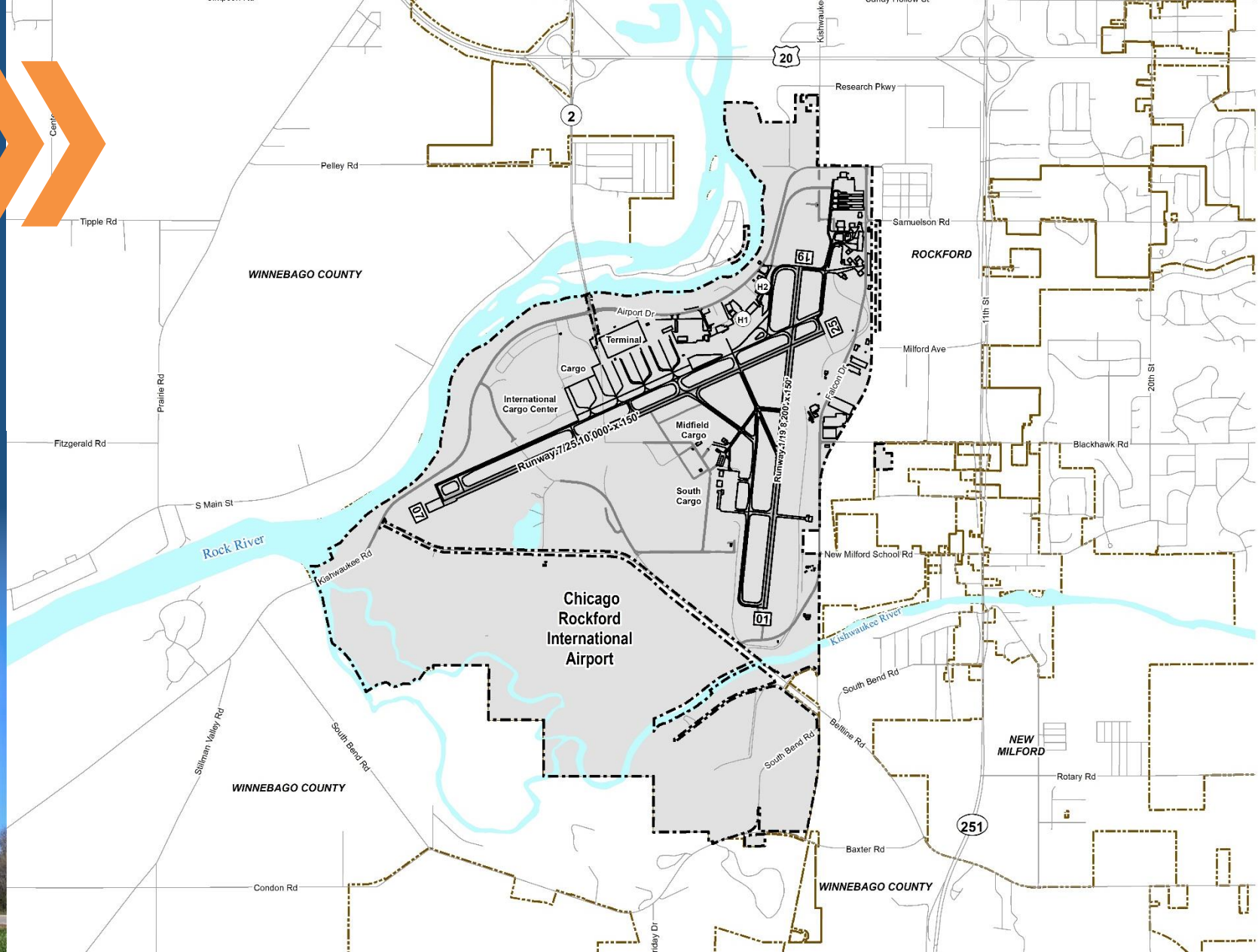
Noise Contours

Tabular Reports

Grid Point Analysis

Airport Layout

-  Jurisdictional Boundary
-  Airport Property Boundary



Data Collection



Overview

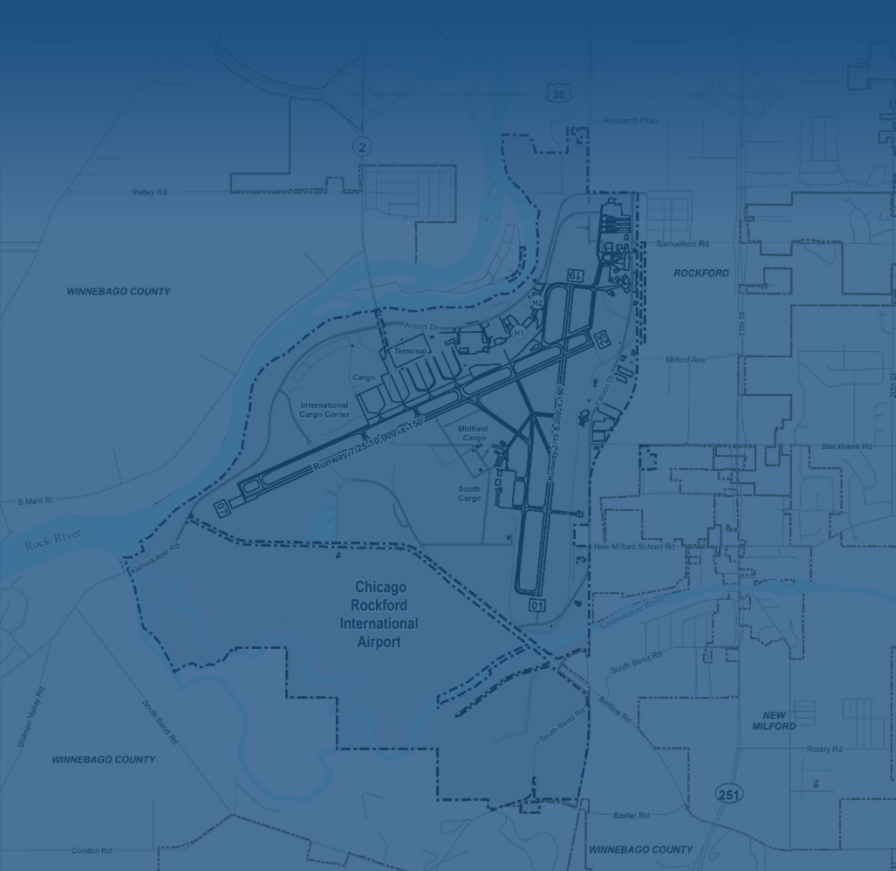
- **Existing (2020) Baseline condition input data based on most recent 12 months of data from:**
 - FAA's Traffic Flow Management System (TFMS) data
 - FAA's Operational Network (OPSNET)
 - Radar track data received from the FAA's National Offload Program (NOP)
- **Existing (2020) Baseline condition cargo operations primarily consist of:**
 - Boeing 767-200 Series Freighter (767CF6) 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
 - Time of Day
 - Runway Utilization
 - Stage length
 - Forecast Working Paper Sensitivity Analysis, 2021
 - Annual Operations
 - Fleet Mix
- **Future (2027) Baseline condition cargo operations primarily consist of:**
 - Boeing 767-300 ER Freighter (7673ER) 43%
 - Boeing 757-200 Series Freighter (757PW / 757RR) 23%
 - Airbus A300B4-600 Series (A300-622R) 25%



Data Collection



Existing (2020) Baseline Condition Aircraft Operations

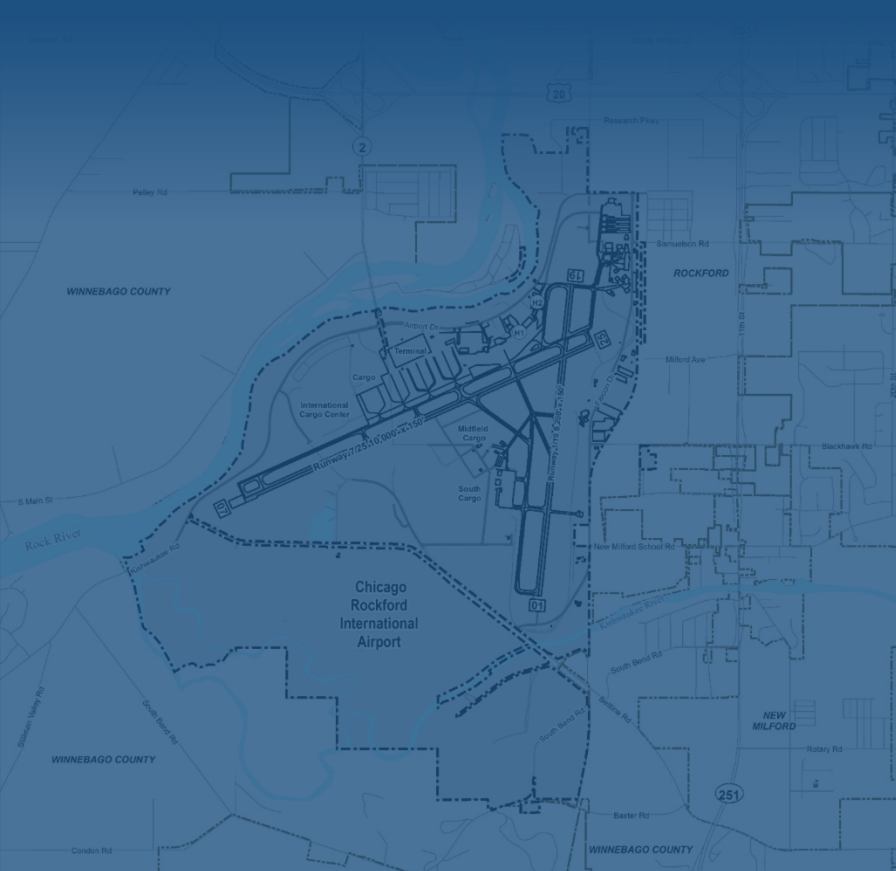


Aircraft Type	2020 Annual Operations	2020 Average Annual Day			Percent of Total
		Day	Night	Total	
Cargo Aircraft	17,494.8	18.4	29.5	47.9	40.9%
Commercial Aircraft	4,885.2	10.1	3.3	13.4	11.4%
General Aviation Jets	2,006.0	5.2	0.3	5.5	4.7%
General Aviation Props	17,286.9	46.2	1.2	47.4	40.4%
General Aviation 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



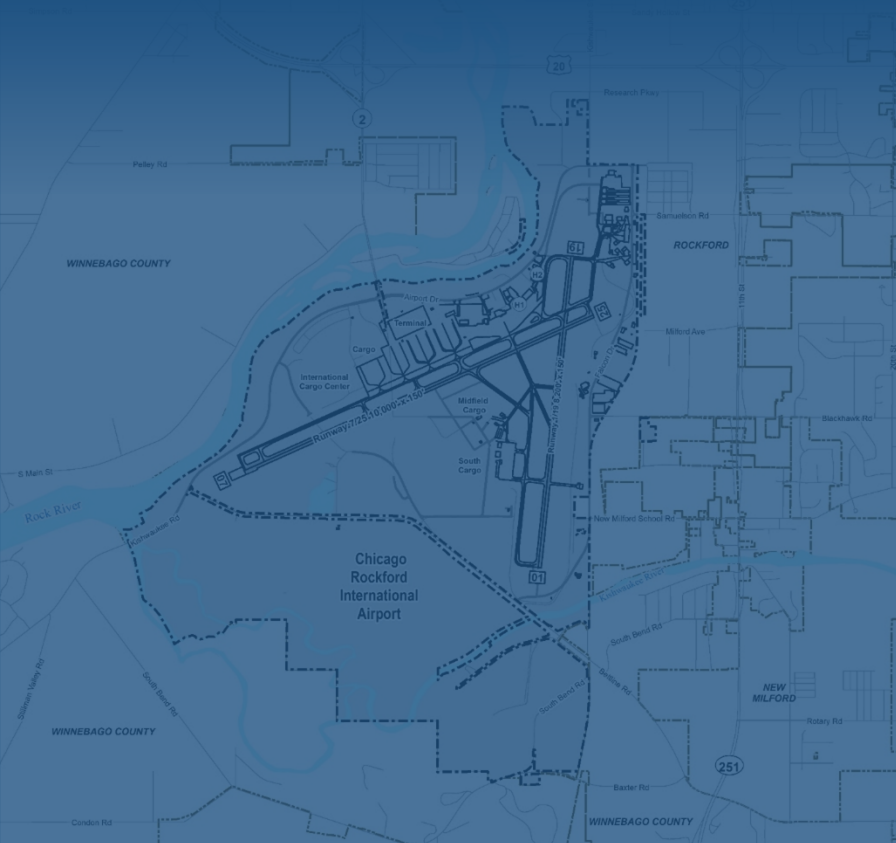
Future (2027) Baseline Condition Forecasted Aircraft Operations



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%
Grand Total	62,342.4	119.0	51.8	170.8	100.0%

Data Collection

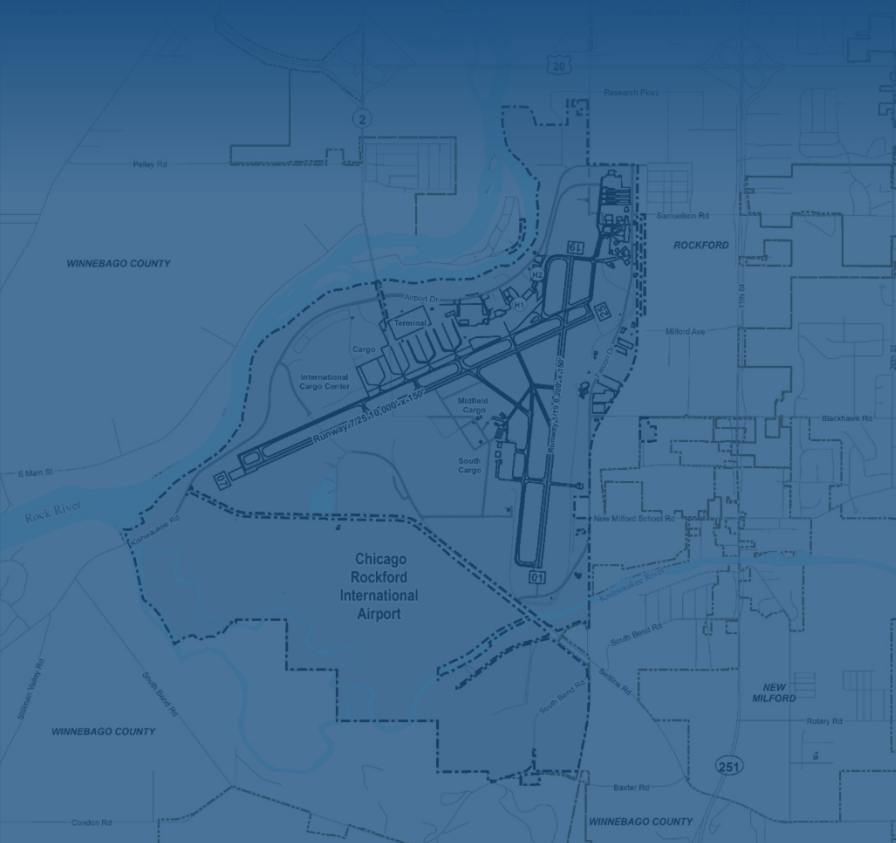
Existing (2020) & Future (2027) Baseline Condition Arrival Runway Utilization



Aircraft Category	Runway End						Total
	01	07	19	25	H1	H2	
Daytime Arrivals							
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%
Nighttime Arrivals							
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%	26.9%	15.4%	46.2%	--	--	100.0%
General Aviation Helicopter	--	--	--	--	--	100.0%	100.0%
Military Aircraft	--	--	--	--	--	--	--
Military Helicopter	--	--	--	--	--	--	--

Data Collection

Existing (2020) & Future (2027) Baseline Condition Departure Runway Utilization



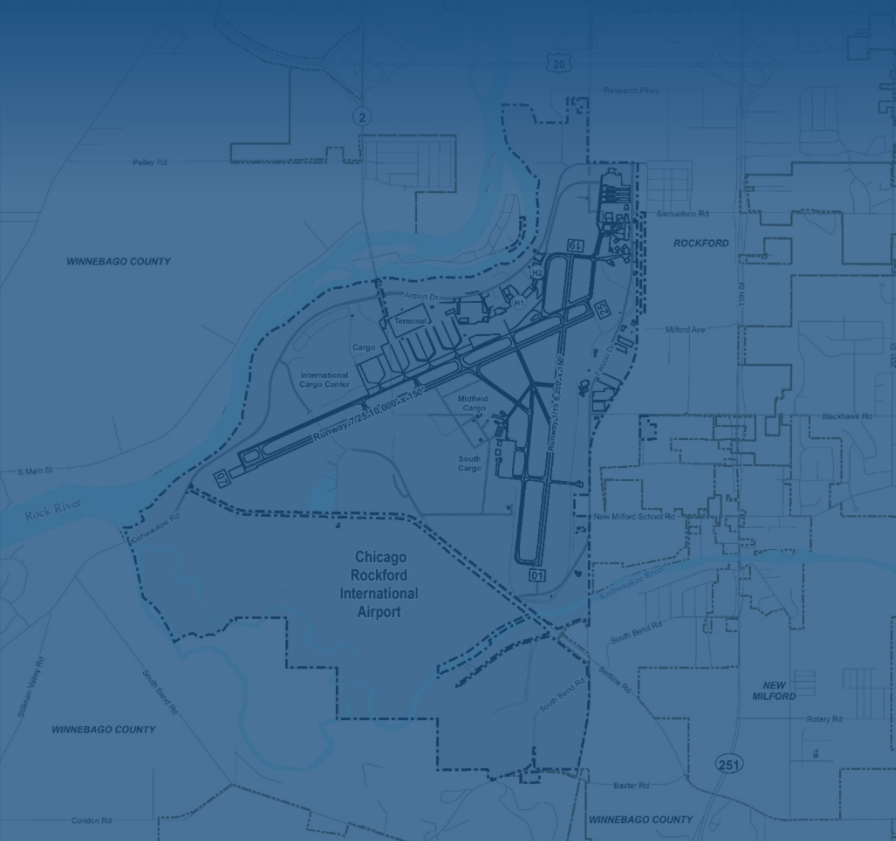
Aircraft Category	Runway End						Total
	01	07	19	25	H1	H2	
Daytime Departures							
Cargo Jets	6.7%	21.8%	16.9%	54.7%	--	--	100.0%
Commercial Jets	12.9%	23.6%	23.0%	40.5%	--	--	100.0%
General Aviation Jets	14.5%	17.9%	24.9%	42.8%	--	--	100.0%
General Aviation Props	18.2%	16.1%	27.8%	37.9%	--	--	100.0%
General Aviation Helicopter	--	--	--	--	--	100.0%	100.0%
Military Aircraft	11.8% (6.7%)	11.8% (6.7%)	31.7% (38.6%)	44.6% (47.9%)	--	--	100.0%
Military Helicopter	--	--	--	--	100.0%	--	100.0%
Nighttime Departures							
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



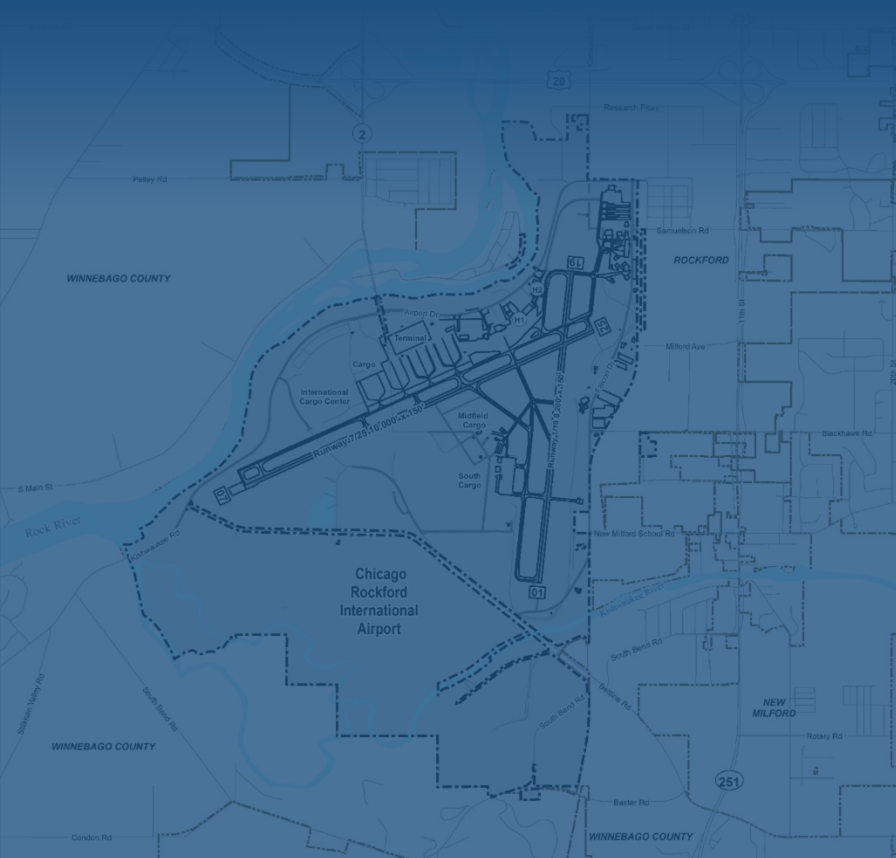
Data Collection



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

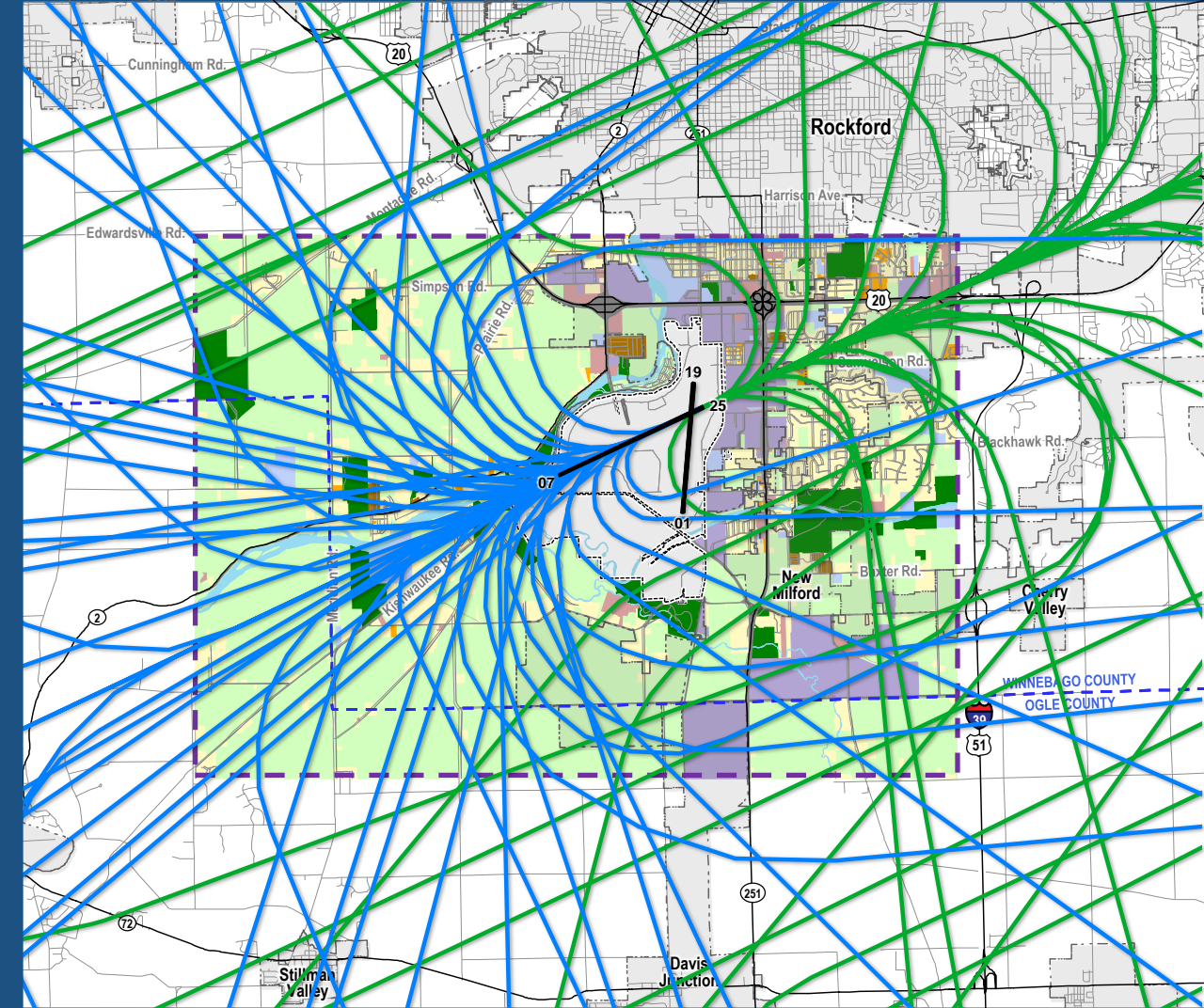
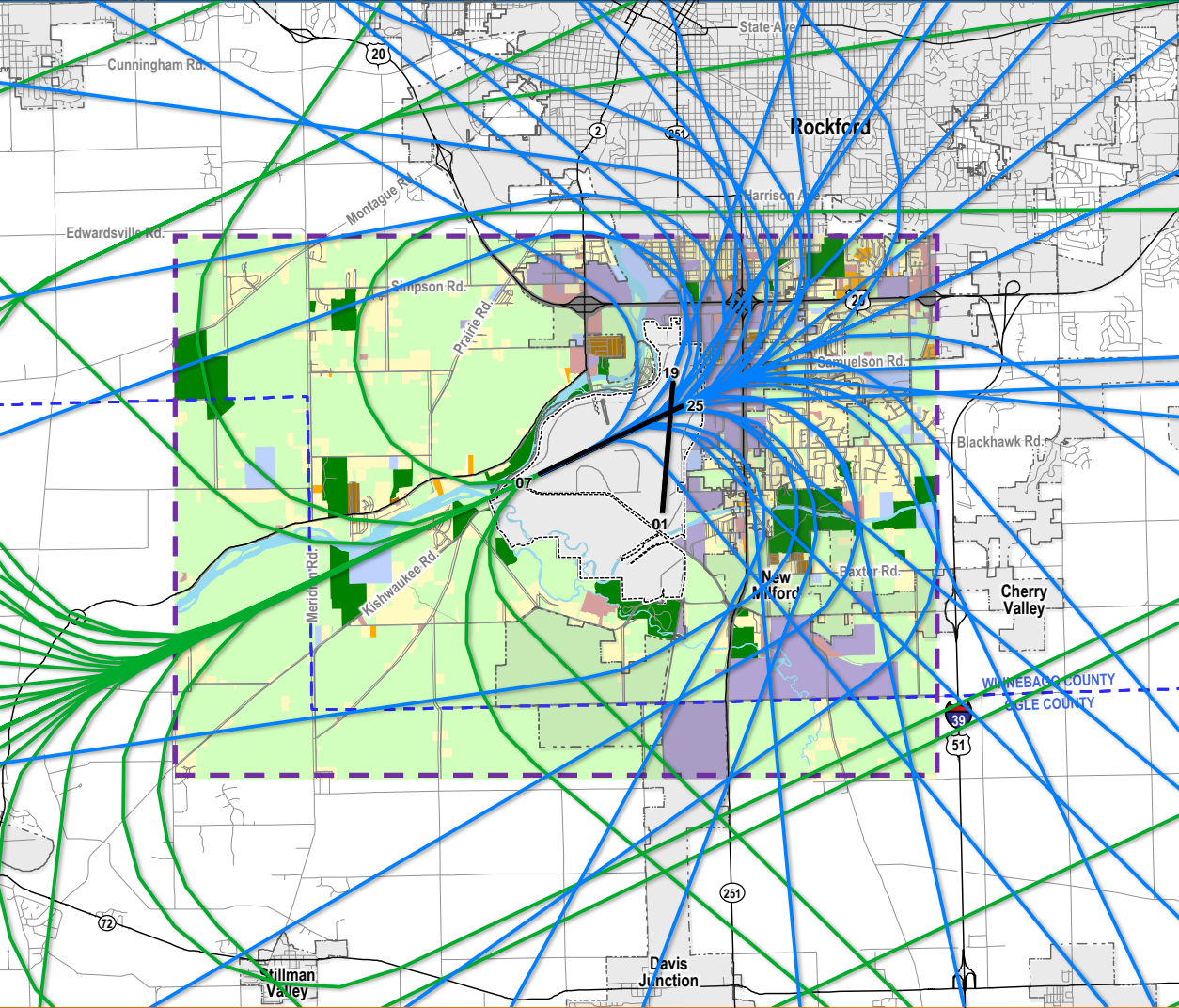
Stage Length	Distance (nautical miles)	Typical Destinations
1	0 – 500	SDF, MSP, MCI
2	501 – 1,000	DFW, BWI, DEN
3	1,001 – 1,500	ONT, MIA, SEA
4	1,501 – 2,500	OAK, ANC
5	2,501 – 3,500	International
6	3,501 – 4,500	International
7	4,501 – 5,500	International



Aircraft Category	Stage Length							Total
	1	2	3	4	5	6	7	
Daytime Departures								
Cargo Jets	26.5%	15.9%	56.3%	0.7%	--	0.6%	0.0%	100.0%
Commercial Jets	2.9%	76.6%	19.1%	1.4%	--	0.1%	--	100.0%
General Aviation Jets	99.2%	0.8%	--	--	--	--	--	100.0%
Nighttime Departures								
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%

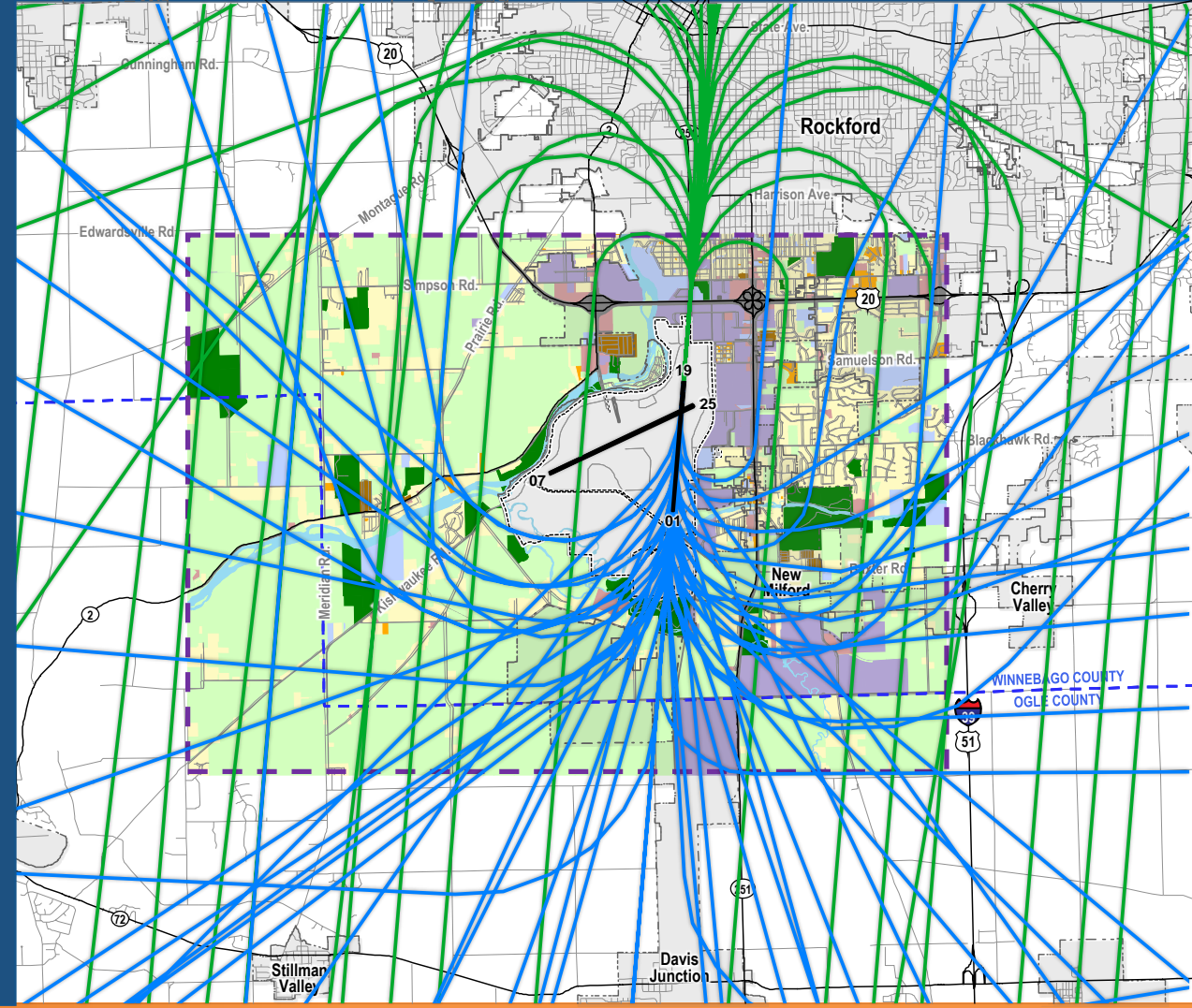
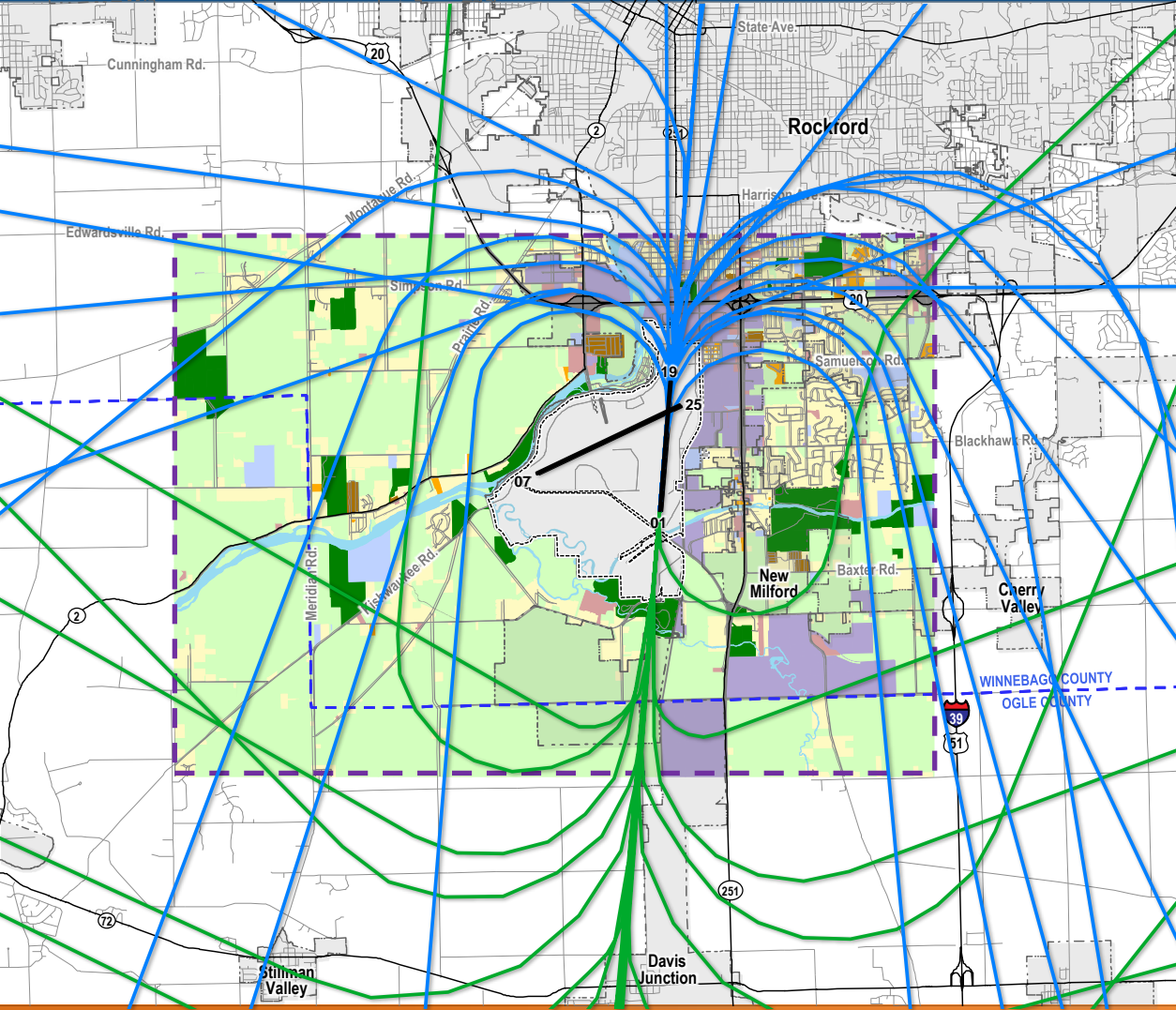
Data Collection Flight Tracks Runway 07/25

- Arrival Track
- Departure Track
- Single-Family Residential
- Multi-Family Residential
- Manufactured Housing
- Park / Recreation
- Institutional
- Water
- Agricultural / Open Space / Vacant
- Commercial
- Industrial
- ROW/Utility
- Arterial Roads
- Interstate/Major Roads
- Airport Property Boundary
- Study Area
- County Boundaries
- Municipal Boundaries





















Data Collection Flight Tracks Runway 01/19

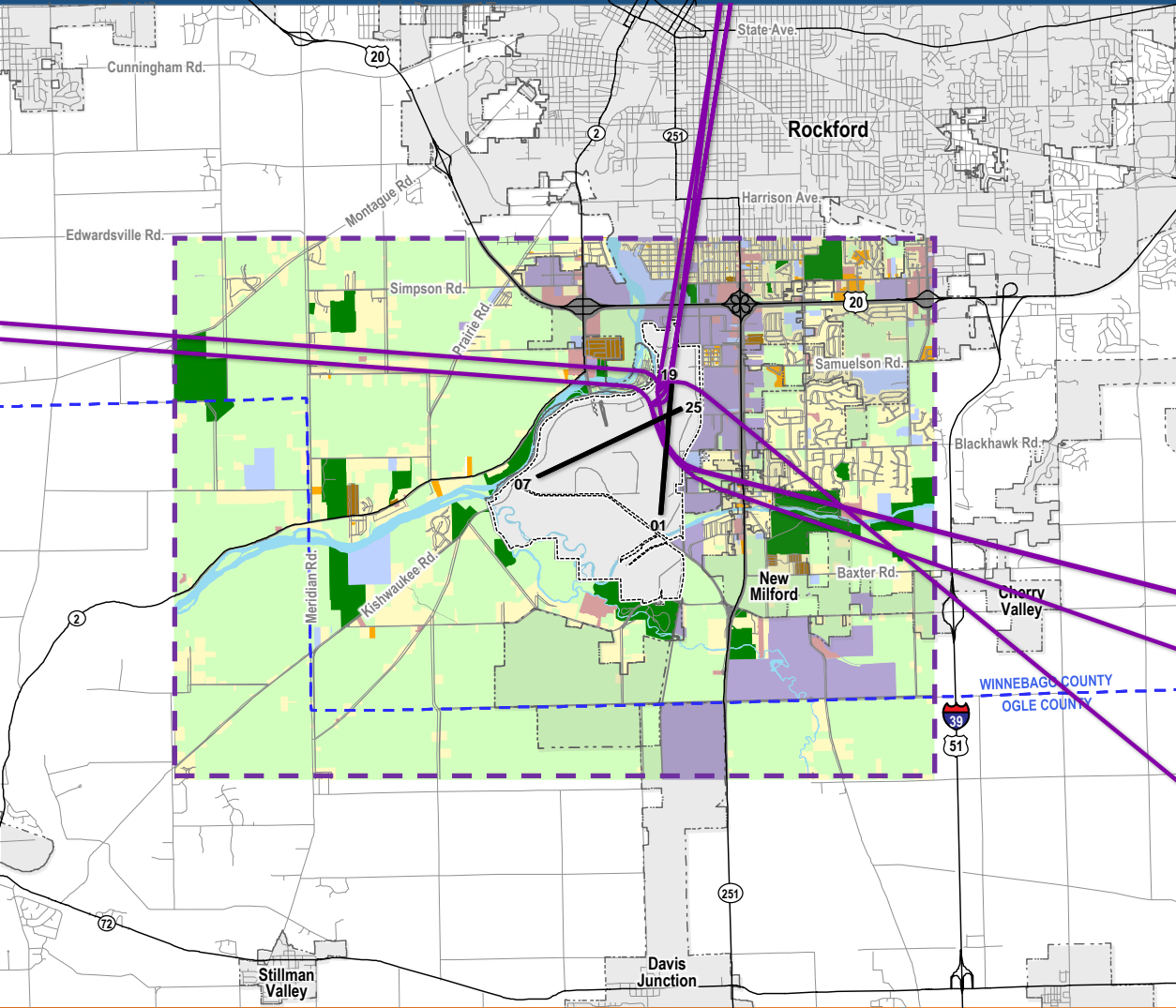
- | | |
|--|---|
|  Arrival Track |  Commercial |
|  Departure Track |  Industrial |
|  Single-Family Residential |  ROW/Utility |
|  Multi-Family Residential |  Arterial Roads |
|  Manufactured Housing |  Interstate/Major Roads |
|  Park / Recreation |  Airport Property Boundary |
|  Institutional |  Study Area |
|  Water |  County Boundaries |
|  Agricultural / Open Space / Vacant |  Municipal Boundaries |



Data Collection

Flight Tracks Helicopter & Touch-and-Go

-  Helicopter Flight Track
-  Touch-and-Go Flight Track
-  Single-Family Residential
-  Multi-Family Residential
-  Manufactured Housing
-  Park / Recreation
-  Institutional
-  Water
-  Agricultural / Open Space / Vacant
-  Commercial
-  Industrial
-  ROW/Utility
-  Arterial Roads
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Noise Exposure Contours



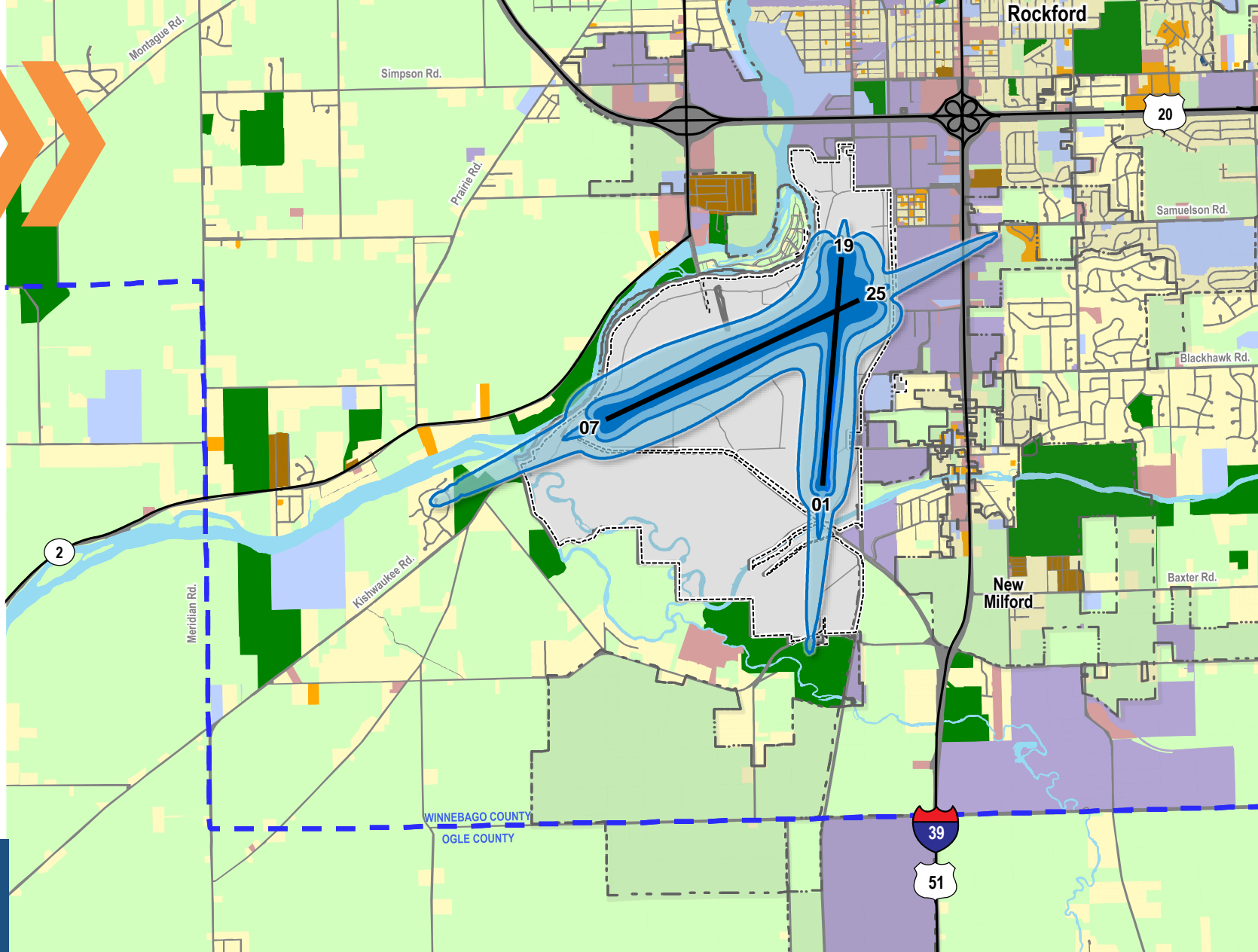
Technical Requirements





- 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



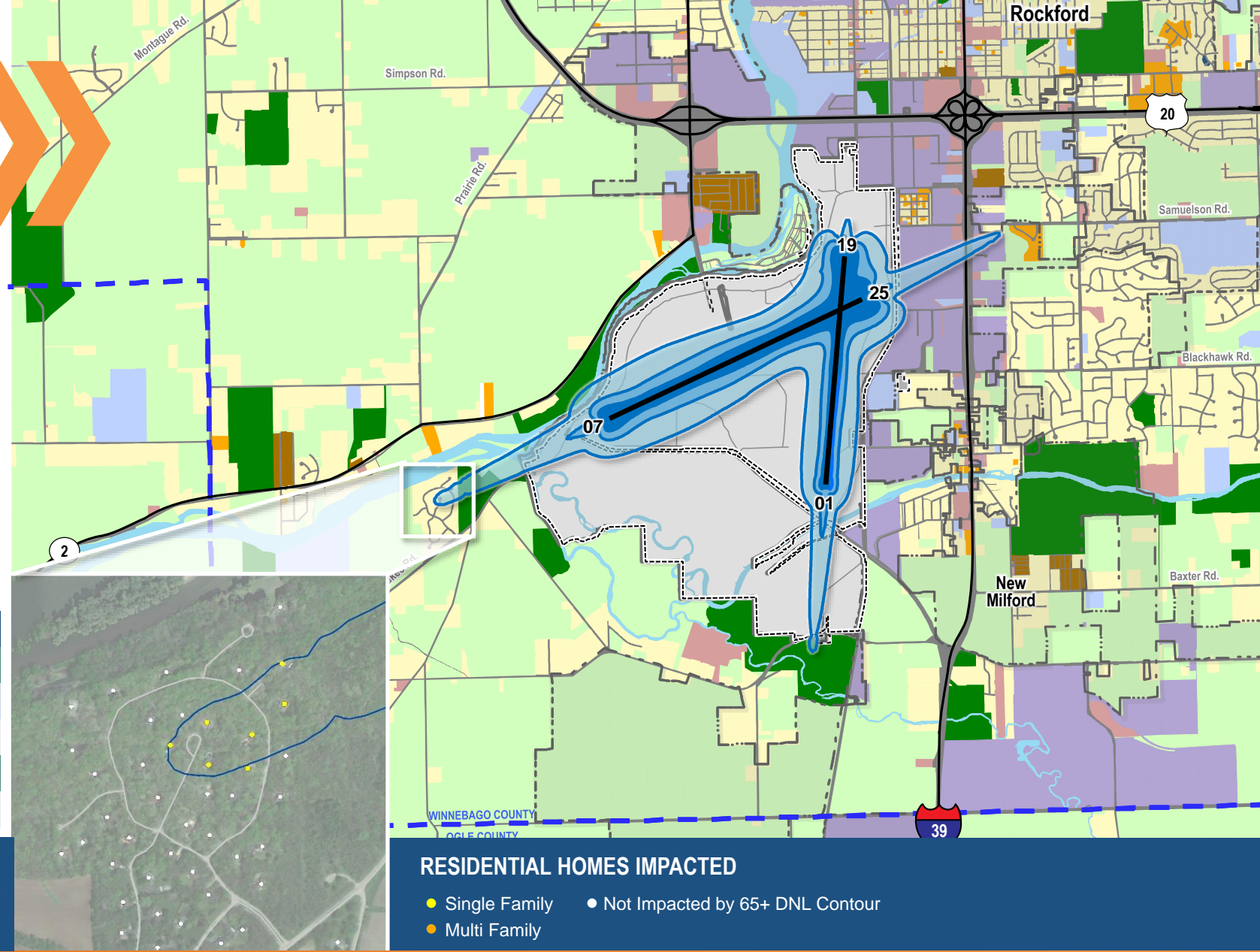
	65 - 70 DNL	752.9 Acres
	70 - 75 DNL	297.8 Acres
	75+ DNL	251.3 Acres
	65+ DNL	1,302.0 Acres

 Single-Family Residential	 Water	 Arterial Roads
 Multi-Family Residential	 Agricultural / Open Space / Vacant	 Interstate/Major Roads
 Manufactured Housing	 Commercial	 Airport Property Boundary
 Park / Recreation	 Industrial	 County Boundaries
 Institutional	 ROW/Utility	 Municipal Boundaries



Noise Exposure Contours

Existing (2020) Condition Land Use Incompatibilities



RESIDENTIAL IMPACTS				
	75+ DNL	70-75 DNL	65-70 DNL	65+ DNL
Single Family Units	0	0	7	7
Multi-Family Units	0	0	0	0
Total Housing Units	0	0	7	7
Estimated Population	0	0	18	18

Single-Family Residential	Water	Arterial Roads
Multi-Family Residential	Agricultural / Open Space / Vacant	Interstate/Major Roads
Manufactured Housing	Commercial	Airport Property Boundary
Park / Recreation	Industrial	County Boundaries
Institutional	ROW/Utility	Municipal Boundaries

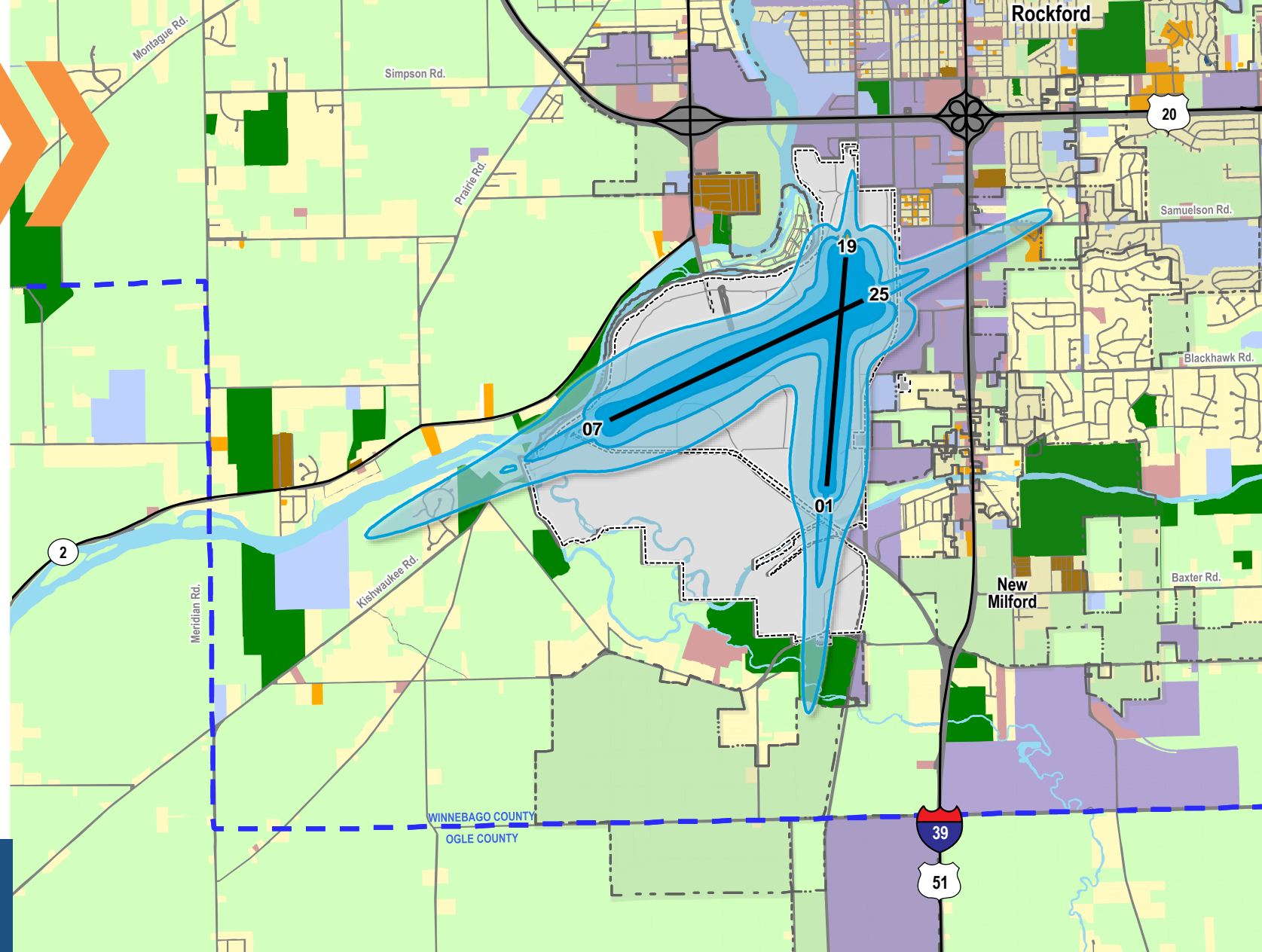
RESIDENTIAL HOMES IMPACTED




- Single Family
- Multi Family
- Not Impacted by 65+ DNL Contour






Noise Exposure Contours

Existing (2027) Condition Land Use Incompatibilities



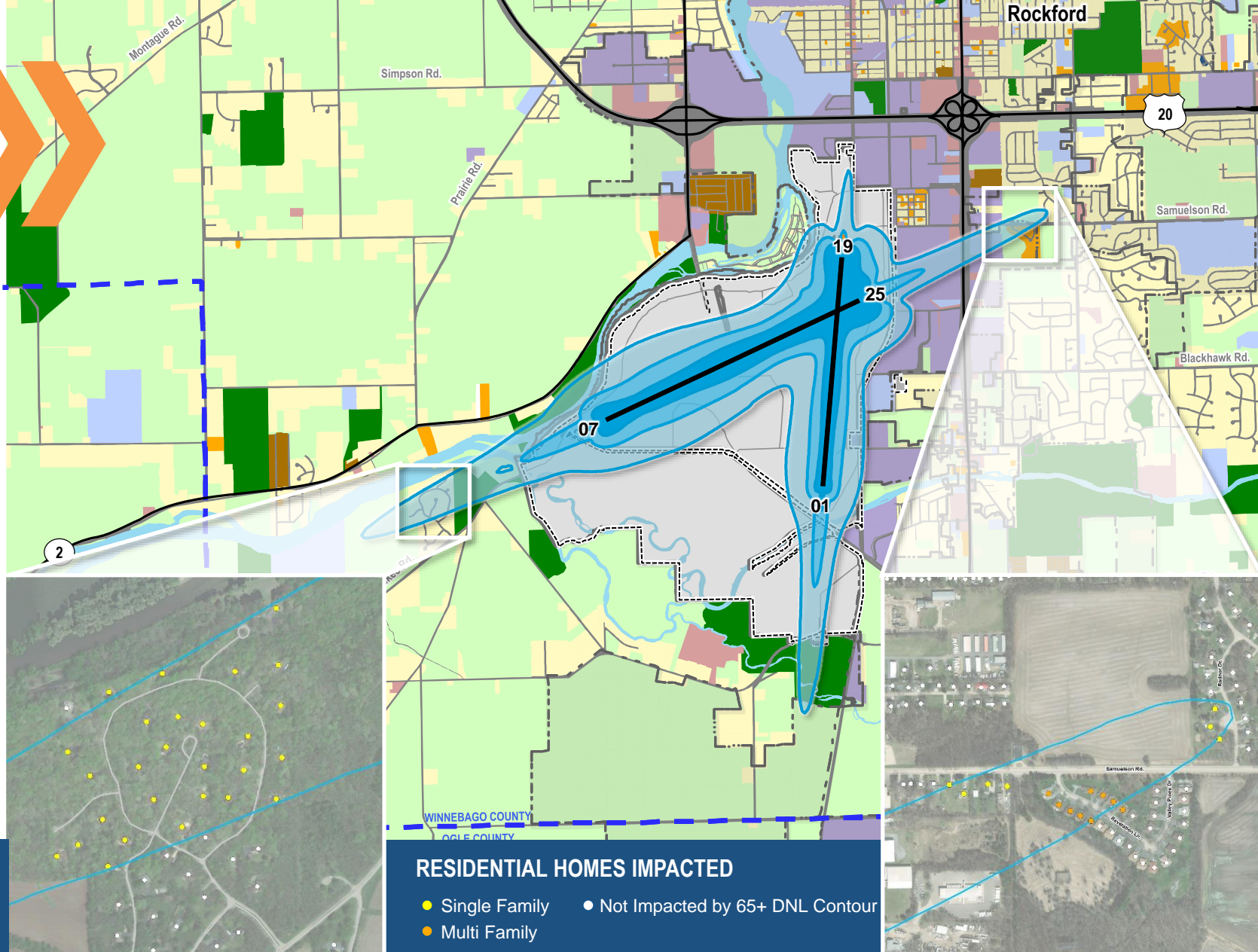
	65 - 70 DNL	1,148.2 Acres
	70 - 75 DNL	450.3 Acres
	75+ DNL	368.1 Acres
	65+ DNL	1,966.6 Acres

 Single-Family Residential	 Water	 Arterial Roads
 Multi-Family Residential	 Agricultural / Open Space / Vacant	 Interstate/Major Roads
 Manufactured Housing	 Commercial	 Airport Property Boundary
 Park / Recreation	 Industrial	 County Boundaries
 Institutional	 ROW/Utility	 Municipal Boundaries



Noise Exposure Contours

Existing (2027) Condition Land Use Incompatibilities



RESIDENTIAL IMPACTS

	75+ DNL	70-75 DNL	65-70 DNL	65+ DNL
Single Family Units	0	0	34	34
Multi-Family Units	0	0	18	18
Total Housing Units	0	0	52	52
Estimated Population	0	0	138	138

- Single-Family Residential
- Multi-Family Residential
- Manufactured Housing
- Park / Recreation
- Institutional
- Water
- Agricultural / Open Space / Vacant
- Commercial
- Industrial
- ROW/Utility
- Arterial Roads
- Interstate/Major Roads
- Airport Property Boundary
- County Boundaries
- Municipal Boundaries

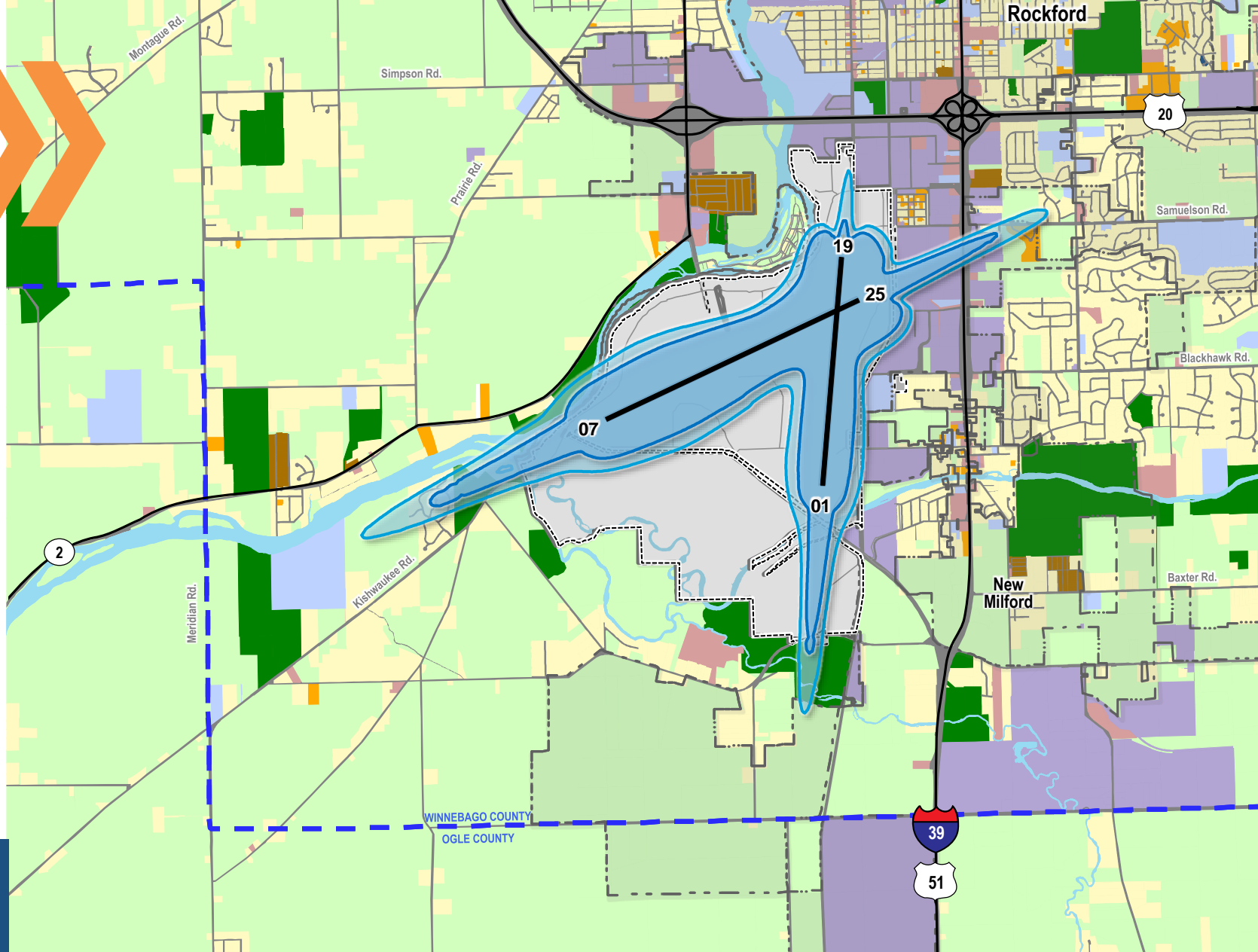
RESIDENTIAL HOMES IMPACTED

- Single Family
- Multi Family
- Not Impacted by 65+ DNL Contour





Noise Exposure Contours













Existing 2020 / 2027 65 DNL Comparison



RESIDENTIAL IMPACTS

	2020 65+ DNL	2027 65+ DNL	DIFFERENCE
Single Family Units	7	34	+27
Multi-Family Units	0	18	+18
Total Housing Units	7	52	+45
Estimated Population	18	138	+120

	2020 65+ DNL	1,302.0 Acres
	2027 65+ DNL	1,966.6 Acres
	Change in Acreage	+694.6 Acres

-  Single-Family Residential
-  Multi-Family Residential
-  Manufactured Housing
-  Park / Recreation
-  Institutional
-  Water
-  Agricultural / Open Space / Vacant
-  Commercial
-  Industrial
-  ROW/Utility
-  Arterial Roads
-  Interstate/Major Roads
-  Airport Property Boundary
-  County Boundaries
-  Municipal Boundaries



Next Steps



■ Noise Compatibility Program (NCP) Alternatives Analysis

- Noise Abatement Alternatives

*Purpose: To **ABATE** noise levels in surrounding communities*

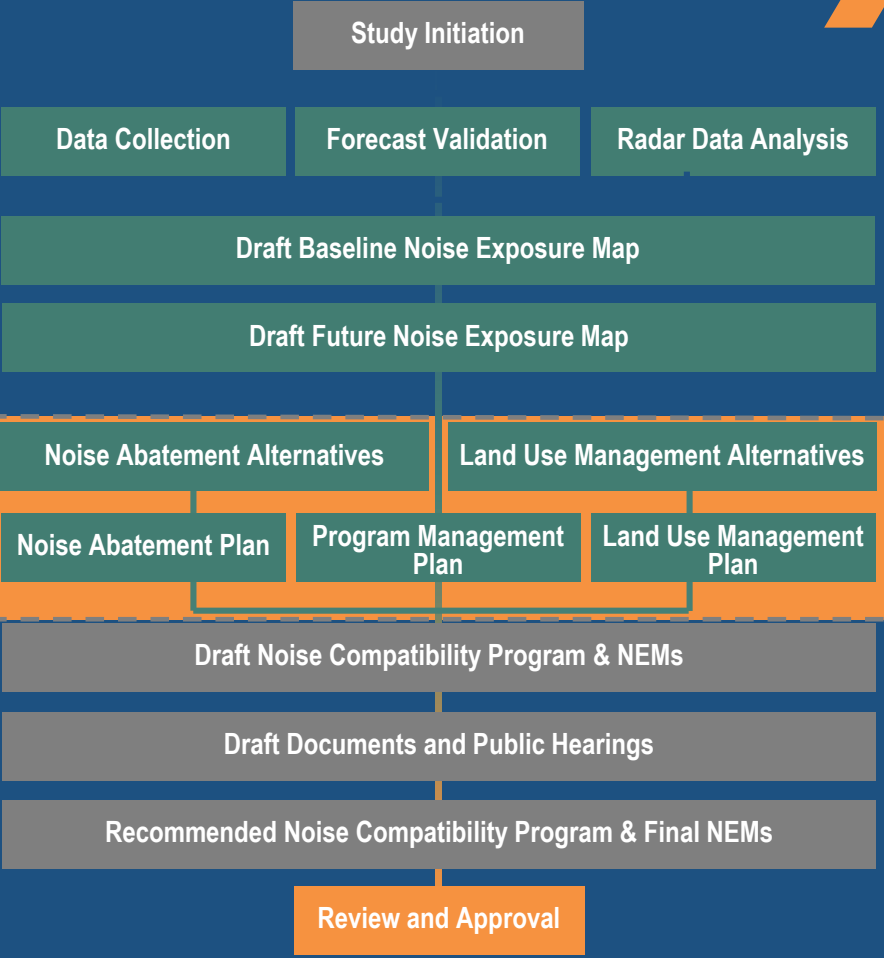
- Land Use Mitigation Alternatives

*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



Contacts



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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.