AIRPORT MASTER PLAN UPDATE
EXECUTIVE SUMMARY

Arthur Dunn Airpark | March 2026



PREPARED BY

RICONDO®

IN ASSOCIATION WITH

American Infrastructure Development, Inc.
Brown & Phillips, Inc.
Martinez Geospatial, Inc.
Mohsen Design Group, Inc.
The Quotient Group

FLY SPACE COAST
ARTHUR DUNN AIRPARK (X21)


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1 INTRODUCTION

Arthur Dunn Airpark (X21 or the Airport) is a public use, general aviation (GA) airport that supports recreational aviation activities for northern Brevard County. The Airport is owned and operated by the Titusville-Cocoa Airport Authority (TCAA), which also operates Space Coast Regional Airport (TIX) and Merritt Island Airport (COI).

In 2022, TCAA initiated this Master Plan Update (MPU) to serve as a guide for implementing future airport improvements in an incremental and financially feasible manner; maintaining compliance with evolving federal and state regulatory standards; and ensuring that X21 remains a safe, efficient, and sustainable community asset. The MPU culminates with the development of an Airport Layout Plan (ALP), which is required to secure federal and state funding through the Federal Aviation Administration (FAA) Airport Improvement Program (AIP) and Florida Department of Transportation (FDOT) aviation grant programs.

The recommendations contained in this MPU are intended to accommodate future aeronautical demand, maintain and enhance existing infrastructure, and incorporate TCAA's vision for X21. The MPU documents existing conditions, forecasts future demand, evaluates the capacity of existing facilities, and identifies the future requirements for the 20-year planning horizon.

An iterative process was undertaken to identify and analyze improvements to the airfield, GA facilities, and support facilities needed to efficiently accommodate the forecast growth in aviation activity.

X21 AT A GLANCE

RUNWAYS



15-33
Length: 3,026'
Width: 70'

4-22
(turf runway)
Length: 1,805'
Width: 100'

Full length parallel taxiway

T-Hangars: **88**

Conventional Hangars: **3**

Acres: **148**

Existing Conditions (as of June 2023)

2 MASTER PLAN PROCESS

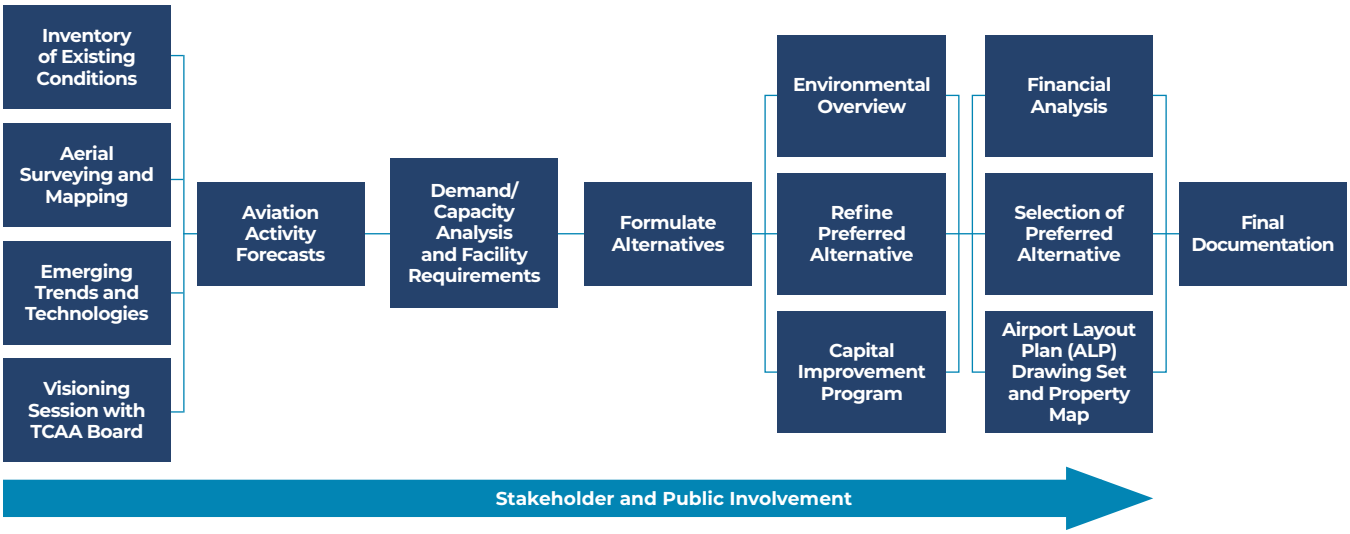
The previous MPU for X21 was completed in 2009. Since the previous MPU was drafted, the GA industry has evolved, and the FAA has revised pertinent design criteria and other applicable regulatory guidance. TCAA has completed numerous airfield and hangar improvement projects over the past 16 years to provide tenants with competitive and relevant services and facilities.

An updated MPU is needed to provide TCAA with a long-range (20-year) management tool to help guide the Airport development necessary to accommodate forecast growth in demand. The MPU was completed in accordance with federal and state guidance found in FAA Advisory Circular 150/5070-6B, *Airport Master Plans* and the Florida Department of Transportation (FDOT) *Guidebook for Airport Master Planning*. The MPU process was tailored to meet X21's specific needs.



The MPU will focus on the Airport's role within the TCAA system and how to leverage the Airport's existing and proposed facilities and infrastructure to best serve the surrounding region.

Master Plan Process



SOURCE: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5070-6B, *Airport Master Plans*, January 27, 2015; Florida Department of Transportation, *Guidebook for Airport Master Planning* (2021-2022); Ricondo & Associates, Inc. September 2022.

AIRPORT VISION AND MASTER PLAN GOALS

A Visioning Workshop was conducted with the TCAA Board of Directors and management staff in June 2023 to identify strengths and opportunities, desired amenities, and a vision for each airport in the TCAA system. The workshop was also a platform to discuss key goals to guide the MPU.

X21 VISION

To support recreational flying and enhance flight training activity by attracting additional aeronautical tenants.

MASTER PLAN GOALS



Evaluate activity levels at the Airport and assess airfield capacity.



Enhance the existing airfield to continue to support recreational flying.



Prepare a plan that maximizes land use opportunities for accommodating future aeronautical demand and non-aeronautical opportunities.



Identify improvements to modernize facilities to attract additional tenants and investments at X21.


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3 AVIATION ACTIVITY FORECAST

Aviation activity forecasts provide the foundation for determining future facility and infrastructure requirements at X21. They translate demographic and economic conditions, industry trends, and operational patterns into a set of quantified expectations through the 20-year planning horizon (which culminates in fiscal year [FY] 2043).

The forecasts were developed and approved by the FAA on January 8, 2024, for **aircraft operations** (by fleet mix) and for **based aircraft** (by engine type).

The forecasts are unconstrained and intended to provide an approximate indication of future activity levels. These forecasts assume no limitations on growth related to the airport's ability to deliver airfield capacity, supporting infrastructure, hangar and apron space, or adequate landside access and circulation. Actual future activity may vary from these projections due to unforeseen factors, including economic, social, regulatory, political, technological, or environmental changes.

FUTURE AVIATION ACTIVITY DRIVERS



Historical Activity and Trends at COI



Industry Aircraft Market Trends for GA



Local, State, and National Socioeconomic Trends

Aircraft operations are forecast to increase from 25,517 in FY2022 to 49,900 in FY2043.

AIRCRAFT OPERATIONS

An aircraft operation is defined as a takeoff or landing on the airport's runways. Touch-and-go operations, which are associated with flight training activities, are considered two operations: one landing and one takeoff. Aircraft operational demand levels dictate the need for airfield infrastructure, aircraft fuel storage, and transient aircraft storage.

Based aircraft are forecast to increase from 95 in FY2022 to 114 in FY2043.

BASED AIRCRAFT

Based aircraft are aircraft that are registered at X21, stored in hangars, or on aircraft parking aprons. Based aircraft volumes typically influence storage requirements, demand for maintenance, and other aviation support services.

Aviation Activity Forecasts (Approved by FAA January 2024)

CATEGORY	BASE YEAR (ACTUAL) FY[1]2022	5-YEAR FY2028	10-YEAR FY2033	20-YEAR FY2043
Total Operations	25,517	30,900	36,300	49,900
Itinerant	6,592	8,800	11,100	17,500
Local	18,925	22,100	25,200	32,400
Total Based Aircraft	95	99	105	114
Single Engine	88	92	97	103
Multi-Engine	5	5	6	7
Helicopter	1	1	1	2
Other[2]	1	1	1	2

NOTE FY
1 The FY is October through September.
2 Other includes military, experimental, and light sport aircraft and gliders.
SOURCES: Florida Department of Transportation, Aviation and Spaceports Office, Florida Aviation System Plan 2035, February 2023 (forecast growth rate); Ricondo & Associates, Inc., March 2023 (forecast); US Department of Transportation, Federal Aviation Administration, Terminal Area Forecast Fiscal Years 2022–2050, February 2023 (operations, FY 2012 through FY 2021, and operations forecast growth rate); Virtower LLC, February 2023 (operations data, FY 2022).



4 DEMAND/CAPACITY ANALYSIS AND FACILITY REQUIREMENTS

The purpose of the demand/capacity analysis is to assess the existing airfield, GA facilities, and various other airport support facilities to accommodate future demand levels identified in the aviation activity forecasts. The results of the demand/capacity analyses set the framework for developing a recommended airport improvement plan, ensuring that capital investments are both necessary and timed appropriately.

As a part of the MPU, facility requirements for future Airport facilities and infrastructure were quantified for three key functional areas.

Airfield: Ensure the runway and taxiway systems will accommodate forecast demand and comply with FAA standards.

GA: Quantify additional apron space, corporate and T-hangars, fixed-base operator (FBO) facilities, and automobile parking to support the operations of the Airport.

Support Facilities: Develop recommendations for the timing of improvements to the airport maintenance facility and electrical vault.

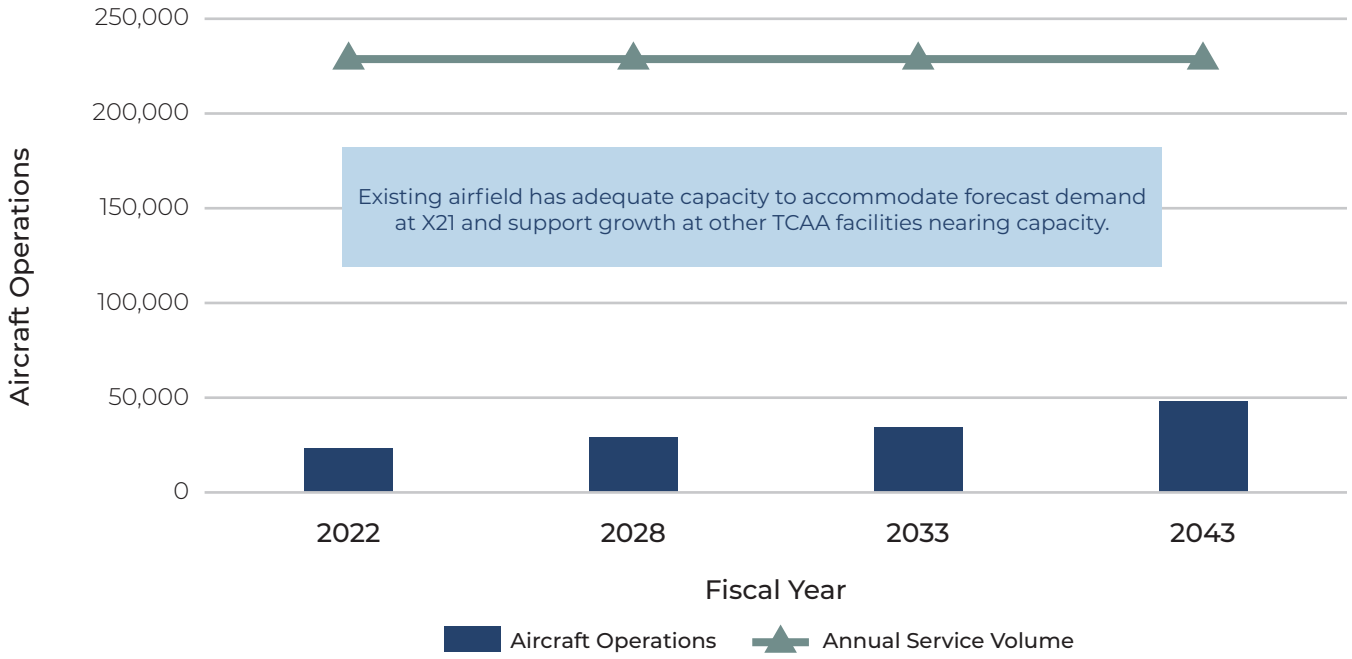
AIRFIELD FACILITIES

Airfield capacity is defined by the maximum number of aircraft operations that can be accommodated during a specific period without incurring an unacceptable level of delay. Airfield capacity can vary depending on the configuration of the runways, types of aircraft operating on the airfield, weather conditions, and operational procedures. The results of this analysis are expressed in terms of annual service volume (ASV).

Airfield capacity is adequate to accommodate 20-Year forecast demand totaling 49,900 aircraft operations.

ASV accounts for the hourly, daily, and seasonal variations in aircraft demand associated with the airfield and can be used as a reference point for the general planning of capacity-related improvements. The ASV, based on the FY 2022 demand levels and the existing airfield configuration, is estimated at 230,000 annual operations. The Airport's annual demand is forecast to increase from 25,517 operations (11.1 percent of the 230,000 ASV) in 2022 to 49,900 operations (21.7 percent of the 230,000 ASV) in 2043. Therefore, the existing airfield will have adequate capacity to support forecast operations at X21 and the ability to support other nearby capacity constrained facilities, such as COI.

ANNUAL SERVICE VOLUME VERSUS FORECAST DEMAND



SOURCES: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5060-5, Airport Capacity and Delay, December 1995; Ricondo & Associates, Inc., July 2023 (Aviation Activity Forecast).

In addition to airfield capacity, the existing airfield was evaluated based on current FAA design standards to determine whether it is appropriately sized and configured to meet the base year (FY 2022) and forecast demand. The airfield analysis includes an examination of the runways, taxiways, and navigational aids (NAVAIDs).

Runway 15-33 is currently 70 feet wide. To comply with FAA design standards for runways serving B-II small aircraft, the runway is recommended to be increased in width to 75 feet during the next runway rehabilitation. The existing 150-foot separation distance between Taxiway A and Runway 15-33 is recommended to be increased to 240 feet to comply with the FAA design standards for runways and taxiways serving B-II small aircraft. Other airfield improvements include the construction of engine run-up areas to provide pilots with a designated area for pre-flight checks without blocking the runway ends, as well as replacement of the rotating beacon.

GENERAL AVIATION AND SUPPORT FACILITY REQUIREMENTS

Additional GA facilities are needed to accommodate forecast demand. An estimated 4.8 acres of additional space are needed to provide aircraft parking and circulation, FBO/terminal spaces, and supporting infrastructure such as automobile parking. The methodologies used to determine demand/capacity relationships and facility requirements are in accordance with industry standards, with planning factors adjusted as appropriate to reflect actual Airport use characteristics. The MPU includes recommendations for the replacement of the electrical vault and relocation of the Airport Maintenance facility.

FACILITY	X21
ADDITIONAL GENERAL AVIATION FACILITY REQUIREMENTS	
Apron Space	35,500 sq ft
Corporate Hangar Space	8,200 sq ft
T-hangar Space	69,400 sq ft
FBO/GA Terminal Space	9,400 sq ft
Automobile Parking	44,100 sq ft
Landscaping / Drainage	41,700 sq ft
Total Additional Space	**208,300 sq ft / 4.8 Acres**
SUPPORT FACILITY REQUIREMENTS	
Airport Electrical Vault	The electrical vault is in poor condition and is recommended to be replaced.
Airport Maintenance	The Maintenance Facility is undersized. Equipment and personnel could be accommodated at the former Brevard County Parks Department facility located on Airport property.

SOURCE: Ricondo & Associates, Inc., February 2024.

To accommodate demand, additional development is needed by FY2043.

The Airport's existing property will accommodate future requirements.

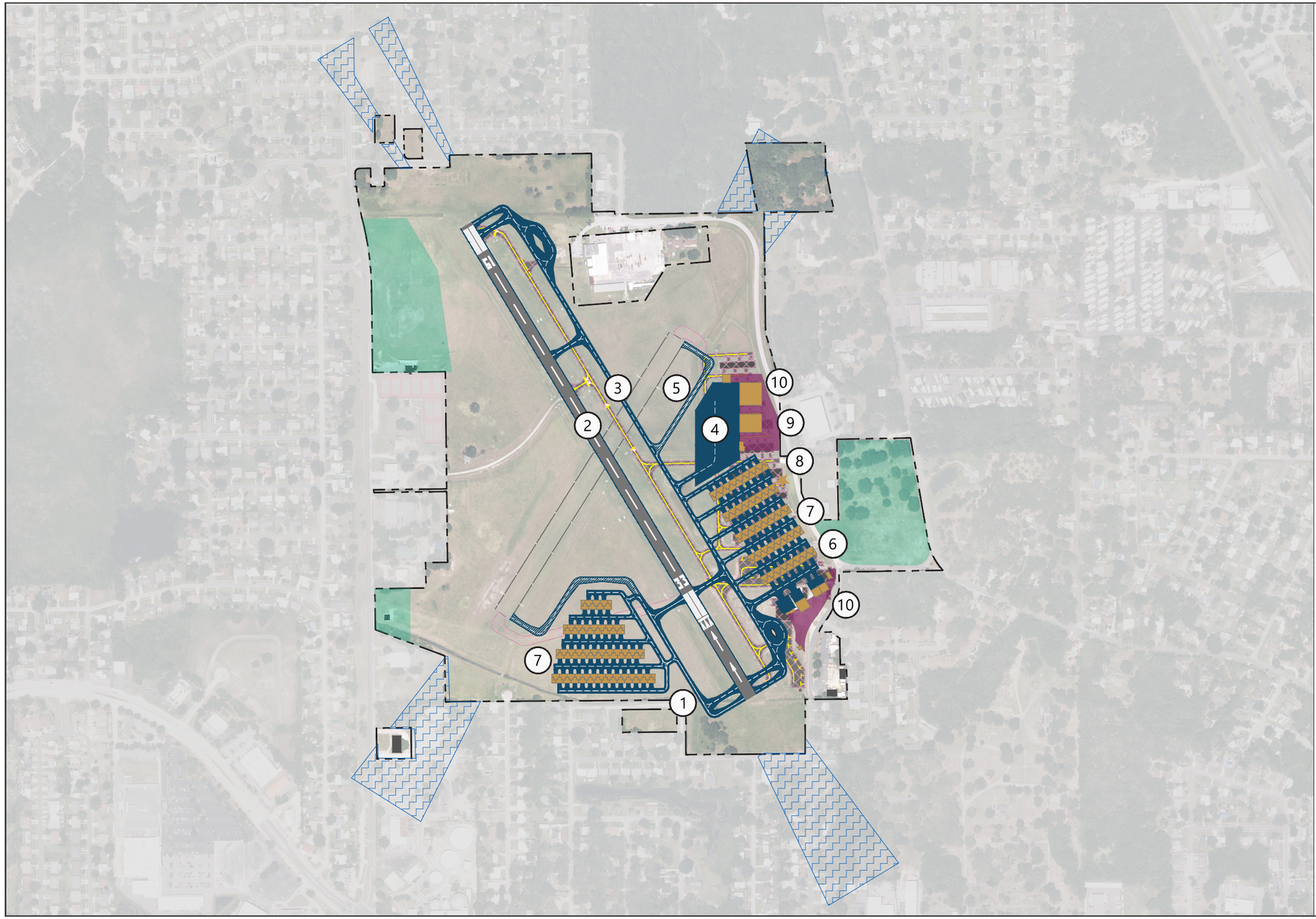
5 RECOMMENDED AIRPORT IMPROVEMENT PLAN

The recommended airport improvement plan incorporates the findings from the demand/capacity analyses and the preferred alternative selected from an interactive process involving stakeholder coordination. Recommendations stated in the MPU were selected through a series of interactive work sessions that included various stakeholders, Airport users, regulatory agencies, and TCAA staff and board members.

During these sessions, participants openly discussed the location and configuration of future facilities or replacement facilities. These discussions covered advantages, disadvantages, and tradeoffs of different facility locations, as well as configurations and layouts for the proposed facilities, from operational and land use perspectives.

The recommended airport improvement projects are intended to comply with existing FAA airport design standards, accommodate future demand, modernize and update Airport facilities and equipment, and assist TCAA in meeting its vision.





Projects Not Illustrated

- Runway 15-33 Rehabilitation
- Recurring Hangar Improvements

Airfield Improvements

1. Construct Partial Parallel Taxiway E (West of Runway 15-33) and Relocate Partial Turf Taxiway D and Unnamed Taxiway at Runway 22 End
2. Runway 15-33 Rehabilitation and Widening
3. Relocate Taxiway A, Construct Connectors, Construct North and South Run-up Areas, and Demolish Existing Taxiway A
4. Construct North Apron
5. Construct Turf Taxiway B
6. Rehabilitate FBO Apron and Fuel Farm

Proposed Buildings

7. Construct T-Hangars and Access Taxilanes
8. Electrical Vault and Rotating Beacon Replacement and Relocation
9. Construct GA Terminal/FBO, Self-Service Fuel Farm, and Vehicle Parking
10. Construct Corporate Hangar and Vehicle Parking

LEGEND

- Airport Property Boundary
- Future Easement Acquisition
- Area Reserved for Nonaeronautical Development
- Existing Airfield Pavement
- Existing Building
- Pavement Demolition
- ★ Proposed Rotating Beacon

NOTES:

EAA - Experimental Aircraft Association
FBO - Fixed-Base Operator

SOURCES: Martinez Geospatial, Inc., November 2023 (aerial photography - for visual reference only, may not be to scale); Ricondo & Associates, Inc., July 2024.

NORTH

6 ENVIRONMENTAL OVERVIEW

The Environmental Overview (EO) summarizes environmental processing considerations for the recommended airport improvement plan projects proposed as part of this MPU, specifically as they relate to the requirements in FAA Order 1050.1F, *Environmental Impacts: Policies and Procedures*, and FAA Order 5050.4B, *National Environmental Policy Act* (NEPA) *Implementing Instructions for Airport Actions*. All projects that require federal action, including those receiving federal funding, must comply with NEPA.

The intent of the EO is to provide an understanding of key environmental issues that would likely need to be addressed as part of the implementation of MPU projects. Based on the development associated with the recommended projects proposed as part of the MPU, the following environmental resource categories have been preliminarily identified for any potential environmental impacts. Ongoing collaboration with the FAA regarding updates and refinements to future project assumptions, such as timing and anticipated impacts, will be critical to refining a NEPA processing strategy.

PURPOSE OF THE ENVIRONMENTAL OVERVIEW

- **Identify potential environmental constraints** to planned projects.
- **Identify anticipated NEPA documentation requirements:** Categorical Exclusion, Environmental Assessment, or Environmental Impact Statement.
- **Support early coordination** with federal and state agencies to reduce permitting risk.
- **Inform design decisions** to avoid or minimize adverse impacts to sensitive resources.

ENVIRONMENTAL RESOURCE CATEGORIES



7 CAPITAL IMPROVEMENT PROGRAM



The Capital Improvement Program (CIP) provides a structured framework for TCAA staff to guide decision-making on recommended airport enhancements and development initiatives. It incorporates both ongoing TCAA capital projects and the recommended airport improvement plan, prioritizing efforts to maximize federal and state funding, sustain airport operations, and enable future growth for asset preservation.

The TCAA will implement the recommended improvements from the MPU through a phased development approach. Project sequencing depends on factors such as funding availability, facility age and condition for projects associated with existing facilities, and applicable regulatory requirements. The CIP organizes proposed projects into three distinct phases to support efficient and strategic execution over time.

SHORT-TERM PROJECTS
FY2025* through FY2029

INTERMEDIATE-TERM PROJECTS
FY2030 through FY2034

LONG-TERM PROJECTS
FY2035 through FY2043

* The MPU was finalized in FY2026; however, the development of the Capital Improvement Program, and analysis of the subsequent funding plan, began in FY2025.

SHORT-TERM IMPROVEMENT PROJECTS (FY2025* – FY2029)

- Rehabilitate FBO Apron and Fuel Farm – Design and Construction
- Construct Partial Taxiway E (West of Runway 15-33) and Relocate Partial Turf Taxiway D and Unnamed Taxiway at Runway 22 End – Design and Construction
- Recurring Hangar Improvements

INTERMEDIATE-TERM IMPROVEMENT PROJECTS (FY2030 – FY2034)

- Construct T-Hangars and Access Taxilanes – Design and Construction
- Electrical Vault and Rotating Beacon Replacement and Relocation – Design and Construction
- Runway 15-33 Rehabilitation and Widening – Design and Construction
- Recurring Hangar Improvements
- Relocate Taxiway A, Construct Connectors, Construct North and South Run-up Areas and Blast Fence, and Demolish Existing Taxiway A – Design

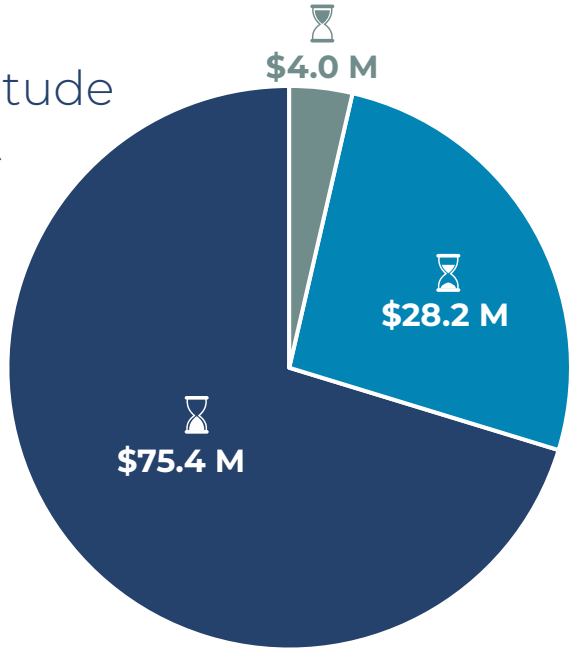
LONG-TERM IMPROVEMENT PROJECTS (FY2035 – FY2043)

- Relocate Taxiway A, Construct Connectors, Construct North and South Run-up Areas and Blast Fence, and Demolish Existing Taxiway A – Construction
- Demolition of T-Hangars and Taxilanes
- Construct North Apron – Design and Construction
- Acquire Easements – Runway 15 Runway Protection Zone
- Construct T-Hangars and Access Taxilanes – Design
- Construct Turf Taxiway B – Design and Construction
- Construct T-Hangars and Access Taxilanes – Construction
- Construct GA Terminal/FBO, Self-Service Fuel Farm, and Vehicle Parking – Design and Construction
- Acquire Easements – Runway 33 Runway Protection Zone
- Construct Corporate Hangar and Vehicle Parking – Design and Construction
- Acquire Easements – Runway 4 Runway Protection Zone
- Acquire Easements – Runway 22 Runway Protection Zone
- Recurring Hangar Improvements

Additionally, other demand-driven development opportunities were considered and discussed throughout the MPU planning effort; however, they were ultimately not included in the CIP. These projects—such as corporate and T-hangar construction, aprons and taxilanes, vehicular parking, and an aircraft wash rack—should be monitored over the 20-year planning horizon. They may be added to the CIP as needed, based on future Airport requirements and available funding.

Rough order of magnitude (ROM) cost estimates were developed for each project in the CIP using 2024 US dollars and were escalated at 3.5 percent annually to account for inflation. The ROM cost estimates related to development projects incorporate the direct cost of construction and soft program costs to reflect the overall anticipated project cost. It is anticipated that further refinement of the cost estimates will occur as the projects advance through architectural and engineering analyses, and design development.

Escalated Rough Order of Magnitude Cost of the Capital Improvement Program by Phase



SHORT-TERM PROJECTS (FY2025 - FY2029)

INTERMEDIATE-TERM PROJECTS (FY2030 - FY2034)

LONG-TERM PROJECTS (FY2035 - FY2043)

NOTES: FY - Fiscal Year
1. Costs were developed in 2024 dollars and escalated at 3.5 percent per year.
SOURCES: Ricondo & Associates, Inc., November 2024; Mohsen Design Group (cost estimates), November 2024

While these three CIP phases estimate the general period (in FYs) for future Airport enhancements, periodic re-evaluation of the proposed timing may be necessary. This would allow TCAA to adjust to evolving Airport needs or priorities due to potential deviations from the operational demand levels contained in the aviation activity forecasts or other unforeseen factors. It is also possible that other enhancements not included in this implementation plan may be identified in the future to support Airport operations and/or improve operational efficiency.



8 FUNDING PLAN

Airport development is typically supported through a mix of public and private funding sources, each with its own requirements and opportunities. The proposed funding strategy for the recommended airport improvement plan consists of a variety of funding sources including federal, state, local, and other entities. Actual financing strategies used will be determined as implementation approaches. Typical funding sources include the following:

AIP Grants — FAA distributes federal grants under the AIP to airport operators in two ways: through entitlement grants and discretionary grants. Entitlement grants for GA airports that are included in the National Plan of Integrated Airport Systems (NPIAS), such as X21, are referred to as nonprimary entitlement grants. TCAA is eligible to receive up to $150,000 annually in nonprimary entitlement grants for airfield capital projects and eligible maintenance projects. Discretionary grants are distributed for individual projects based on funding availability and the priority of projects at airports nationwide.

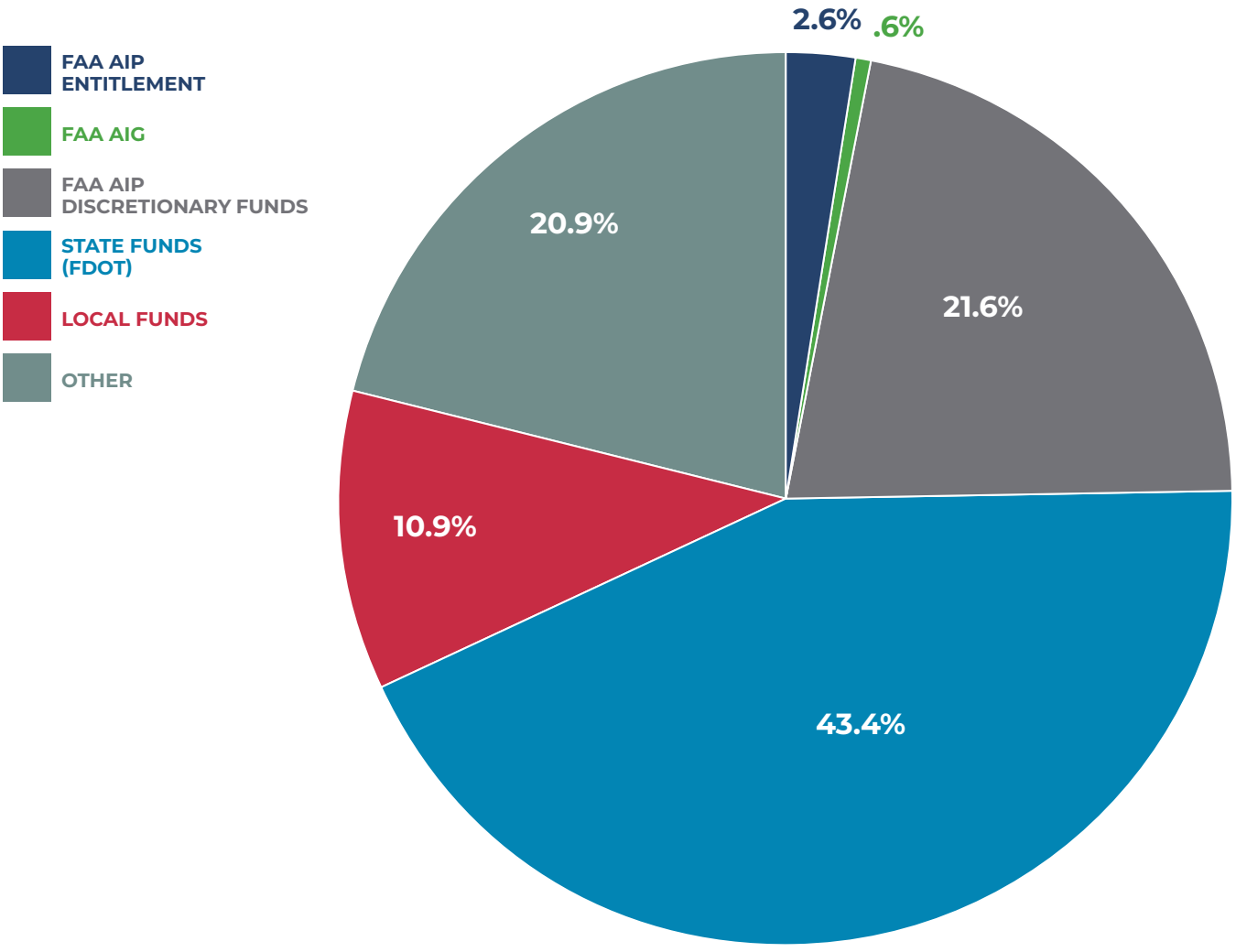
Airport Infrastructure Grants (AIGs) — As part of the Infrastructure Investment and Jobs Act (IIJA), AIG funds for nonprimary airports are allocated based on airport classification in the NPIAS and the aggregated NPIAS eligible development cost for each classification. AIG grants are only applicable for short-term projects, through FY 2026.

FDOT Funds — The FDOT grant program was established to fund projects related to airport planning and capital improvements that address safety, security, or capacity improvements; land acquisition; and economic development. To be eligible for FDOT funding, projects must be included in the FDOT Joint Automated CIP (JACIP), which is a cooperative funding program mechanism used by FAA and FDOT for coordination of annual funding and programming of Florida airport projects.

Local Funds — Local funds may be provided by TCAA or other local sources for projects not eligible for federal or state funding and to account for shortfalls in funding levels.

Other Funds — Other funding includes possible grants and assistance from nontraditional federal and state (i.e., FAA and FDOT) entities. Depending on the project type or funding availability, grants could also be available from local governmental entities and agencies responsible for economic and workforce development. Other funding would also include private investments from existing and future tenants, as well as public-private partnerships (PPPs).

Estimated Project Funding Sources for Recommended Airport Improvement Plan



NOTES:
1. AIP - Airport Improvement Program; AIG - Airport Infrastructure Grant; FAA - Federal Aviation Administration; FDOT - Florida Department of Transportation; FY - Fiscal Year
2. Costs developed in 2024 U.S. dollars.
3. Project costs have been escalated by 3.5 percent annually over the course of the planning period.
4. Other includes possible grants and assistance from federal, state, and local governmental agencies, as well and private investment or public-private partnerships.
SOURCES: Ricondo & Associates, Inc., November 2024; Mohsen Design Group (cost estimates), November 2024.

9 PUBLIC AND STAKEHOLDER PARTICIPATION



The public and stakeholder participation program was designed to gather meaningful input from individuals and organizations with a vested interest in the Airport and the MPU. This effort included a series of activities: three Technical Advisory Panel meetings, three Citizens Advisory Panel meetings, a primary tenant survey, two TCAA Board Workshops, and two public workshops. These forums ensured multiple opportunities for participation and informed the resulting recommendations.



10 ACKNOWLEDGMENTS

CONSULTANT TEAM

Ricondo & Associates, Inc.

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Mohsen Design Group, Inc.

The Quotient Group

TECHNICAL AND CITIZENS ADVISORY PANEL

Special thanks to all the members representing the diverse stakeholder organizations that comprised the Technical and Citizens Advisory Panels. Your contributions to this MPU are deeply appreciated.





FLY SPACE COAST

ARTHUR DUNN AIRPARK (X21)