

CHAPTER SIX

Environmental Considerations

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6.0 Environmental Considerations

6.1. Environmental Analysis

As Saint Paul Downtown Airport (STP or the Airport) is a federally obligated airport and recipient of FAA Airport Improvement Program funding, future development may be subject to environmental review requirements associated with federal funding or FAA approval actions. This chapter identifies environmental factors that could materially affect implementation of the recommended development program and provides a planning-level assessment of the anticipated National Environmental Policy Act (NEPA) documentation that may be required for future projects.

This review supports the alternatives evaluation process by focusing on resources most likely to influence project implementation, agency coordination, permitting, or FAA environmental documentation. It is based on the environmental inventory presented in **Chapter 1**, available desktop environmental resources, and the recommended development program identified in **Chapter 4**. Detailed environmental studies were not completed as part of this planning effort. Project-specific environmental review and agency coordination will occur during subsequent design and implementation phases.

6.1.1. Environmental Resource Categories Evaluated

Chapter 1 identified the environmental setting at STP and the full range of resources present on or near the Airport. This chapter does not repeat that inventory. Instead, it focuses on the resource categories most relevant to the recommended development program and most likely to affect the level of NEPA documentation required for future airport projects.

Consistent with FAA environmental review procedures, the recommended development program was reviewed to identify resource categories that could: (1) materially constrain implementation of a recommended project, (2) require agency coordination or permitting, or (3) influence whether a future action is processed as a Categorical Exclusion (CATEX), Environmental Assessment (EA), or Environmental Impact Statement (EIS).

Based on this review, the resource categories below are organized into two groups: (1) categories not expected to be substantially affected by the recommended development program and (2) categories that may require project-specific study, agency coordination, permitting, or environmental documentation as projects advance. These resource categories also represent the environmental factors most likely to be evaluated during future FAA NEPA reviews.

6.1.1.1. Categories Not Expected to Be Substantially Affected

Based on the environmental inventory presented in **Chapter 1** and the recommended development program identified in **Chapter 4**, the following resource categories are not anticipated to represent significant constraints, require substantial environmental documentation, or influence the anticipated NEPA class of action for the recommended development program:

- **Coastal Resources –** No coastal resources occur within or adjacent to the Airport.

- **Farmland –** The Airport and surrounding developed urban environment do not contain prime farmland or unique farmland resources.
- **Wild and Scenic Rivers –** Although the Airport is adjacent to the Mississippi River, the river segment adjacent to STP is not designated as a National Wild and Scenic River.
- **Section 4(f) Resources –** The recommended development program is not anticipated to result in direct use of public parks, recreation areas, wildlife refuges, or historic sites protected under Section 4(f) of the U.S. Department of Transportation Act.
- **Land Use Compatibility –** Recommended projects are located on existing airport property and generally consist of airfield modifications, facility improvements, or redevelopment of existing airport land. Substantial off-airport land acquisition is not anticipated.
- **Socioeconomic Resources –** The recommended development program is not anticipated to result in substantial socioeconomic impacts, relocations, or changes in community services.
- **Air Quality –** Temporary construction-related emissions would occur; however, the recommended development program is not expected to result in significant long-term air quality impacts.
- **Climate and Energy Use –** Construction activities and airport operations will continue to require energy resources; however, the recommended projects are not anticipated to result in substantial changes to airport energy consumption or greenhouse gas emissions.

6.1.1.2. Categories That Could Be Affected by Recommended Development

The environmental inventory completed for this LTP Update identified several resource categories that may require additional consideration as recommended projects advance. At this planning level, no environmental fatal flaws were identified; however, several recommended development elements may require resource-specific documentation, agency coordination, permitting, or design refinements during project-level environmental review. The discussions below identify the resource categories most likely to be relevant and summarize the types of environmental review that may be required during future project development.

Floodplains and Floodway

Floodplain and floodway constraints represent the most significant environmental consideration affecting long-term development at STP. The Airport is located within the Mississippi River floodplain, and portions of the Airport are located within the FEMA-regulated floodway. As documented in the Floodwall Feasibility Study, hydraulic modeling determined that expansion into the Mississippi River corridor would result in unacceptable impacts to flood elevations and floodway conditions. As a result, alternatives requiring riverward expansion were removed from consideration during development of the recommended plan.

Recommended development elements that may require additional floodplain or floodway review include:

- **RE 32 Alternative E –** Temporary Floodwall Realignment & Declared Distances, because it includes floodwall modifications and continued reliance on flood protection infrastructure near the Runway 32 end.

- **Taxiway Alternative A –** Full Length Runway 14/32 East Side Parallel Taxiway, to the extent work near the Runway 32 end interacts with floodwall operations, grading, drainage, or flood protection constraints.
- **CMF Alternative B –** Northeast Development Area Integration, if final grading, stormwater design, or utility connections interact with mapped floodplain areas or flood protection infrastructure.
- **AAM Development Alternatives A, B, and C –** Depending on the ultimately selected site and whether grading or utility extensions affect areas influenced by floodwall operations or floodplain constraints.

Future projects involving floodwall modifications, runway-end improvements, changes to drainage patterns, or work near the flood protection system may require additional floodplain review, hydraulic analysis, and coordination with applicable floodplain regulatory agencies. These constraints do not preclude implementation of the recommended development program, but they will continue to be a primary design and permitting consideration for projects near the Runway 32 end and other areas influenced by the flood protection system.

Wetlands and Water Resources

Wetlands are present in portions of the Airport, including areas near the southwest airfield and south hangar area, a remnant area near the Runway 32 end between Taxiways A and B, and the northeast side of the Airport between the north hangar area and the Mississippi River. Development involving new taxiways, hangar areas, maintenance facilities, AAM pad-ready sites, or other expansion into currently undeveloped portions of the Airport may require wetland delineation, stormwater review, and permitting.

Recommended development elements that may require additional wetland or water resource review include:

- **Taxiway Alternative A –** Full Length Runway 14/32 East Side Parallel Taxiway, because it would introduce new taxiway pavement and connectors, including work in less-developed portions of the airfield.
- **Taxiway Alternative B –** Runway 9/27 North Side Partial Parallel Taxiway, because it would add new pavement and modify drainage patterns north of Runway 9/27.
- **Taxiway Alternative E –** Taxiway E Realignment, because it involves reconfigured pavement and may affect nearby stormwater flow patterns or undeveloped areas.
- **NE Alternative B –** Taxiway D Retention Concept, because it includes new hangar and apron development within the northeast development area.
- **CMF Alternative B –** Northeast Development Area Integration, because it would introduce new building, pavement, fueling, and utility infrastructure.
- **AAM Development Alternatives A, B, and C –** Future pad-ready development may require grading, utility extensions, and stormwater infrastructure depending on the selected site.

Future projects involving land disturbance would also require consideration of stormwater management, erosion control, and water quality requirements consistent with airport stormwater permits and Minnesota Pollution Control Agency requirements. At this planning level, no recommended project is anticipated to result in wetland or water resource impacts that would preclude implementation.

Biological Resources

Desktop review identified federally listed or protected species within the broader vicinity of the Airport. Species most relevant to potential airport development include the northern long-eared bat, tricolored bat, and rusty patched bumble bee. Most recommended projects occur within previously disturbed and actively managed airport property where habitat value is limited. However, projects involving undeveloped grassland, naturalized areas, tree removal, or ground disturbance may require additional review.

Recommended development elements that may require additional biological resource review include:

- **Taxiway Alternative A –** Full Length Runway 14/32 East Side Parallel Taxiway, if construction affects grassland, naturalized areas, or other habitat features.
- **Taxiway Alternative B –** Runway 9/27 North Side Partial Parallel Taxiway, because it would add pavement in an area that may include grassland or maintained turf areas.
- **Taxiway Alternative E –** Taxiway E Realignment, depending on the final alignment and extent of disturbance outside existing pavement.
- **NE Alternative B –** Taxiway D Retention Concept, because development would occur in portions of the northeast airfield area that may include grassland or maintained turf areas.
- **CMF Alternative B –** Northeast Development Area Integration, depending on final limits of disturbance and any vegetation removal.
- **AAM Development Alternatives A, B, and C –** Depending on the selected location and whether site preparation affects vegetation or potential habitat.

Projects involving tree removal, expansion into undeveloped grassland areas, or disturbance of naturalized portions of the Airport may require coordination with the U.S. Fish and Wildlife Service and review under the Endangered Species Act. Based on the nature of the recommended development program and the disturbed condition of most project areas, significant impacts to protected species are not anticipated.

Hazardous Materials

Airport operations have historically included aviation fueling, aircraft maintenance, vehicle maintenance, snow removal equipment storage, and other activities that may have involved the storage or use of hazardous materials. As a result, construction activities involving excavation, pavement removal, demolition, or redevelopment in previously developed portions of the Airport could encounter previously unknown contamination.

Recommended development elements that may require additional hazardous materials due diligence include:

- **Runway Alternative C –** Runway 13/31 Closure, if pavement removal or redevelopment occurs in areas with prior airfield use.
- **Taxiway Alternative F –** Wide Expanse of Pavement Removal, because pavement removal may involve excavation or disturbance of underlying materials.
- **Southwest Development Alternative –** New hangar and apron development would occur in an established aviation operations area.

- **NE Alternative B –** Taxiway D Retention Concept, because hangar and apron development may involve pavement removal, grading, and redevelopment of airfield areas.
- **Terminal Apron Expansion Alternative –** The project would expand apron pavement near existing terminal and aviation service areas.
- **CMF Alternative B –** Northeast Development Area Integration, because it includes maintenance, equipment storage, fueling, and support facility uses.
- **AAM Development Alternatives A, B, and C –** Depending on whether future development includes charging infrastructure, utility work, pavement removal, or redevelopment of existing airfield surfaces.

Hazardous materials are not expected to represent a fatal flaw for implementation of any recommended project. However, additional environmental due diligence may be warranted during project design, particularly for projects involving substantial excavation, pavement removal, demolition, fueling facilities, maintenance operations, or redevelopment of previously developed areas.

Noise and Community Considerations

The recommended development program does not include construction of a new runway, a major runway extension, or substantial expansion of airport capacity. The preferred runway alternative involves closure of Runway 13/31, while recommended taxiway, apron, hangar, support facility, and AAM planning elements are primarily intended to improve operational efficiency, safety, resiliency, and long-term land use flexibility.

Recommended development elements that may warrant future noise or community consideration include:

- **Runway Alternative C –** Runway 13/31 Closure, because it would modify the runway system and could affect how aircraft activity is distributed across remaining runways.
- **RE 32 Alternative E –** Temporary Floodwall Realignment & Declared Distances, because declared distances and floodwall operating conditions may affect runway use under certain conditions.
- **Taxiway Alternative A –** Full Length Runway 14/32 East Side Parallel Taxiway, because it may improve operational efficiency and aircraft circulation along the primary runway.
- **Terminal Apron Expansion Alternative –** The project would provide additional transient aircraft staging and parking capacity.
- **Southwest Development Alternative and NE Alternative B –** Taxiway D Retention Concept, because new hangar and apron development could affect localized aircraft activity, ground operations, and surface traffic patterns.
- **AAM Development Alternatives A, B, and C –** Future AAM operations are not yet fully defined and would require project-specific evaluation once a site, aircraft type, operating model, and facility design are identified.

Substantial changes in airport noise exposure are not anticipated at this planning level. However, future FAA environmental review would evaluate noise effects associated with specific development projects, as required, particularly if a project changes runway use, introduces new operational activity, or results in a measurable change in aircraft activity near noise-sensitive areas. Noise considerations and modeling efforts conducted are further discussed in **Sections 6.2** and **6.3**.

Historical, Archaeological, and Cultural Resources

The Holman Field Administration Building is listed on the National Register of Historic Places and represents the primary known historic property on airport property. The recommended development program is not anticipated to directly affect the building or other known historic properties. However, future federally funded or FAA-approved projects would still be reviewed under Section 106 of the National Historic Preservation Act, as appropriate.

Recommended development elements that may warrant historic property review include:

- **Runway Alternative C –** Runway 13/31 Closure, because runway removal and related redevelopment may involve federal approval and ground disturbance.
- **RE 32 Alternative E –** Temporary Floodwall Realignment & Declared Distances, because floodwall-related work would occur in a constrained area near long-established airport infrastructure.
- **Southwest Development Alternative, NE Alternative B, Terminal Apron Expansion Alternative, and CMF Alternative B –** These projects involve new development, grading, or redevelopment within airport property.
- **AAM Development Alternatives A, B, and C –** Review needs would depend on the selected site and final limits of disturbance.

No direct effects to known historic properties are anticipated based on the planning-level review completed for this LTP Update. Project-specific Section 106 review may still be required during implementation to confirm the presence or absence of historic properties within the area of potential effects and to determine whether any additional coordination is needed.

6.1.2. National Environmental Policy Act Requirements

As a recipient of FAA Airport Improvement Program (AIP) funding and sponsor of projects requiring FAA approval, future development at STP will be subject to environmental review pursuant to the NEPA. The FAA implements NEPA through FAA Order 1050.1G, FAA National Environmental Policy Act Implementing Procedures, which establishes the agency's environmental review process, identifies environmental resource categories that must be considered during project development, and defines classes of action used to document environmental effects. FAA Order 1050.1G also identifies actions that normally qualify for a CATEX, provided extraordinary circumstances are not present.

Based on the planning-level review completed for this LTP Update, no environmental fatal flaws were identified that would prevent implementation of the recommended development program. Most recommended projects consist of airfield safety improvements, runway and taxiway modifications, pavement removal, apron expansion, support facility development, floodwall-related improvements, and redevelopment of previously disturbed airport property. These types of actions are commonly processed as CATEXs under FAA Order 1050.1G when project-specific environmental review confirms that significant impacts would not occur.

Before relying on a CATEX, the FAA must evaluate whether extraordinary circumstances are present. Under FAA Order 1050.1G, extraordinary circumstances generally involve the potential for significant effects on resources such as wetlands, floodplains, threatened and endangered species, historic properties, Section 4(f) resources, water quality, noise-sensitive land uses, air quality, environmental

contamination, or other environmental resources. The planning-level review completed for this LTP Update identified several resource categories that may require additional study or agency coordination as projects advance; however, none of the recommended development elements are currently anticipated to result in impacts that would clearly preclude use of a CATEX, although the final NEPA class of action will be determined by FAA based on project-specific information and review of extraordinary circumstances.

Because the recommended development program is expected to be implemented as a program of projects over the next 20 years, individual projects may be advanced in phases as funding becomes available. Phasing does not necessarily require separate NEPA documentation for each phase; where phased improvements are connected, interdependent, or part of a larger federal action, they should be evaluated together to avoid improper segmentation. Similarly, when multiple project elements are combined into one FAA action, the CATEX determination should generally rely on the citation that best represents the dominant action, rather than assigning multiple citations to individual components.

Several recommended projects, particularly those associated with the Runway 32 end and flood protection system, may require coordination with the U.S. Army Corps of Engineers (USACE). The existing floodwall system is associated with the federal flood risk management infrastructure along the Mississippi River, and modifications to the floodwall or related flood protection features may require review under Section 408 of the Rivers and Harbors Act. A Section 408 review evaluates whether a proposed alteration would impair the usefulness of a federally authorized civil works project or be injurious to the public interest. Depending on the scope of a future project, USACE may participate as a cooperating or coordinating agency during environmental review, and a Section 408 permission process may be required in addition to any applicable FAA approvals, permitting actions, or NEPA documentation.

In general, airport projects fall into one of three levels of environmental review:

- **Categorical Exclusion (CATEX) –** Actions that normally do not individually or cumulatively result in significant environmental impacts.
- **Environmental Assessment (EA) –** Projects where the significance of environmental impacts has not yet been established and further analysis is warranted.
- **Environmental Impact Statement (EIS) –** Major federal actions with the potential for significant environmental impacts.

Table 6.1 identifies the FAA Order 1050.1G Appendix B CATEX provisions that appear most applicable to each recommended project based on the planning-level project descriptions developed as part of this LTP Update. The table is intended to demonstrate that each recommended project is associated with a CATEX provision that may be available during future project development. Final determination of CATEX applicability remains subject to FAA review and confirmation of project scope, environmental conditions, and the absence of extraordinary circumstances.

Table 6.1 - Potential FAA Order 1050.1G CATEX Applicability for Recommended Projects[1] [2]

Recommended Project	Recommended Citation	Applicability Rationale
Runway Alternative C: Runway 13/31 Closure	**B-2.4(cc)**	Permanent runway closure and removal.
RE 14 Alternative A: ROFA Mitigation with MOS	**B-2.3(c)**	Relocation of localizer/DME equipment and associated facilities on airport property; VSR relocation is ancillary.
RE 32 Alternative E: Temporary Floodwall Realignment & Declared Distances	**B-2.5(l)**	Establishes modified declared distances associated with runway-end improvements and floodwall modifications. Additional FAA review, MOS approval, and potential USACE Section 408 coordination may be required.
RE 9 Alternative F: VSR Removal	**B-2.4(a)**	Removal of a service road within the RSA/ROFA.
Taxiway Alternative A: Full Length Runway 14/32 East Side Parallel Taxiway	**B-2.4(e)**	New taxiway construction.
Taxiway Alternative B: Runway 9/27 North Side Partial Parallel Taxiway	**B-2.4(e)**	New taxiway construction.
Taxiway Alternative C: Taxiway C1 Relocation	**B-2.4(e)**	Taxiway relocation and reconstruction.
Taxiway Alternative D: Taxiway B Connector Removal	**B-2.4(e)**	Taxiway removal and reconfiguration to restore standards compliance.
Taxiway Alternative E: Taxiway E Realignment	**B-2.4(e)**	Taxiway relocation and reconstruction.
Taxiway Alternative F: Wide Expanse of Pavement Removal	**B-2.4(e)**	Modification of taxiway.
Southwest Development Alternative	**B-2.4(f)**	Hangar and apron support development.
NE Alternative B: Taxiway D Retention Concept	**B-2.4(f)**	Hangar and apron development.
Terminal Apron Expansion Alternative	**B-2.4(e)**	Apron expansion.
CMF Alternative B: Northeast Development Area Integration	**B-2.4(f)**	Maintenance and support facility construction.
AAM Development Alternatives A, B, and C[3]	**B-2.4(f)**	Pad-ready airport facility development; final review depends on selected site and facility design.

Source:
Federal Aviation Administration Order 1050.1G
Kimley-Horn, 2026

[1] The CATEX provisions identified in Table 6.1 are preliminary and intended for planning purposes only. Prior to relying on a CATEX, the FAA must determine that the proposed action qualifies for the cited CATEX provision and that no extraordinary circumstances, as defined by FAA Order 1050.1G Appendix B, are present.
[2] Floodwall Coordination: Runway End 32 alternatives involving modifications to flood protection infrastructure may require coordination with the U.S. Army Corps of Engineers and authorization under Section 408 of the Rivers and Harbors Act. Such coordination would not necessarily affect CATEX applicability but may result in additional environmental review, permitting, and agency coordination requirements
[3] Final CATEX provision depends on AAM facility design

6.2. Noise Analysis

This section presents the modeling inputs used to develop the noise models for the 2024 Existing Conditions, the 2045 No Action Alternative, and the 2045 Proposed Action Alternative of this LTP, as well as the corresponding modeling results in **Section 6.3**.

The noise analysis was conducted using Version 3g of the FAA Aviation Environmental Design Tool (AEDT), which was the most current version available when the modeling inputs were prepared.[4] All AEDT modeling performed for this study adheres to *Guidance on Using the AEDT to Conduct Environmental Modeling for FAA Actions Subject to NEPA*.[5]

6.2.1. Physical Description of the Airfield Layout

The airport physical parameters of most importance are the locations of the aircraft noise sources, such as the start-of-takeoff roll (SOTR) for departing aircraft and the landing threshold for arriving aircraft. Information regarding the 2024 Existing Conditions airfield layout at STP was obtained from the FAA Airport Data and Information Portal,[6] as shown in **Figure 6.1**. There are three operational runways: Runway 13/31 is 4,004 feet long and 150 feet wide, Runway 14/32 is 6,491 feet long and 150 feet wide, and Runway 9/27 is 3,642 feet long and 100 feet wide. Because helicopters do not use the runways like fixed-wing aircraft, helicopter activity is modeled departing from and arriving to one of the "helipad" locations designated on the airfields for modeling purposes. Those locations are indicated on **Figure 6.1**.

Table 6.2 provides the modeled physical parameters for the 2024 Existing Conditions and the 2045 No Action Alternative. Under the 2045 Proposed Action Alternative, Runway 13/31 would be closed, while Runways 9/27 and 14/32 would remain operational.

[4] Released May 9, 2022. https://aedt.faa.gov/3e_information.aspx
[5] Published October 27, 2017.
[6] https://adip.faa.gov/agis/public/#/simpleAirportMap/STP

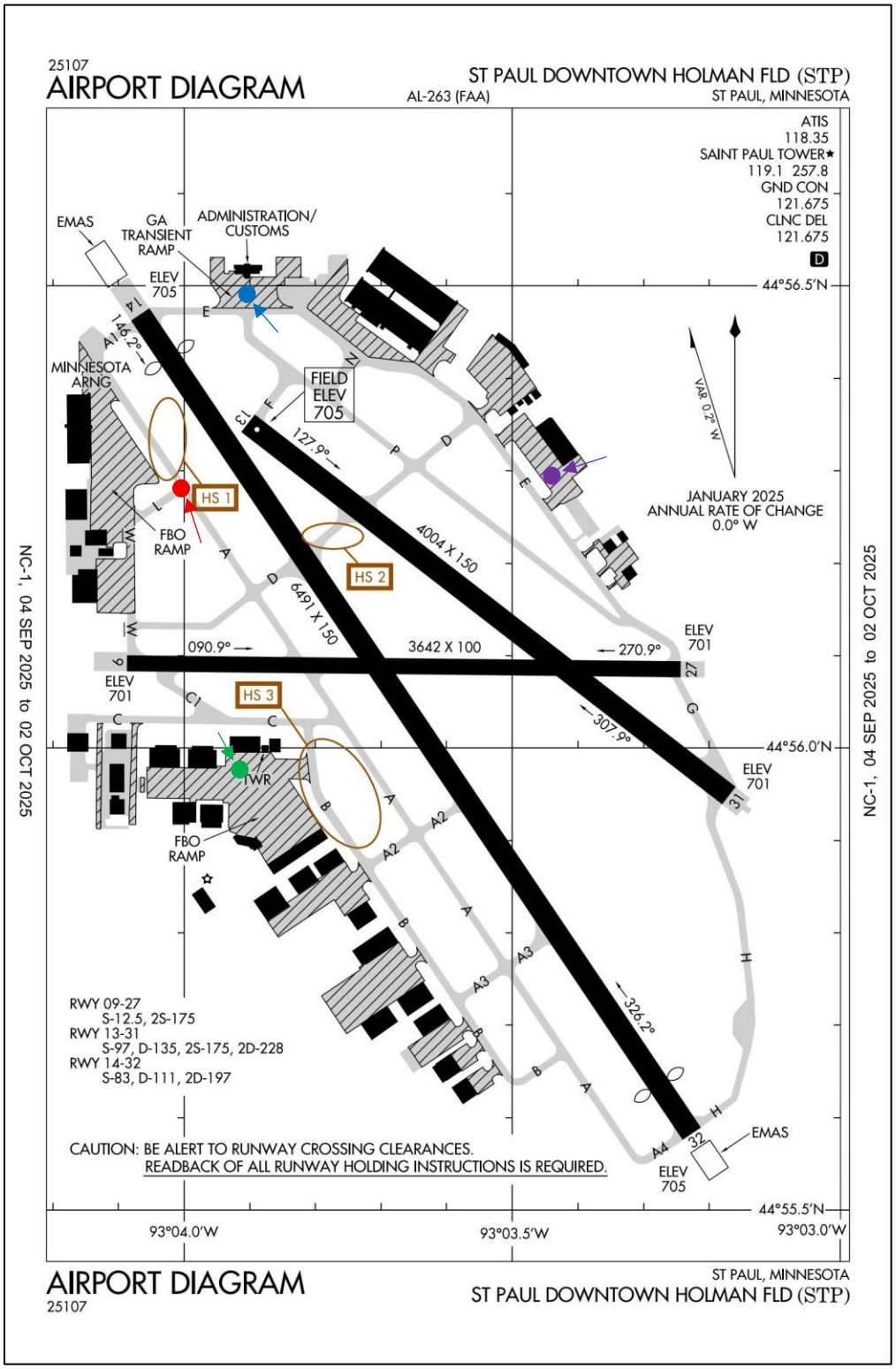
Table 6.2 - STP Airfield Layout Details

Runway	Latitude (degrees)	Longitude (degrees)	Elevation (feet, MSL)	Length (feet)	Displaced Landing Threshold (feet)	Glide Slope (degrees)	Threshold Crossing Height (feet)
Runways							
9	44.934865	-93.068122	700.7	3,642	-	3	50
27	44.934748	-93.054060	701.0	3,642	-	4	40
14	44.941144	-93.067806	704.5	6,491	343	3	50
32	44.926380	-93.053806	704.6	6,491	382	3	40
13	44.939186	-93.065067	704.7	4,004	-	3	40
31	44.932464	-93.052840	701.2	4,004	-	3	45
Helicopter Operations Areas							
H1	44.941633	-93.065093	705.0	21.5	-	-	-
H2	44.938090	-93.057324	705.0	21.5	-	-	-
H3	44.933008	-93.065501	705.0	21.5	-	-	-
HM	44.938897	-93.067545	705.0	21.5	-	-	-

Source:
FAA 5010 data, accessed September 10, 2025.

Note:
Helipad elevation set to Airfield Elevation
A standard Glideslope of 3 degrees and 50' Threshold Crossing Height will be used for Runway 9.
MSL = mean sea level

Figure 6.1 - Existing Airport Layout: STP Airport Diagram



Source: *https://www.faa.gov/airports/runway_safety/diagrams, accessed September 10, 2025*
Note: *"Helipad" locations for noise modeling purposes are depicted with **red**, **blue**, **purple**, and **green** dots.*

6.2.2. Aircraft Noise and Performance Characteristics

The AEDT database contains noise and performance data for over 300 different aircraft types. The program automatically accesses the applicable noise and performance data for operations by those aircraft. Within the model, noise data are provided for slant distances[7] from 200 feet to 25,000 feet, for a particular aircraft with engines at a specific thrust level. Performance data include sets of thrust, speed, and altitude profiles for takeoffs and landings.

All aircraft operations were modeled using standard AEDT flight profiles. These aircraft noise and performance characteristics were used for noise modeling in all scenarios.

The fleet mix used in the noise modeling analysis was developed from 12 months of MACNOMS radar data (January 2024 to December 2024). The process matches the International Civil Aviation Organization (ICAO) aircraft type designator to aircraft types in the AEDT database, with supplemental information provided by published charter airline fleet composition. Aircraft types that use STP infrequently are combined with similar types (unless the type is among the loudest using the airport).

6.2.3. Aircraft Flight Operations

The FAA organizes aircraft operations into categories per FAA Order 7210.3 “Facility Operation and Administration,” namely Air Carrier, Air Taxi, General Aviation, and Military. Air Carrier and Air Taxi are commercial categories distinguished by aircraft capacity, while General Aviation includes all non-commercial, non-military operations. FAA personnel at the Airport’s air traffic control tower (ATCT) provide counts of operations that are reported by FAA’s Operations Network (OPSNET) (tower counts) and then used in preparation of the FAA’s Terminal Area Forecast (TAF). Twelve months of MACNOMS data for January 2024 through December 2024 were obtained. Calendar year 2024 FAA Traffic Flow Management System Counts (TFMSC) were also downloaded and used to check the aircraft types within the flight data and to augment the fleet mix for military aircraft. The MACNOMS and TFMSC data were used to develop the existing fleet mix, day/night split, and runway use. Since the aircraft control tower at STP is closed between 10:00 p.m. and 6:00 a.m. (Monday through Friday) and 10:00 p.m. and 7:00 a.m. (Saturday and Sunday), the percentage of operations during the overnight period while the tower is closed was estimated and added to the FAA OPSNET data to get the total operations for the baseline year. This data was used to develop the Existing Conditions fleet mix and day/night breakdown shown in **Tables 6.2 and 6.3.** The radar data was then scaled to the FAA-reported tower counts for the 12-month period of January 2024 through December 2024 operations.

Table 6.3 presents the annual flight operations modeled for existing conditions and the corresponding average annual day (AAD) operations. Due to 2024 being a leap year, the annual counts are divided by 366 days to get the AAD totals.

[7] Direct distance from the aircraft to the receptor being modeled.

Table 6.3 - Annual and Average Annual Day Aircraft Operations for Existing Conditions

Year	Air Carrier	Air Taxi	General Aviation Itinerant	General Aviation Local	Military	Total Operations
FAA OPSNET 2024	83	6,474	22,117	11,304	2,366	42,344
Estimated Operations while Tower is Closed	18	463	2,105	681	150	3,417
Annual	101	6,937	26,118	10,089	2,516	45,761
AAD	0.3	19.0	71.4	27.6	6.8	125.0

Source:
FAA OPSNET 2024, HMMH 2025

The required AEDT inputs include counts of arrival and departure operations by each specific aircraft type separated into the day (7 a.m.-10 p.m.) and night (10 p.m.-7 a.m.) time periods, which are used in calculating the day-night average sound level (DNL). These day/night percentages were derived from the 12-month MACNOMS radar data. The AAD operation counts were split into categories by engine type (Jet, Turboprop, Piston, and Helicopter). These engine types were used with radar data to split operation counts by aircraft type. **Table 6.4** presents the modeled AAD operational model inputs to AEDT for the 2024 Existing Conditions. Totals by category match the AAD totals shown in **Table 6.3**.

Table 6.4 - Modeled 2024 Existing Conditions AAD Operations by AEDT Aircraft Type

Engine	ICAO Type	AEDT Aircraft Type	Arrival Day	Arrival Night	Departure Day	Departure Night	Day Circuits	Night Circuits	Total
Air Carrier									
Jet	E170	EMB170	0.1	<0.1	0.1	<0.1	-	-	0.3
Air Carrier Subtotals			***0.1***	***<0.1***	***0.1***	***<0.1***	***-***	***-***	***0.3***
Air Taxi									
Jet	C25B	CNA525C	0.4	0.2	0.4	0.1	-	-	1.1
	C56X	CNA560XL	0.7	<0.1	0.6	<0.1	-	-	1.3
	C68A	CNA680	1.2	<0.1	1.2	0.1	-	-	2.5
	C750	CNA750	0.2	<0.1	0.2	<0.1	-	-	0.5
	CL30	CL600	0.9	0.1	0.9	0.1	-	-	1.9
	CL35	CL600	0.5	<0.1	0.5	<0.1	-	-	1.0
	CL60	CL600	0.3	-	0.3	<0.1	-	-	0.6
	E550	CL601	0.7	<0.1	0.6	0.1	-	-	1.4
	E55P	CNA55B	1.6	<0.1	1.4	0.2	-	-	3.2
	F2TH	CNA750	0.4	<0.1	0.4	<0.1	-	-	0.8
	F900	FAL900EX	0.4	<0.1	0.4	<0.1	-	-	0.8
	H25B	LEAR35	0.1	<0.1	0.1	<0.1	-	-	0.3
Piston Prop	P28A	GASEPF	1.0	0.2	1.0	0.2	-	-	2.4
Turboprop	B350	DHC6	0.6	-	0.5	0.1	-	-	1.2
Air Taxi Subtotals			***8.9***	***0.6***	***8.5***	***1.0***	***-***	***-***	***19.0***

Engine	ICAO Type	AEDT Aircraft Type	Arrival Day	Arrival Night	Departure Day	Departure Night	Day Circuits	Night Circuits	Total
General Aviation									
Jet	BE40	MU3001	1.3	0.3	1.2	0.3	<0.1	-	3.0
	C25B	CNA525C	0.3	<0.1	0.3	<0.1	-	-	0.6
	C25C	CNA525C	0.5	<0.1	0.5	<0.1	-	-	1.0
	C525	CNA525C	0.4	<0.1	0.4	<0.1	<0.1	-	0.9
	C560	CNA560U	0.3	<0.1	0.3	<0.1	<0.1	-	0.6
	C56X	CNA560XL	2.0	0.1	1.9	0.1	<0.1	<0.1	4.1
	C680	CNA680	0.8	0.1	0.7	0.2	0.1	<0.1	1.7
	C68A	CNA680	0.3	<0.1	0.3	<0.1	<0.1	<0.1	0.7
	C750	CNA750	0.3	<0.1	0.3	<0.1	<0.1	-	0.6
	CL30	CL600	0.3	<0.1	0.3	<0.1	-	-	0.7
	CL35	CL600	0.2	<0.1	0.2	<0.1	-	-	0.4
	CL60	CL600	0.2	<0.1	0.2	<0.1	-	-	0.4
	E55P	CNA55B	0.4	<0.1	0.4	<0.1	<0.1	-	0.8
	F2TH	CNA750	1.4	0.1	1.4	0.1	0.1	<0.1	3.1
	F900	FAL900EX	0.2	<0.1	0.1	<0.1	-	-	0.4
	GLF5	GV	1.6	0.2	1.7	0.1	0.1	<0.1	3.7
	H25B	LEAR35	0.4	<0.1	0.4	<0.1	-	-	0.8
Piston Prop	BE36	GASEPV	0.4	<0.1	0.4	<0.1	0.2	<0.1	1.0
	C150	GASEPF	0.8	<0.1	0.8	<0.1	3.2	<0.1	4.9
	C152	GASEPF	0.5	<0.1	0.5	<0.1	1.4	<0.1	2.5
	C172	CNA172	5.1	0.2	5.1	0.2	8.4	0.3	19.3
	C182	CNA182	1.2	0.1	0.9	0.4	2.5	0.2	5.2
	CH7A	CNA172	0.3	-	0.3	-	1.8	-	2.4
	P28A	GASEPF	2.1	0.1	2.1	0.1	4.4	0.1	8.8
	RV12	GASEPF	0.2	<0.1	0.2	<0.1	0.7	-	1.2
	S22T	COMSEP	0.5	-	0.5	-	<0.1	-	1.0
	SR20	COMSEP	0.4	<0.1	0.4	<0.1	0.3	-	1.1
	SR22	COMSEP	1.5	0.4	1.6	0.4	1.6	0.7	6.2
Turboprop	B350	DHC6	0.3	-	0.3	<0.1	<0.1	-	0.5
	BE20	DHC6	3.1	0.8	3.0	1.0	0.3	<0.1	8.2
	BE9L	DHC6	0.9	0.1	0.8	0.1	0.2	<0.1	2.1
	KODI	CNA208	0.2	<0.1	0.2	-	0.7	-	1.0
	PC12	CNA208	1.1	0.3	1.0	0.4	<0.1	-	2.9
Helicopter	B407	B407	1.4	0.6	1.4	0.5	-	-	4.0
	R44	R44	1.6	-	1.6	-	-	-	3.2
General Aviation Subtotals			***32.3***	***3.4***	***31.5***	***4.2***	***26.1***	***1.5***	***99.0***

Engine	ICAO Type	AEDT Aircraft Type	Arrival Day	Arrival Night	Departure Day	Departure Night	Day Circuits	Night Circuits	Total
Military									
Jet	GLF4	GIV	<0.1	-	<0.1	-	-	-	<0.1
Turboprop	BE20	DHC6	0.4	<0.1	0.4	-	<0.1	<0.1	0.8
Helicopter	H60	S70	2.7	0.3	2.9	0.1	-	-	6.0
Military Subtotals			***3.1***	***0.4***	***3.3***	***0.1***	***<0.1***	***<0.1***	***6.8***
Totals			**44.3**	**4.4**	**43.5**	**5.3**	**26.1**	**1.5**	**125.0**

Source:
MACNOMS Radar data, HMMH 2025

Table 6.5 presents the AAD flight operations modeled for the 2045 No Action Alternative and the 2045 Proposed Action Alternative. These operations are based on the annual aviation activity forecast presented in **Table 2.37** and discussed in **Section 2.11**. The AAD operations were calculated by dividing the forecast annual flight operations by 365 days.

Table 6.5 - Annual and Average Annual Day Aircraft Operations for 2045 Future Conditions

Year	Air Carrier	Air Taxi	GA Itinerant	GA Local	Military	Total Operations
Annual	-	7,735	26,975	12,783	2,441	49,934
AAD	-	21.2	73.9	35.0	6.7	136.8

Source:
Kimley-Horn, 2025

Table 6.6 presents the detailed AAD operational inputs modeled in AEDT for the 2045 No Action Alternative and the 2045 Proposed Action Alternative. The totals by category match the AAD totals shown in **Table 6.5**. For both alternatives, the aircraft fleet was scaled to approximate the distribution of operations among the Airport Reference Code (ARC) categories forecast for 2045 in **Table 2.28** and discussed in **Section 2.7**. The fleet composition also ensures that C-III aircraft, identified as the critical aircraft group for STP, are appropriately represented.

Table 6.6 - Modeled 2045 Future Conditions AAD Operations by AEDT Aircraft Type

Engine	ICAO Type	AEDT Aircraft Type	Arrival Day	Arrival Night	Departure Day	Departure Night	Day Circuits	Night Circuits	Total
Air Taxi									
Jet	C25B	CNA525C	0.4	0.1	0.4	0.1	-	-	1.0
	C56X	CNA560XL	0.8	<0.1	0.8	0.1	-	-	1.7
	C68A	CNA680	1.5	<0.1	1.5	0.1	-	-	3.2
	C750	CNA750	0.2	<0.1	0.2	<0.1	-	-	0.4
	CL30	CL600	1.1	0.1	1.1	0.1	-	-	2.4
	CL35	CL600	0.6	<0.1	0.6	0.1	-	-	1.2

Engine	ICAO Type	AEDT Aircraft Type	Arrival Day	Arrival Night	Departure Day	Departure Night	Day Circuits	Night Circuits	Total
	CL60	CL600	0.3	-	0.3	<0.1	-	-	0.6
	E550	CL601	0.8	0.1	0.8	0.1	-	-	1.8
	E55P	CNA55B	1.9	<0.1	1.8	0.2	-	-	3.9
	F2TH	CNA750	0.3	<0.1	0.3	<0.1	-	-	0.6
	F900	FAL900EX	0.3	<0.1	0.3	<0.1	-	-	0.7
	H25B	LEAR35	0.1	<0.1	0.1	<0.1	-	-	0.2
Piston Prop	C172	CNA172	0.1	<0.1	0.1	<0.1	-	-	0.2
	P28A	GASEPF	0.8	0.1	0.8	0.1	-	-	2.0
Turboprop	B350	DHC6	0.6	-	0.5	0.1	-	-	1.2
Air Taxi Subtotals			***9.9***	***0.6***	***9.6***	***1.0***	***-***	***-***	***21.2***
General Aviation									
Jet	BE40	MU3001	1.5	0.1	1.5	0.1	-	-	3.1
	C25B	CNA525C	0.1	<0.1	0.1	<0.1	-	-	0.3
	C25C	CNA525C	0.3	<0.1	0.2	<0.1	-	-	0.6
	C525	CNA525C	0.8	<0.1	0.8	<0.1	<0.1	-	1.7
	C560	CNA560U	0.1	<0.1	0.1	<0.1	<0.1	-	0.3
	C56X	CNA560XL	1.5	0.1	1.4	0.2	<0.1	<0.1	3.2
	C680	CNA680	0.3	<0.1	0.2	0.1	<0.1	<0.1	0.8
	C68A	CNA680	0.3	<0.1	0.3	0.1	0.1	<0.1	0.8
	C750	CNA750	0.2	<0.1	0.2	<0.1	<0.1	-	0.5
	CL30	CL600	0.4	0.1	0.5	<0.1	-	-	1.0
	CL35	CL600	0.3	<0.1	0.3	<0.1	-	-	0.7
	CL60	CL600	0.2	<0.1	0.2	<0.1	-	-	0.4
	E55P	CNA55B	0.3	<0.1	0.3	<0.1	<0.1	-	0.6
	F2TH	CNA750	1.9	0.1	2.0	0.1	0.1	<0.1	4.2
	GLF4	GIV	0.7	<0.1	0.7	<0.1	-	-	1.4
	GLF5	GV	2.6	0.2	2.7	0.1	0.1	<0.1	5.7
	H25B	LEAR35	1.4	<0.1	1.4	<0.1	-	-	2.8
Piston Prop	BE36	GASEPV	0.4	<0.1	0.4	<0.1	0.2	<0.1	1.1
	C150	GASEPF	0.8	<0.1	0.8	<0.1	3.1	<0.1	4.9
	C152	GASEPF	0.3	<0.1	0.3	<0.1	0.8	<0.1	1.6
	C172	CNA172	5.2	0.2	5.1	0.2	8.8	0.2	19.7
	C182	CNA182	1.2	0.1	0.9	0.4	2.7	0.2	5.5
	CH7A	CNA172	0.3	-	0.3	-	1.8	-	2.3
	P28A	GASEPF	2.2	0.1	2.2	0.1	4.6	0.1	9.2
	RV12	GASEPF	0.2	<0.1	0.2	<0.1	0.7	-	1.2
	S22T	COMSEP	0.8	-	0.8	-	<0.1	-	1.6
	SR20	COMSEP	0.5	<0.1	0.5	<0.1	0.4	-	1.5

Engine	ICAO Type	AEDT Aircraft Type	Arrival Day	Arrival Night	Departure Day	Departure Night	Day Circuits	Night Circuits	Total
	SR22	COMSEP	2.3	0.6	2.3	0.6	2.4	0.9	9.0
Turboprop	B350	DHC6	0.3	-	0.3	<0.1	<0.1	-	0.5
	BE20	DHC6	2.7	0.7	2.6	0.9	0.3	<0.1	7.3
	BE9L	DHC6	0.8	0.1	0.8	0.1	0.2	<0.1	2.0
	KODI	CNA208	0.2	<0.1	0.2	-	0.6	-	1.0
	PC12	CNA208	1.2	0.6	1.0	0.7	0.1	-	3.6
Helicopter	B407	B407	2.2	0.8	2.2	0.7	-	-	5.9
	R44	R44	1.6	-	1.6	-	-	-	3.1
General Aviation Subtotals			***36.2***	***4.0***	***35.4***	***4.8***	***27.0***	***1.6***	***108.9***
Military									
Turboprop	BE20	DHC6	0.4	<0.1	0.4	-	<0.1	<0.1	0.8
Helicopter	H60	S70	2.6	0.3	2.8	0.1	-	-	5.8
Military Subtotals			***3.0***	***0.3***	***3.2***	***0.1***	***<0.1***	***<0.1***	***6.7***
Totals			**49.2**	**5.0**	**48.2**	**5.9**	**27.0**	**1.6**	**136.8**

Source:
MACNOMS Radar data, STP Forecast 2025, HMMH 2026

AEDT inputs also require distribution of departure operations into stage length categories. The AEDT database includes performance profiles for most commercial aircraft types for a range of stage length values; however, many smaller aircraft types have a single representative weight used for all operations, identified as Stage Length 1. If the radar track data analysis counted departures by a particular aircraft type with a stage length exceeding the available performance profiles in AEDT, the profile for the greatest stage length available for that aircraft type in AEDT was used instead. **Table 6.7** provides the stage length classifications by their associated trip distances.

Table 6.7 - AEDT Stage Length Categories

Category	Stage Length (nmi)
1	0-500
2	500-1,000
3	1,000-1,500
4	1,500-2,500
5	2,500-3,500
6	3,500-4,500
7	4,500-5,500
8	5,500-6,500
9	6,500-11,000
M	Maximum range at maximum takeoff weight

Source:
AEDT 3g User Manual, August 2024

Note:
Stage Length is defined as the distance an aircraft travels from takeoff to landing.
nmi = nautical miles

The stage lengths flown from STP are based on MACNOMS radar data operations. All Air Taxi, General Aviation, and Military operations utilize Stage Length 1. Within the Air Carrier category, the EMB170 is the only aircraft type operating at STP. **Table 6.8** presents the stage length proportions for the EMB170, the only aircraft type assigned to multiple stage lengths. For the 2045 Future Conditions, all operations were modeled using Stage Length 1.

Table 6.8 - Modeled Departure Stage Length Usage by Aircraft Type for Existing Conditions

AEDT ANP Type	Stage Length (%)	
	1	2
EMB170	45.10%	54.90%

Source:
MACNOMS Radar data, HMMH 2025

6.2.4. Runway Utilization Rates

Aircrafts arriving to a given runway end have a different noise signature than departing aircrafts. For this reason, and because it indicates how often aircraft fly in any given direction, runway utilization is a key factor in determining the noise exposure around the Airport. **Table 6.9** and **Table 6.10** summarize the fixed-wing runway utilization rates for each aircraft category, developed from the 12-month MACNOMS radar data for the 2024 Existing Conditions and the 2045 No Action Alternative. The rates are presented for all categories for each runway end. Runway choice is often dictated by wind conditions, but other factors such as the time of day, specific aircraft runway length requirements, and the relative location on the airfield influence the choice as well.

Table 6.9 - Modeled Jet Runway Use Percentages for the 2024 Existing Conditions and the 2045 No Action Alternative

Aircraft Category	Operation Mode	Runway					
		13	31	14	32	9	27
Air Carrier	Arrivals	0.0%	0.0%	54.3%	45.7%	0.0%	0.0%
	Departures	0.0%	0.0%	45.7%	54.3%	0.0%	0.0%
	Circuits	-	-	-	-	-	-
Air Taxi	Arrivals	0.1%	0.1%	49.3%	50.5%	0.0%	0.0%
	Departures	0.0%	0.0%	50.9%	49.1%	0.0%	0.0%
	Circuits	0.0%	0.0%	36.4%	63.6%	0.0%	0.0%
General Aviation	Arrivals	0.0%	0.0%	49.1%	50.8%	0.0%	0.1%
	Departures	0.0%	0.0%	50.6%	49.3%	0.1%	0.0%
	Circuits	0.0%	0.0%	36.8%	63.2%	0.0%	0.0%
Military	Arrivals	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%
	Departures	0.0%	0.0%	33.3%	66.7%	0.0%	0.0%
	Circuits	-	-	-	-	-	-

Sources:
MACNOMS Radar data, 2025 AEDT Study, HMMH 2025

Table 6.10 - Modeled Non-Jet Runway Use Percentages for the 2024 Existing Conditions and the 2045 No Action Alternative

Aircraft Category	Operation Mode	Runway					
		13	31	14	32	9	27
Air Taxi	Arrivals	0.8%	0.2%	45.6%	51.4%	0.2%	1.8%
	Departures	0.2%	0.2%	46.5%	52.3%	0.8%	0.0%
	Circuits	-	-	-	-	-	-
General Aviation	Arrivals	0.4%	1.0%	53.2%	42.4%	0.2%	2.8%
	Departures	0.3%	0.9%	52.1%	44.6%	1.0%	1.1%
	Circuits	0.6%	0.8%	51.4%	44.6%	1.6%	1.0%
Military	Arrivals	0.0%	0.0%	54.3%	41.4%	0.0%	4.3%
	Departures	0.0%	0.0%	53.4%	46.6%	0.0%	0.0%
	Circuits	20.0%	0.0%	60.0%	20.0%	0.0%	0.0%

Sources:
MACNOMS Radar data, 2025 AEDT Study, HMMH 2025

For the 2045 Proposed Action Alternative, Runway 13/31 is planned to be closed. As a result, the runway use assigned to Runway 13/31 under the 2024 Existing Conditions and the 2045 No Action was redistributed to the remaining operational runways for the AEDT noise model. Specifically, 98 percent of the operations previously assigned to Runway 13/31 were reassigned to Runway 14/32, while the remaining 2 percent were reassigned to Runway 9/27. **Table 6.11** and **Table 6.12** summarize the fixed-wing runway utilization rates for each aircraft category, for the 2045 Proposed Action Alternative.

Table 6.11 - Modeled Jet Runway Use Percentages

Aircraft Category	Operation Mode	Runway			
		14	32	9	27
Air Carrier	Arrivals	54.3%	45.7%	0.0%	0.0%
	Departures	45.7%	54.3%	0.0%	0.0%
Air Taxi	Arrivals	49.4%	50.6%	0.0%	<0.1%
	Departures	50.9%	49.1%	<0.1%	0.0%
General Aviation	Arrivals	49.1%	50.8%	0.0%	<0.1%
	Departures	50.6%	49.3%	<0.1%	0.0%
	Circuits	36.8%	63.2%	0.0%	0.0%
Military	Arrivals	0.0%	100.0%	0.0%	0.0%
	Departures	33.3%	66.7%	0.0%	0.0%

Sources:
MACNOMS Radar data, 2025 AEDT Study, HMMH 2026

Table 6.12 - Modeled Non-Jet Runway Use Percentages

Aircraft Category	Operation Mode	Runway			
		14	32	9	27
Air Taxi	Arrivals	46.4%	51.6%	0.2%	1.8%
	Departures	46.6%	52.5%	0.8%	<0.1%
General Aviation	Arrivals	53.6%	43.4%	0.2%	2.8%
	Departures	52.3%	45.5%	1.0%	1.1%
	Circuits	52.0%	45.4%	1.6%	1.0%
Military	Arrivals	54.3%	41.4%	0.0%	4.3%
	Departures	53.4%	46.6%	0.0%	0.0%
	Circuits	79.6%	20.0%	0.4%	0.0%

Sources:
MACNOMS Radar data, 2025 AEDT Study, HMMH 2026

Table 6.13 presents the helipad utilization rates, developed from the 12-month MACNOMS radar data. These utilization rates were applied across all modeled scenarios.

Table 6.13 - Modeled Helipad Use Percentages

Aircraft Category	Operation Mode	Helipad			
		H1	H2	H3	HM
Air Taxi	Arrivals	0.0%	0.0%	100.0%	0.0%
	Departures	0.0%	0.0%	100.0%	0.0%
	Circuits	0.0%	0.0%	100.0%	0.0%
General Aviation	Arrivals	35.5%	14.0%	50.4%	0.0%
	Departures	41.7%	5.3%	53.0%	0.0%
	Circuits	51.2%	9.7%	39.1%	0.0%
Military	Arrivals	0.0%	0.0%	0.0%	100.0%
	Departures	0.0%	0.0%	0.0%	100.0%
	Circuits	0.0%	0.0%	0.0%	100.0%

Sources:
MACNOMS Radar data, 2025 AEDT Study, HMMH 2025

6.2.5. Flight Track Geometry and Utilization Rates

For the noise analysis, model flight tracks were developed to represent the path along the ground over which aircraft generally fly. Departure corridors are defined by a series of individual flight tracks located across the width of the corridor. Generally, aircraft on approach to a runway end are located within a smaller corridor due to the use of navigational instruments. To model the flight corridors in AEDT, consolidated flight tracks were developed from the radar data and given a track ID. Flight tracks modeled for the Existing Conditions and forecast scenarios are shown in **Figure 6.2** (Arrival Tracks), **Figure 6.3** (Departure Tracks), and **Figure 6.4** (Helicopter Tracks). The modeled flight track percentages for fixed wing operations and helicopter operations are listed in **Table 6.14** and **Table 6.15**, respectively**.** Air Carrier operations (i.e., the EMB170) utilized jet tracks for runways 14 and 32 in the Existing Conditions.

Figure 6.2 - Modeled Arrival Tracks

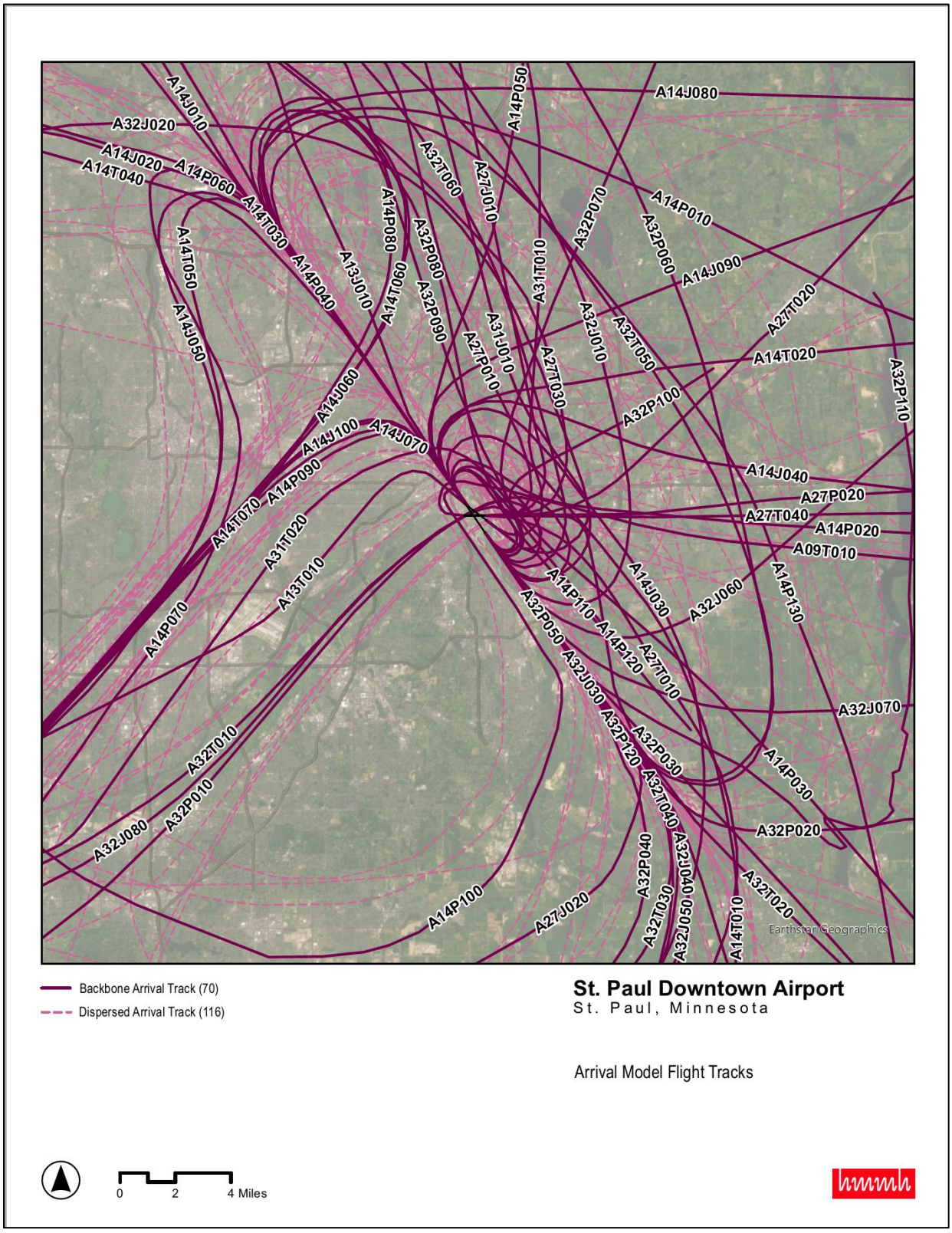


Figure 6.3 - Modeled Departure Tracks

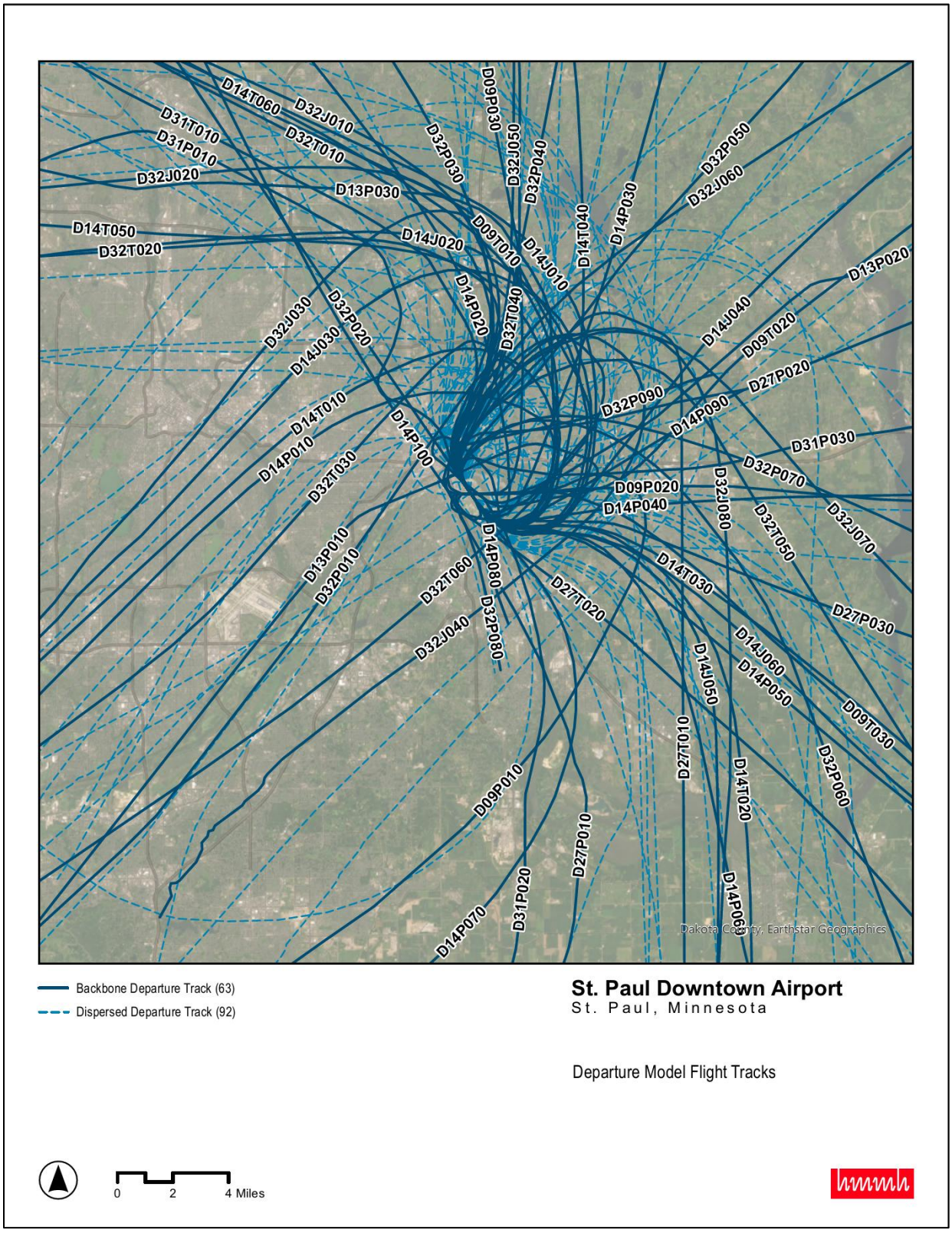


Figure 6.4 - Modeled Helicopter Tracks

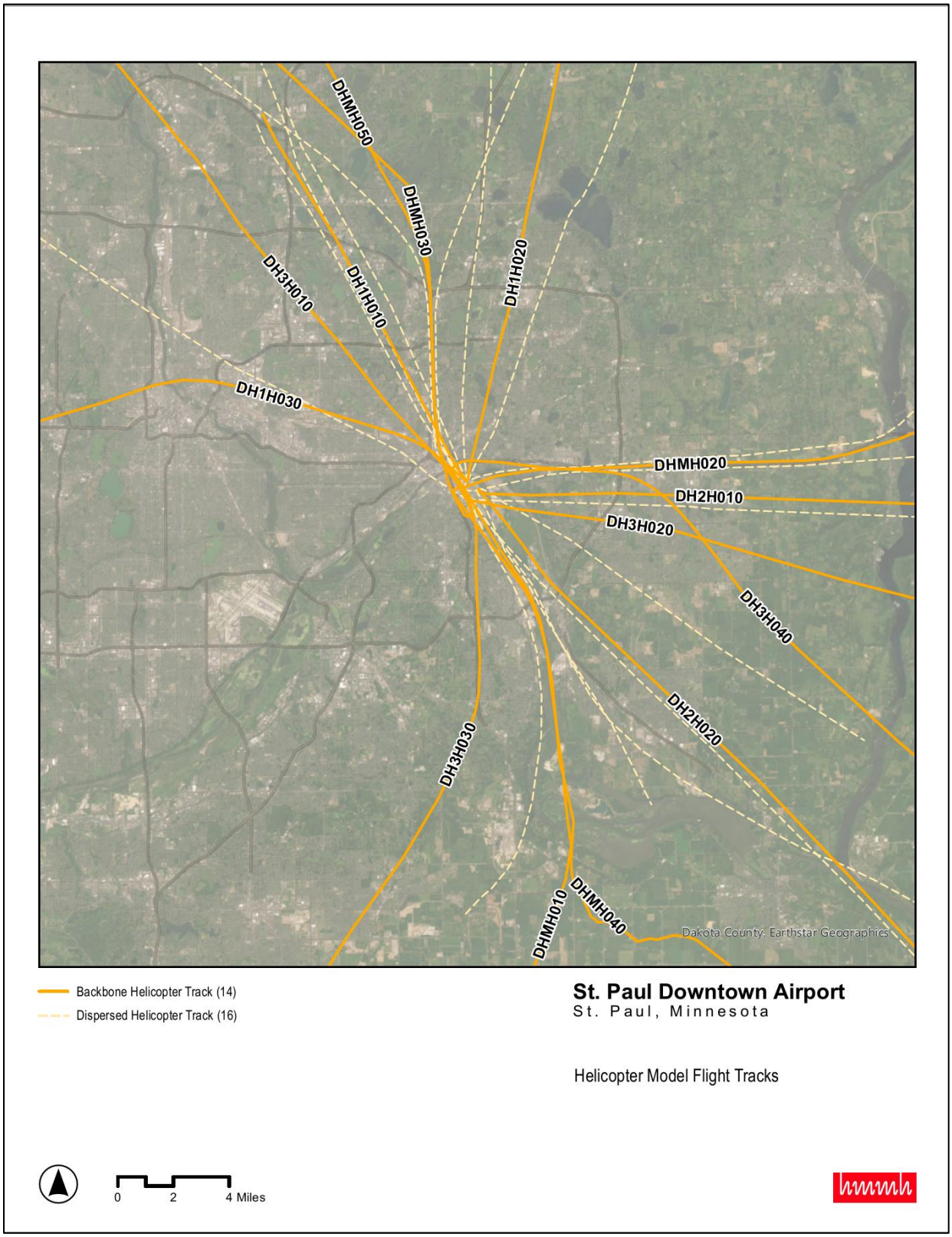


Table 6.14 - Model Fixed Wing Flight Track Utilization

Aircraft	Runway	Arrivals		Departures		Circuits	
		Track ID	Percent	Track ID	Percent	Track ID	Percent
Air Taxi and General Aviation	13	A13J01	50.00%	D13P01	33.33%	C13P01	100.00%
		A13T01	50.00%	D13P02	33.33%		
				D13P03	33.33%		
		Total	**100.00%**	**Total**	**100.00%**	**Total**	**100.00%**
	31	A31J01	33.00%	D31P01	20.00%	C31P01	90.24%
		A31T01	33.00%	D31P02	20.00%	C31T01	9.76%
		A31T02	33.00%	D31P03	20.00%		
				D31T01	40.00%		
		Total	**100.00%**	**Total**	**100.00%**	**Total**	**100.00%**
	14	A14J01	1.80%	D14J01	2.30%	C14J01	0.30%
		A14J01	6.10%	D14J01	0.80%	C14J01	0.20%
		A14J02	1.40%	D14J02	1.40%	C14P01	19.30%
		A14J02	1.60%	D14J02	2.10%	C14P01	0.20%
		A14J03	1.40%	D14J03	6.60%	C14P02	76.30%
		A14J03	0.90%	D14J03	4.10%	C14P02	0.50%
		A14J04	5.10%	D14J04	1.20%	C14T01	3.10%
		A14J04	2.40%	D14J04	1.90%	C14T02	0.20%
		A14J05	0.70%	D14J05	2.60%		
		A14J05	0.30%	D14J05	4.40%		
		A14J06	0.90%	D14J06	10.70%		
		A14J06	0.30%	D14J06	8.80%		
		A14J07	3.30%	D14P01	0.60%		
		A14J07	2.80%	D14P01	0.00%		
		A14J08	2.30%	D14P02	3.60%		
		A14J08	2.10%	D14P02	1.20%		
		A14J09	5.10%	D14P03	0.10%		
		A14J09	5.80%	D14P03	2.60%		
		A14J10	5.40%	D14P04	2.30%		
		A14J10	2.70%	D14P04	0.20%		
		A14P01	0.40%	D14P05	2.60%		
		A14P01	0.10%	D14P05	0.10%		
		A14P02	2.20%	D14P06	2.10%		
		A14P02	0.10%	D14P06	0.10%		
		A14P03	3.00%	D14P07	1.30%		

Aircraft	Runway	Arrivals		Departures		Circuits	
		Track ID	Percent	Track ID	Percent	Track ID	Percent
		A14P03	0.10%	D14P08	0.10%		
		A14P04	5.90%	D14P08	8.70%		
		A14P04	1.10%	D14P09	6.30%		
		A14P05	1.90%	D14P09	0.00%		
		A14P05	0.00%	D14P10	0.50%		
		A14P06	0.50%	D14P10	0.00%		
		A14P07	0.20%	D14T01	2.40%		
		A14P07	0.10%	D14T01	0.30%		
		A14P08	0.10%	D14T02	0.20%		
		A14P08	0.30%	D14T02	1.80%		
		A14P09	0.10%	D14T03	1.70%		
		A14P09	1.60%	D14T03	0.30%		
		A14P10	1.60%	D14T04	0.00%		
		A14P11	1.40%	D14T04	4.60%		
		A14P12	0.30%	D14T05	0.20%		
		A14P13	0.20%	D14T05	2.60%		
		A14P13	0.40%	D14T06	6.20%		
		A14T01	0.10%	D14T06	0.40%		
		A14T01	1.70%				
		A14T02	1.90%				
		A14T02	0.30%				
		A14T03	11.30%				
		A14T03	0.70%				
		A14T04	4.40%				
		A14T04	0.30%				
		A14T05	0.30%				
		A14T05	0.10%				
		A14T06	0.20%				
		A14T07	0.50%				
		A14T07	4.00%				
		Total	**100.00%**	**Total**	**100.00%**	**Total**	**100.00%**
	32	A32J01	1.70%	D32J01	0.80%	C32J01	0.60%
		A32J01	6.10%	D32J01	2.60%	C32J01	0.80%
		A32J02	0.70%	D32J02	1.40%	C32P01	24.60%
		A32J02	1.30%	D32J02	2.20%	C32P01	0.20%

Aircraft	Runway	Arrivals		Departures		Circuits	
		Track ID	Percent	Track ID	Percent	Track ID	Percent
		A32J03	1.00%	D32J03	5.10%	C32P02	68.60%
		A32J03	0.80%	D32J03	6.90%	C32P02	0.30%
		A32J04	2.10%	D32J04	1.00%	C32T01	0.30%
		A32J04	2.60%	D32J04	1.20%	C32T01	4.40%
		A32J05	6.70%	D32J05	0.70%	C32T02	0.40%
		A32J05	4.10%	D32J05	1.30%		
		A32J06	6.80%	D32J06	1.30%		
		A32J06	7.80%	D32J06	3.20%		
		A32J07	9.60%	D32J07	10.10%		
		A32J07	6.30%	D32J07	8.90%		
		A32J08	2.60%	D32J08	3.20%		
		A32J08	4.00%	D32J08	4.70%		
		A32P01	0.10%	D32P01	0.90%		
		A32P01	0.70%	D32P01	0.10%		
		A32P02	0.20%	D32P02	0.80%		
		A32P02	0.60%	D32P02	3.30%		
		A32P03	0.30%	D32P03	2.70%		
		A32P03	3.40%	D32P03	0.70%		
		A32P04	0.10%	D32P04	1.80%		
		A32P04	1.90%	D32P05	0.10%		
		A32P05	1.90%	D32P05	0.90%		
		A32P05	0.80%	D32P06	0.20%		
		A32P06	1.10%	D32P06	1.40%		
		A32P06	0.30%	D32P07	0.20%		
		A32P07	1.30%	D32P07	2.80%		
		A32P08	1.10%	D32P08	4.80%		
		A32P08	0.80%	D32P09	7.00%		
		A32P09	1.90%	D32P09	0.10%		
		A32P09	0.10%	D32T01	0.70%		
		A32P10	1.90%	D32T01	5.60%		
		A32P10	0.10%	D32T02	1.10%		
		A32P11	0.50%	D32T02	0.00%		
		A32P12	1.30%	D32T03	1.80%		
		A32P12	0.10%	D32T03	0.30%		
		A32T01	0.20%	D32T04	0.10%		

Aircraft	Runway	Arrivals		Departures		Circuits	
		Track ID	Percent	Track ID	Percent	Track ID	Percent
		A32T01	1.50%	D32T04	3.70%		
		A32T02	1.20%	D32T05	3.10%		
		A32T02	0.20%	D32T05	0.40%		
		A32T03	0.20%	D32T06	0.80%		
		A32T03	1.20%	D32T06	0.10%		
		A32T04	2.70%				
		A32T04	0.40%				
		A32T05	0.20%				
		A32T05	1.40%				
		A32T06	0.80%				
		A32T06	5.50%				
		Total	**100.00%**	**Total**	**100.00%**	**Total**	**100.00%**
	9	A09T01	100.00%	D09P01	3.80%	C09P01	84.60%
				D09P01	3.80%	C09P02	11.50%
				D09P02	11.50%	C09T01	3.80%
				D09P03	61.50%		
				D09T01	3.80%		
				D09T02	3.80%		
				D09T03	11.50%		
		Total	**100.00%**	**Total**	**100.00%**	**Total**	**100.00%**
	27	A27J01	1.90%	D27P01	14.30%	C27P01	72.70%
		A27J02	1.90%	D27P02	50.00%	C27P02	22.70%
		A27P01	42.60%	D27P03	14.30%	C27T01	4.50%
		A27P02	18.50%	D27T01	7.10%		
		A27T01	5.60%	D27T02	14.30%		
		A27T02	7.40%				
		A27T03	18.50%				
		A27T04	1.90%				
		A27T04	1.90%				
		Total	**100.00%**	**Total**	**100.00%**	**Total**	**100.00%**

Source: MACNOMS Radar data, HMMH 2025

Table 6.15 - Model Helicopter Flight Track Utilization

Aircraft	Helipad	Arrivals		Departures	
		Track ID	Percent	Track ID	Percent
Air Taxi and General Aviation	H1	AH1H01	10.26%	DH1H01	80.36%
		AH1H02	87.18%	DH1H02	14.29%
		AH1H03	2.56%	DH1H03	5.36%
		Total	**100.00%**	**Total**	**100.00%**
	H2	AH2H01	11.11%	DH2H01	12.50%
		AH2H02	88.89%	DH2H02	87.50%
		Total	**100.00%**	**Total**	**100.00%**
	H3	AH3H01	10.00%	DH3H02	10.00%
		AH3H01	40.00%	DH3H01	65.00%
		AH3H02	30.00%	DH3H02	7.50%
		AH3H03	20.00%	DH3H03	15.00%
				DH3H04	2.50%
		Total	**100.00%**	**Total**	**100.00%**
Military	HM	AHMH01	31.45%	DHMH01	43.79%
		AHMH02	10.06%	DHMH02	4.14%
		AHMH03	50.94%	DHMH03	31.95%
		AHMH04	5.03%	DHMH04	13.02%
		AHMH05	2.52%	DHMH05	7.10%
		Total	**100.00%**	**Total**	**100.00%**

Source: *2025 AEDT Study, HMMH, 2025*

6.2.6. Meteorological Conditions

AEDT uses meteorological data to adjust aircraft performance and sound propagation based on average weather conditions at the Airport. The meteorological parameters include temperature, barometric pressure, relative humidity, and wind speed. The FAA requires the use of the provided AEDT weather information. The AEDT database includes 10-year average[8] weather for each airport. The meteorological data for STP in AEDT version 3g are:

- Temperature: 46.39° F
- Station Pressure: 989.47 mb
- Sea Level Pressure: 1016.19 mb
- Dew point: 36.85° F
- Relative humidity: 69.27%

[8] For the 10-year period 2014 through 2023

- Wind speed: 7.43 knots

6.2.7. Terrain Data

AEDT uses terrain data to adjust the aircraft-to-ground path length, which takes terrain variation relative to the airfield elevation into account. The terrain data inputs to AEDT for this study were obtained from the United States Geological Survey 3D Elevation Products dataset with 1/3 arc second (approximately 33 feet) resolution covering the Study Area.

6.3. Noise Modeling Results

6.3.1. 2024 Existing Conditions

Error! Reference source not found.**.5** presents the 2024 Existing Conditions DNL noise contours, 60 dB through 75 dB in 5 dB intervals, overlaid on the land use base map. The shape and size of the DNL contours are determined by the number of operations, the type of operation, the period during which the operations occurred, and the aircraft/engine combination. Arrival operations influence contour shapes in a different manner than departure operations do. The extended lobes of the contours along the extended runway centerlines are due to overflight noise from both arrivals and departures, whereas the wider lobes at the runway ends and sides are primarily the result of sideline noise associated with departures.

The DNL 65 dB contour extends from the airfield as follows:

- To the north, the DNL 65 dB contour extends beyond the airport boundary, west of Runway 14 end and Airport Drive and northwest of the MAC equipment building, over compatible industrial and utility land uses. This is due to operations on Runway 14/32 and at modeled Helipad H1.
- To the south, the DNL 65 dB contour extends beyond the airport boundary east of Runway 32 end, over the Mississippi River. This is due to operations on Runway 14/32.
- To the west, the DNL 65 dB contour does not extend beyond the airport boundary as a result of operations on Runway 9/27 and at modeled Helipad H3.
- To the east, the DNL 65 dB contour remains within the airport boundary as a result of operations on Runway 9/27, Runway 13/31, and at modeled Helipad H2.

There are no residential areas within the DNL 65 dB contour.

The extent of the DNL 60 dB contour is shown for informational purposes only and is shown to extend to the northwest and southeast of the Airport along the runway headings and flight paths.

Table 6.16 provides the population exposure, and housing unit counts within the 2024 Existing Conditions DNL noise contours. There are no residents and no housing units within the DNL 65 dB noise contour. There are no residents or housing units within the DNL 70 dB noise contour. In addition, no individual noise-sensitive locations, such as schools or places of worship, are within the 2024 Existing Conditions DNL 65 dB or greater noise contours.

Table 6.16 - Estimated Population, Housing, and Area within the 2024 Existing Conditions DNL Noise Contours

Contour	Population	Housing	Area (Acres)
65-70 DNL	0	0	133.12
70-75 DNL	0	0	71.36
75+ DNL	0	0	37.55
Total > 65 DNL	**0**	**0**	**242.03**

Sources:
HMMH, 2026; U.S. Census Bureau, 2020

Figure 6.5 - 2024 Existing Conditions Noise Contours



6.3.2. 2045 No Action Alternative

Error! Reference source not found.**.6** presents the 2045 No Action Alternative DNL noise contours, 60 dB through 75 dB in 5 dB intervals, overlaid on the land use base map.

The DNL 65 dB contour extends from the airfield as follows:

- To the north, the DNL 65 dB contour extends beyond the airport boundary, west of Runway 14 end and Airport Drive and north of the MAC equipment building, over compatible industrial and utility land uses. This is due to operations on Runway 14/32 and at modeled Helipad H1.
- To the south, the DNL 65 dB contour extends beyond the airport boundary east of Runway 32 end, over the Mississippi River. This is due to operations on Runway 14/32.
- To the west, the DNL 65 dB contour does not extend beyond the airport boundary as a result of operations on Runway 9/27 and at modeled Helipad H3.
- To the east, the DNL 65 dB contour remains within the airport boundary as a result of operations on Runway 9/27, Runway 13/31, and at modeled Helipad H2.

There are no residential areas within the DNL 65 dB contour.

Table 6.17 provides the population exposure and housing unit counts within the 2045 No Action Alternative DNL noise contours. There are no residents and no housing units within the DNL 65 dB noise contour. There are no residents or housing units within the DNL 70 dB noise contour. In addition, no individual noise-sensitive locations, such as schools or places of worship, are within the 2045 No Action Alternative DNL 65 dB or greater noise contours.

Table 6.17 - Estimated Population, Housing, and Area within the 2045 No Action Alternative DNL Noise Contours

Contour	Population	Housing	Area (Acres)
65-70 DNL	0	0	139.12
70-75 DNL	0	0	74.29
75+ DNL	0	0	43.82
Total > 65 DNL	**0**	**0**	**257.23**

Sources:
HMMH, 2026; U.S. Census Bureau, 2020

Figure 6.6 - 2045 No Action Alternative Noise Contours



6.3.3. 2045 Proposed Action Alternative

Error! Reference source not found.**.7** presents the 2045 Proposed Action Alternative DNL noise contours, 60 dB through 75 dB in 5 dB intervals, overlaid on the land use base map.

The DNL 65 dB contour extends from the airfield as follows:

- To the north, the DNL 65 dB contour extends beyond the airport boundary, west of Runway 14 end and Airport Drive and north of the MAC equipment building, over compatible industrial and utility land uses. This is due to operations on Runway 14/32 and at modeled Helipad H1.
- To the south, the DNL 65 dB contour extends beyond the airport boundary east of Runway 32 end, over the Mississippi River. This is due to operations on Runway 14/32.
- To the west, the DNL 65 dB contour does not extend beyond the airport boundary as a result of operations on Runway 9/27 and at modeled Helipad H3.
- To the east, the DNL 65 dB contour remains within the airport boundary as a result of operations on Runway 9/27 and at modeled Helipad H2.

There are no residential areas within the DNL 65 dB contour.

Table 6.18 provides the population exposure and housing unit counts within the 2045 Proposed Action Alternative DNL noise contours. There are no residents and no housing units within the DNL 65 dB noise contour. There are no residents or housing units within the DNL 70 dB noise contour. In addition, no individual noise-sensitive locations, such as schools or places of worship, are within the 2045 Proposed Action Alternative DNL 65 dB or greater noise contours.

Table 6.18 - Estimated Population, Housing, and Area within the 2045 Proposed Action Alternative DNL Noise Contours

Contour	Population	Housing	Area (Acres)
65-70 DNL	0	0	137.37
70-75 DNL	0	0	74.26
75+ DNL	0	0	43.78
Total > 65 DNL	**0**	**0**	**255.41**

Sources:
HMMH, 2026; U.S. Census Bureau, 2020

Figure 6.7 - 2045 Proposed Action Alternative Noise Contours



6.3.4. Comparison between the 2045 No Action and Proposed Action Alternatives

Figure 6.8 shows a comparison of the 2045 No Action Alternative DNL 65 dB or greater noise contours to the 2045 Proposed Action Alternative DNL 65 dB or greater noise contours. The differences between the two contours are primarily due to the closure of Runway 13/31 under the 2045 Proposed Action Alternative and the resulting redistribution of aircraft operations to Runways 14/32 and 9/27. As a result, the shape of the 65 dB DNL contour shifted to reflect the revised runway use while the overall noise exposure remains generally comparable between the two alternatives.

The 2045 Proposed Action Alternative and the 2045 No Action Alternative 65 dB DNL noise contours do not include any residential population or housing units. As a result, there is no increase in the number of people or housing units exposed to aircraft noise levels of DNL 65 dB or greater under the 2045 Proposed Action Alternative. In addition, the 2045 Proposed Action Alternative results in a decrease in the total area within the DNL 65 dB or greater noise contours compared to the 2045 No Action Alternative.

Figure 6.8 - Comparison of the 2045 Future Conditions Contours

