TAMPA INTERNATIONAL AIRPORT

2022-2042 MASTER PLAN UPDATE

Hillsborough County Aviation Authority (HCAA) Project No. 6915 22

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Tampa International Airport

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Tampa International Airport

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Chapter 1: Introduction

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1. INTRODUCTION/OVERVIEW

Serving both domestic and international markets, the Tampa International Airport (TPA or the Airport) plays a vital role in the regional transportation system for accommodating passenger air travel, as well as commercial and cargo operations. TPA is owned and operated by the Hillsborough County Aviation Authority (HCAA), an independent special district of the State of Florida, established by the 1945 Florida Legislature with exclusive jurisdiction, control, supervision and management over all publicly owned airports in Hillsborough County. In addition to TPA, HCAA operates Tampa Executive Airport (VDF), Peter O. Knight (TPF), and Plant City (PCM) airports. The FAA classifies TPA as a large-hub commercial service airport in its National Plan of Integrated Airport Systems.

In November 2021, the Hillsborough County Aviation Authority (HCAA) initiated this Master Plan Update (MPU) for TPA with funding from a combination of Federal Aviation Administration (FAA) and Florida Department of Transportation (FDOT) grants, along with airport revenues. The MPU represents a roadmap that identifies a logical path for the Airport to serve anticipated unconstrained demand over a 20-year horizon, subject to business and resource constraints. The exact execution of the MPU and timeline will be based on HCAA's future business parameters, market conditions, and other financial factors.

This MPU included a comprehensive analysis of existing Airport facilities, a review of recently completed studies/analyses, the development of aviation activity forecasts, which were used to determine existing facility capacities/capabilities, and the identification of any deficiencies that the MPU may need to address to meet the Airport’s needs for the 5-, 10, and 20-year planning horizons.

The Implementation Plan presented within the MPU describes the timing of proposed MPU recommendations for airport improvements and additional capacity, estimated rough order of magnitude (ROM) development costs, and potential funding sources. This Implementation Plan is intended to provide general sequencing and implementation guidance to HCAA staff to support decision-making relative to recommended improvements and development at the Airport. The proposed capital projects that were derived from the MPU recommendations were categorized into three phases, referred to as Planning Activity Levels (PALs), which represent short-term and long-term increments of growth at the Airport. The PAL 1 projects include projects identified in the MPU to accommodate demand associated with PAL 1. These projects should be implemented prior to the Airport reaching 30.5 Million Annual Passengers (MAP). PAL 2 projects address the forecast growth up to 34.6 MAP and PAL 3 projects represent long-term projects to serve demand beyond 34.6 MAP and through the MPU’s 20-year planning horizon.

The use of PALs will enable the Authority to develop facility plans based on actual demand rather than the estimated timing associated with the activity forecasts. PALs represent demand levels, not necessarily specific years, which can be used as benchmarks for planning, designing, or constructing Airport improvements. In some instances, a forecast year of occurrence may be associated with a PAL for general planning purposes, but the timeline alone would not trigger development.

The timing of the improvements was aligned with demand and taking into consideration the cost implications of the various MPU recommended projects and a desire to optimize the Airport’s existing capacity resulting from capital investments undertaken as a result of the 2012/2016 MPU’s 3-phase development program (while preserving reasonable levels of customer service). In coordination with HCAA finance staff, an optimized set of capital projects was updated in December 2023 and January 2024. The capital projects were discussed with the HCAA Board of Directors in June 2024 and resulted in a refined set of recommendations and improvements.

The MPU leveraged the findings and recommendations from prior and recent studies including, but not limited to:

- 2012 MPU and associated Airport Layout Plan (ALP)
- 2012 MPU – 2016 Addendum
- 2017 Business Plan
- 2019 Climate Change Resiliency Assessment and Initial Action Plan
- 2019 Sustainability Management Framework Memorandum
- 2020 Commercial Ground Transportation Study
- Airside D Project Definition Document (PDD)
- North Terminal Conceptual Design Documents
- East Side Development Plan Technical Report
- New Air Traffic Control Tower (ATCT) Siting and Planning Study (by FAA)

The FDOT's proposed roadway improvements that will impact vehicle flows at the Airport, including the Tampa Bay Next roadway and express lanes connection to TPA, and the City of Tampa plans for a mass transit facility connecting the Airport, Westshore, Downtown, and East Tampa were also reviewed.

The MPU was conducted in accordance with Federal Aviation Administration (FAA) guidance, including, but not limited to, the following Advisory Circulars (ACs):

- 150/5070-6B, Airport Master Plans
- 150/5300-13B Airport Design
- FAA AC 150/5060-5, Change 2, Airport Capacity and Delay
- 150/5300-16A, Aeronautical Surveys
- 150/5300-17C, Remote Sensing Technologies in Airport Surveys
- 150/5300-18B, Geographic Information System (GIS) Standards
- 150/5060-5, Airport Capacity and Delay
- 120-91A, Airport Obstacle Analysis
- 150/5360-13A, Airport Terminal Planning
- 150/5000-17, Critical Aircraft and Regular Use Determination
- 150/5325-4B, Runway Length Requirements for Airport Design
- 150/5220-17B, Aircraft Rescue and Fire Fighting (ARFF) Training Facilities
- Engineering Brief 105, Vertiport Design
- AC 150/390-2D, Heliport Design
- ACRP Report 113, Guidebook on General Aviation Facility Planning

1.1 CHANGES SINCE PREVIOUS MASTER PLAN

The FAA recommends airport master plans be updated every five (5) years, or as necessary, to keep current. TPA's last Master Plan Update was published in 2012. However, in 2016, HCAA initiated an update to validate the Phase 2 and 3 project elements to determine if conditions in 2016 matched the original findings of the 2012 MPU. The intent was to verify the forecasts of aviation activity and facility needs and reevaluate the roadway/curbside and Airsides/Main Terminal alternatives. This new study was referred to as the 2012 Master Plan – 2016 Addendum.

Since completion of the prior MPU, significant economic and aviation industry changes have impacted needs at the Airport. The primary changes that have influenced TPA's operational and capital needs since the last MPU include the following:

- Effects of the COVID-19 Pandemic: The outbreak and spread of the COVID-19 pandemic disrupted global aviation demand. Globally, airlines experienced an operating loss of $137.7 billion in 2020. The pandemic's impact on air travel began in East Asia in December 2019 and rapidly accelerated to other regions of the world in March and April 2020. Airlines responded by reducing capacity across their networks due to decreased demand, travel restrictions, and border closures. Several large international foreign-flag airlines suspended all operations for a period in March and April 2020. By May 2020, which represented the low point in terms of passenger airline capacity offered, scheduled departing seats decreased to 24.0 percent of May 2019 capacity for all US airports and 24.9 percent of May 2019 capacity at TPA. Airline capacity started to recover in June, particularly in areas with access to sun and leisure activities, such as Florida, where people could visit while also remaining socially distanced. By 2022, TPA traffic rose above the pre-pandemic levels and in January 2022 scheduled departing seats represented 102.4 percent of January 2019 departing seats while nationwide, January 2022 was at 92.8 percent of January 2019 volumes.
- Airline Mergers and Acquisitions: In 2013, US Airways and American merged, with the consolidated airline retaining the American brand. The most recent consolidation occurred in 2016 when Alaska acquired Virgin America. The two airlines completed their integration in 2018. Consolidation across the industry has resulted in the realignment of several airline route networks as airlines have sought efficiencies in their service.
- New Airlines: In 2021, two new airlines began operating in the U.S. Avelo Airlines began operations in April 2021 and commenced service between TPA and Tweed-New Haven Regional Airport (HVN) in November 2021. Breeze Airways began operations in May 2021 and commenced service at TPA in June 2021 between TPA and Charleston International Airport (CHS), as well as five other destinations. Beginning in January 2022, Breeze increased service to a total of 10 destinations from TPA, and the Airport is also one of the airline's crew bases.
- Growth in International Air Service: Since 2012 international air service has increased with the addition of nonstop flights to various European and Caribbean destinations.
- Boeing 737 MAX Grounding: In March 2019, aviation authorities around the world grounded the aircraft model. This decision had significant implications for airlines that had already incorporated the 737 MAX into their fleets, leading to operational disruptions, route cancellations, and financial losses. The grounding lasted for over a year as Boeing worked on corrective measures and regulatory approval processes.
- Rising Fuel Prices: In 2018 and 2021, the airline industry faced a significant increase in fuel prices, driven by geopolitical tensions, supply disruptions, and other factors. Higher fuel costs put pressure on airlines' operating expenses and profitability, leading some carriers to adjust their pricing strategies, implement fuel surcharges, or seek more fuel-efficient aircraft to mitigate the impact. Fuel prices have grown steadily since April 2020 but are still well below previously sustained high prices in 2014.

- Technological Advancements and Innovation: The airline industry has witnessed ongoing technological advancements and innovation, including the development of more fuel-efficient aircraft models such as the Airbus A320neo and Boeing 737 MAX, as well as the emergence of electric and hybrid-electric propulsion technologies for aircraft. Geared turbofan engines, designed to be quieter and more efficient than traditional turbofan engines, have presented challenges for some airlines including increased operational and maintenance costs. Additionally, airlines have increasingly adopted digital technologies for passenger services, operations, and maintenance, enhancing efficiency and customer experience. These technologies include self-service check-in kiosks, biometric technology, mobile apps, remote bag drop, baggage tracking systems, etc.

In addition to these events, TPA has experienced significant growth in passengers and airline activity since the previous MPU. Passenger enplanements have increased from 6.4 million in fiscal year FY2012 to 11.7 million in FY2023, an increase of 38.9 percent.

1.2 AIRPORT BASELINE CONDITIONS

TPA has undertaken several projects and enhancements to the airfield and terminal since the completion of the 2012 MPU – 2016 Addendum. For the purposes of this MPU, a baseline condition is established that is reflective of both existing conditions and on-going capital improvements. Some of these other larger-scale projects and enhancements include, but are not limited to, the following:

- Various airfield improvements including:
  - taxiway/taxilane nomenclature changes
  - decommissioning of Taxiways F and H with pavement removal
  - decommissioning of Taxilane E between the Runway 10-28 and Runway 1R threshold; replaced by an apron circulation taxilane (Taxilane F)
  - construction of Taxilanes F1 and F2
  - construction of Taxilanes R2 and R3
  - construction of new crossfield Taxiway A (with bridge): This project included the construction of a new crossfield Taxiway A from Runway 1L-19R/Taxiway V to Runway 1R-19L/Taxiway C north of and parallel to crossfield Taxiway B.
  - Taxilane A pavement removal between Airside C and remote aircraft parking ramp
  - decommissioning of Taxilane A; replaced by four apron circulation taxilanes (Taxilanes G, U, V, and Y)
- Rental Car Center (RCC): The RCC opened in February 2018 to the south of the Main Terminal at the southern end of the Airport. The RCC is located on the east side or Airport Service Road, to the south of the Economy Parking Garage. The RCC is a four-level facility. There are three levels of ready/return (Levels 1 through 3), with a quick turnaround (QTA) area at the back of each of those floors for the respective companies on that floor. The customer service area is located on the top floor (Level 4), which is also the level to access SkyConnect.
- SkyConnect Automated People Mover (APM): SkyConnect is an APM system connecting the Main Terminal with the RCC and the Economy Parking Garage. It opened in 2018 and was built in conjunction with the RCC. The 1.4-mile SkyConnect guideway is both elevated above ground and at grade level along the Airport

entrance road, and it passes underneath Taxiway J. It has three stations with a dedicated offline maintenance facility.

- SkyConnect Main Terminal Station: The SkyConnect Main Terminal station is located on the east end of the Main Terminal. The station level is aligned with Level 4 of the Main Terminal building.
- Central Utility Plant Construction: a new 10,000-square-foot Central Utility Plant, located east of the FAA ATCT, was commissioned in December 2021 to provide heating and cooling for the Main Terminal and SkyConnect Main Terminal station. This project was an enabler to the expansion of the curbsides on the red and blue sides.
- Renovation of the Transfer Level (Level 3): This project, which was completed in 2017 included an expansion of the Transfer Level by 50,000 square feet, the relocation of the APM train station lobbies for Airsides A, C, E and F, and the demolition of the former Airside D APM lobby. This project added 69 new concessions spaces and four new outdoor terraces.
- Expansion of the existing curbs to include four new express curbsides: This project included the widening of the existing arrivals and departures curbs and the construction of the Blue Express curbs. Opened in November 2021, these new curbs allow passengers without checked baggage to be dropped off and picked up separately from those checking bags. The express curbs have direct vertical circulation for passengers to travel to and from the Transfer Level, bypassing the ticketing and bag drop functions on the Departures Level and baggage claim functions on the Arrivals Level. The Red Express Curbs will be constructed adjacent to the Main Terminal Red Curbs and serve the same purpose and function as the Blue Express Curbs. The anticipated completion date is early 2025. The landside analyses that were completed as part of the MPU assumed the completion of the Blue and Red Express Curbs.
- Relocation of the Authority offices: The administration and service buildings located on the north side of the Main Terminal were demolished to widen the roadway and construct the express curbside lanes on the Red and Blue Sides. To accommodate the Authority offices, SkyCenter One, a nine-story, 274,000 square foot office building located west of the RCC was constructed. Three floors of the building, which opened in 2021, are occupied by HCAA staff. SkyCenter One provides direct access to the Main Terminal via the RCC SkyConnect station. SkyCenter One includes a 15,000 square feet rooftop atrium, wellness walking trail, fitness center, conference center, and café. A six-level parking garage located directly north of SkyCenter One was also constructed.
- Widening of George J. Bean Parkway: George J. Bean Parkway, which is the primary artery to access the terminal was widened at the end of 2021 in both directions to accommodate increased traffic from the SkyCenter development area. This project also included the construction of a new connection from westbound Economy Parking Road to southbound George J. Bean Parkway.
- Airside C and Airside A Bag Sortation Building checked baggage system upgrades and optimization: This project included the relocation of the screening functions, currently housed within the Main Landside Terminal of the airport, to Airside C and the A-Sortation building for screening and the ultimate delivery of bags. This project included construction of approximately 42,450 square feet of enclosed common-use security screening and baggage handling within the existing A-Sortation Building, Airside C Airside and Main Terminal areas and the installation of a new baggage handling system conveyor at the RCC.

1.3 GOALS AND OBJECTIVES

The primary goals and objectives for the Airport MPU included the following:

- Formulate a new 20-year forecast for the Airport, with FY2022 representing the initial forecast year.
  - Assess recent increased airline rate impacts on passenger demand.
  - Research and analyze the effects of the COVID-19 pandemic, as well as the resulting industry trends and factors likely to affect the evolution of all segments of Airport activity.
  - Develop cargo volume forecasts.
- Assess the capacity of the Airport's existing airfield and determine if additional runway capacity may be needed within the 20-year planning horizon.
- Assess the Airport's existing runway and taxiway geometries and configuration to determine if changes are necessary to comply with the most current FAA standards.
- Assess the timing for a new Airside D, as well as any necessary adjustments or additions to the planned concept for Airside D triggered by new or updated terminal design criteria, emerging technologies, and passenger processing guidelines.
- Define terminal processing capacity and gate projected needs over the 20-year study period, including the need for aircraft hardstands. This included defining the timing for the initial buildout of the North Terminal and strategies for facilitating a cost-effective implementation for the initial buildout.
- Validate the terminal, roadway and curbfront capabilities for serving 34 million annual passengers following the construction completion of the Phase 1 and Phase 2 recommendations from the 2012 Master Plan, as well as the identification of additional parking capacity, curbside and roadway improvements needed over the next 20-year horizon.
- Identify development/improvement alternatives for the existing terminal complex facilities (e.g., security screening checkpoint [SSCP] improvements, ticketing level improvements, baggage handling level repurposing, baggage drop alternatives, alternatives to traditional check-in desks, other).
- Develop/update rough-order-of-magnitude (ROM) cost estimates for the projects to be included in the Airport's Capital Improvement Program (CIP) for the 20-year planning horizon, including Airside D.
- Identify potential on-Airport locations for a facility that could handle electric vertical takeoff and landing (eVTOL) aircraft and assess the impact to existing operations and airspace surfaces.
- Review new or emerging aircraft trends and technologies, such as urban air taxi, unmanned aircraft, and Boeing 777X, and assess potential impacts to existing operations and facilities.
- Evaluate the existing baggage handling system (BHS) and assess required improvements to increase the system flexibility (e.g., ability to introduce connecting bags at all airsides)
- Address new environmental and other regulatory constraints.
- Plan for an appropriate mix of land uses to support projected aviation and nonaviation needs.

1.4 MASTER PLAN DELIVERABLES

This MPU's documentation provides the sources of data collected, assumptions, technical analyses, findings, conclusions, and recommendations that form the basis for the preferred development program. The document is presented in the following sections and supporting appendices:

- Chapter 1: Introduction/Overview
- Chapter 2: Inventory of Existing Conditions
- Chapter 3: Aviation Activity Forecast
- Chapter 4: Demand/Capacity and Facility Requirements
- Chapter 5: Alternative Development Concepts and Evaluation
- Chapter 6: Environmental Overview
- Chapter 7: Implementation Plan and Recommended Capital Improvement Projects
- Chapter 8: Airport Layout Plan Narrative Report
- Chapter 9: Sustainability and Resiliency Initiatives
- Appendix A: Stakeholder Outreach Presentations and Notes
- Appendix B: AAAC Presentations
- Appendix C: List of Utility Providers
- Appendix D: Baggage Handling Systems
- Appendix E: Aircraft Gate Capacity Analysis & Design Day Flight Schedules
- Appendix F: Airport Layout Plan (ALP) and Standard Operating Procedure (SOP) 2.0, Standard Procedure for FAA Review and Approval of Airport Layout Plans (ALPs)
- Appendix G: Exhibit "A" Airport Property Inventory Map and FAA Airport Standard Operating Procedure No. 3.00
- Appendix H: FAA Correspondence
- Appendix I: Emerging Trends & Technologies
- Appendix J: On-Airport Land Use Review
- Appendix K: Rough Order of Magnitude Capital Cost Estimate

1.5 STAKEHOLDER ENGAGEMENT STRATEGY AND PUBLIC OUTREACH PROGRAM

The stakeholder engagement strategy was centered around the following goals.

- Meet and collaborate with HCAA and relevant internal leadership to identify a comprehensive list of key stakeholders that must be engaged in the planning process.
- Actively engage key stakeholders so that significant issues can be identified, participants can provide input and comments and, if possible, consensus can be achieved.

- Enhance decision-making and build business and public confidence in the process and recommendations.
- Disseminate accurate, timely, and concise information to assist stakeholders in reaching and expressing informed opinions about the airport development options being considered by the Board.

The stakeholder engagement strategy and public outreach program consisted of the following elements:

- Project Webpage: A project webpage linked from the Aviation Authority's airport website was active throughout the MPU process to provide notifications of upcoming meetings, past meeting details, electronic resources and presentations, master plan chapters, and contact information. The project webpage is accessible at https://www.tampaairport.com/2022-master-plan-update.
- HCAA Executive Team Meetings: A total of ten meetings were conducted with the HCAA Executive Team to review the MPU technical analyses and guide the MPU. These meetings took place on December 28, 2021, March 22, 2022, October 7, 2022, October 19, 2022, October 28, 2022, November 18, 2022, December 5, 2022, February 3, 2023, March 7, 2023, and May 17, 2023.
- Project Team Meetings: Ten project team meetings were established to present detailed master planning information, to engage HCAA leaders in discussions regarding analysis and conclusions, and to gather feedback from staff.
- Public Workshops: Three public open houses were held to outline the master planning process, share preliminary analysis and findings, and present draft recommendations. The workshops provided an opportunity for input and feedback, as well as to facilitate interactions between HCAA, the public, and the MPU team. Copies of the presentations are included in **Appendix A**. These meetings were held on April 4, 2022, November 16, 2022, and July 25, 2023.
- HCAA Board Meetings: Presentations and workshops were used to brief the HCAA Board on the status of the MPU and to gather feedback given at key milestones. HCAA approval of the MPU was required for submission to the FAA and for final acceptance of the MPU. Copies of the presentations are included in Appendix A. A total of 6 meetings were conducted on November 4, 2021, February 3, 2022, June 2, 2022, February 2, 2023, June 1, 2023, and June 6, 2024.
- Airline Airport Affairs Committee (AAAC) Meetings: The MPU team collaborated with airline stakeholders at several AAAC meetings to discuss current and future needs and to obtain feedback on master planning analyses and alternatives development. Six meetings were held with the AAAC to provide updates on the MPU at key milestones and to gain their feedback on proposed future development. Copies of the presentations are included in **Appendix B**. These meetings were held on January 4, 2022, January 12, 2022, April 20, 2022, December 7, 2022, January 9, 2023, May 23, 2023, and June 19, 2024.
- Hillsborough County Planning Commission Meeting: The findings from the MPU were presented to the Hillsborough County Planning Commission on August 12, 2024.

CHAPTER 2

2022-2042 MASTER PLAN UPDATE

Chapter 2: Inventory of Existing Conditions

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LIST OF EXHIBITS

2. INVENTORY OF EXISTING CONDITIONS

The initial step for the master planning process was the preparation of an inventory of the physical, operational, and functional characteristics of Tampa International Airport (TPA or the Airport) and its immediate environs. The information presented in this section provides the basis for evaluating Airport facilities and, subsequently, determining future facility needs and reflects data collected or conditions observed as of January 2022. Updated information, as provided by HCAA in May 2024, is indicated throughout this chapter in *italicized text*.

The collected data and information were used to define the baseline conditions from which subsequent master planning analyses will be conducted. The baseline conditions assume the completion of the 2012 Master Plan Phase 2 projects, including the following: new infrastructure within the Gateway Development Area (GDA) ; completion of the proposed Central Utility Plant (CUP); new relocated loading dock; expansion of the existing curbs, including 16 new express curbsides; relocation of the Hillsborough County Aviation Authority (HCAA or the Authority) offices to the GDA; construction of crossfield Taxiway A; widening of the George J. Bean Parkway; and the Airside C and Airside A Bag Sortation Building checked baggage system upgrades and optimization.

The inventory of existing conditions leverages the findings and recommendations from recent and ongoing studies, analyses, and Capital Improvement Program (CIP) initiatives. The following is an initial list of prior and ongoing studies that were used to supplement and guide the inventory or provide background analyses:

- 2012 Master Plan Update (MPU) and Airport Layout Plan (ALP)
- 2012 MPU – 2016 Addendum
- 2017 Strategic Business Plan
- 2019 Climate Change Resiliency Assessment and Initial Action Plan
- 2019 Sustainability Management Framework Memorandum
- 2020 Commercial Ground Transportation Study
- 2021 Drew Park Community Redevelopment Area (CRA) Strategic Action Plan Update
- 2019 Airside D Project Definition Document (PDD)
- 2016 TPA Electronic ALP (eALP) and Exhibit 'A' Plans Set
- 2018 East Side Development Plan Technical Report
- 2018 Air Traffic Control Tower (ATCT) Siting Report (by the Federal Aviation Administration [FAA])
- 2021 Title 14 Code of Federal Regulations (CFR) Part 150 Study, Draft Noise Exposure Map Update Report
- 2017-2019 National Environmental Policy Act Environmental Assessments and Categorial Exclusions Determinations
- 2020 Tree Surveys and Completed Obstruction Analyses
- 2005 and 2021 Wildlife Hazard Assessment (WHA) and 2019 Wildlife Hazard Management Plan (WHMP)
- Aviation Authority Capital Improvement Program, Project Status Report, September and October 2021
- 2021 Part 139 Inspection Results

- 2021 Airport Certification Manual
- 2017 Tampa Air Traffic Control Tower and Hillsborough County Aviation Authority Letter of Agreement
- 2021 Airfield Pavement Management System (APMS) Update
- Drawings of recently completed projects including:
  - SkyCenter Layout Plan
  - CAE Site Plan
  - Jet ICU Plan
  - United Airlines Hangar Plan
- 2018 Remote Overnight Parking Study
- 2019 Common-Use Passenger Processing System (CUPPS) / Shared Use Passenger Processing (SUPPS) MPU

2.1 AIRPORT LOCATION AND SIZE

The Airport is approximately 3,235-acre facility located in West Central Florida, approximately 6 miles west of downtown Tampa in Hillsborough County, Florida. TPA serves as the primary air carrier airport for the Tampa Bay area and is easily accessible via State Road (SR) 60, Suncoast Parkway / Veterans Expressway (589), and Interstate 275 (I-275), which is linked to I-4. The Airport is also located just north of I-275, to the east of the Veterans Expressway, west of Dale Mabry Highway and south of Hillsborough Avenue.

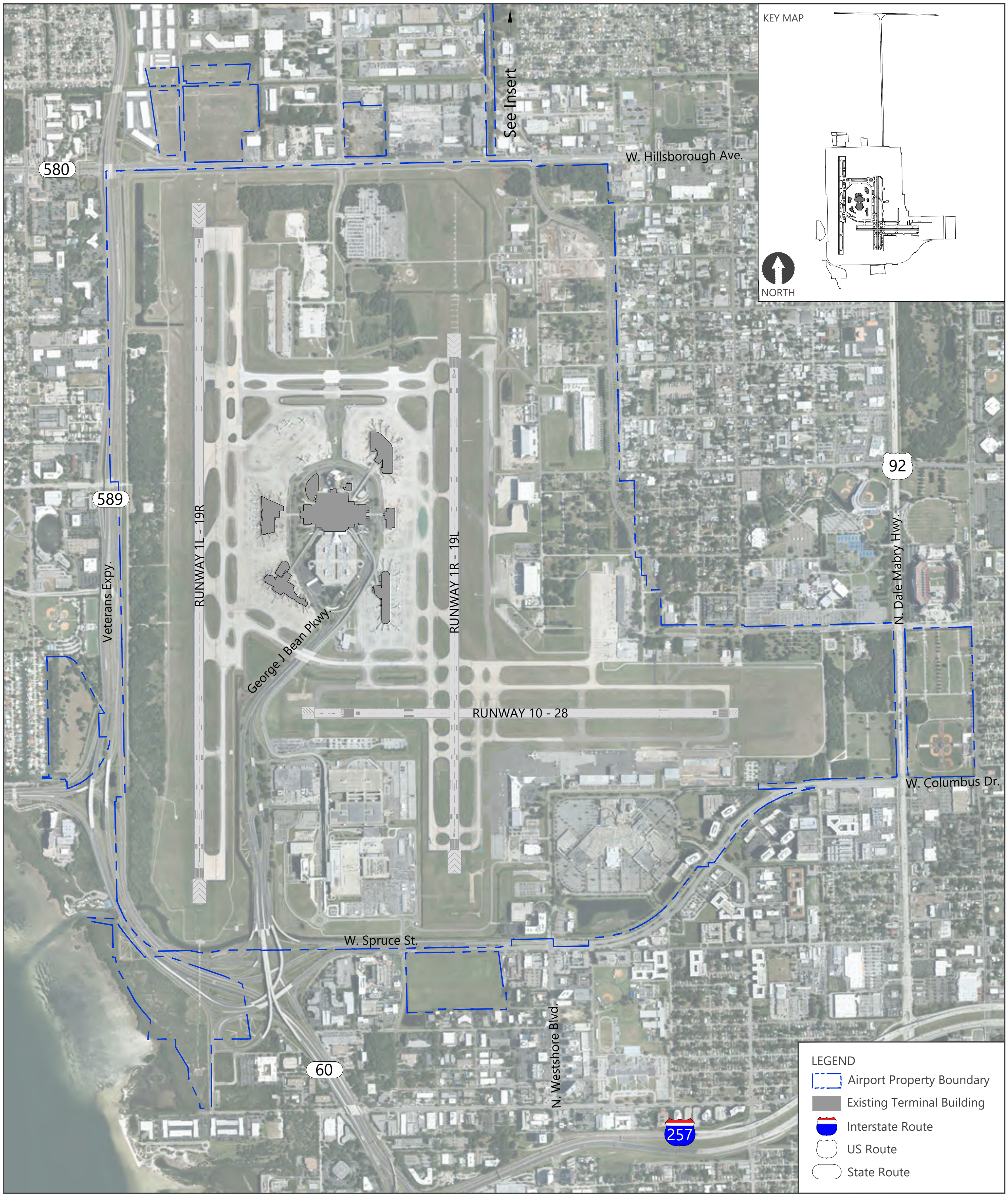
Serving both domestic and international markets, the Airport plays a vital role in the regional transportation system for accommodating passenger air travel, as well as commercial and cargo operations. TPA is owned and operated by the Hillsborough County Aviation Authority (HCAA), an independent special district of the State of Florida, established by the 1945 Florida Legislature with exclusive jurisdiction, control, supervision and management over all publicly owned airports in Hillsborough County. The FAA classifies TPA as a large-hub commercial service airport in its National Plan of Integrated Airport Systems. The large-hub category consists of commercial service airports that serve 1 percent or more of the annual US commercial enplaned passengers. With approximately 11.085 million enplaned passengers in Fiscal Year (FY) 2019 (pre-COVID-19 pandemic)[1], TPA ranked 27th among large-hub airports. **Exhibit 2.1-1** depicts the Airport property.

2.2 AIRFIELD AND AIRSPACE

This section documents the current configuration and operational characteristics of TPA's airfield. It summarizes the airfield infrastructure changes that have been completed since the 2012 MPU. All changes related to the airfield are provided for subsequent facility requirements and capacity evaluation purposes.

The airfield components described herein include the runway, taxiways/taxilanes, aircraft parking aprons, navigational aids (NAVAIDs), and airfield lighting. Operating factors such as designated airfield movement areas, runway use, and aircraft taxi flows are also discussed.

[1] Hillsborough County Aviation Authority, January 2022



SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

EXHIBIT 2.1-1

AIRPORT PROPERTY

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.1-1 Airport Location and Size.dwgLayout: 8.5x11P Plotted: May 15, 2024, 09:40AM

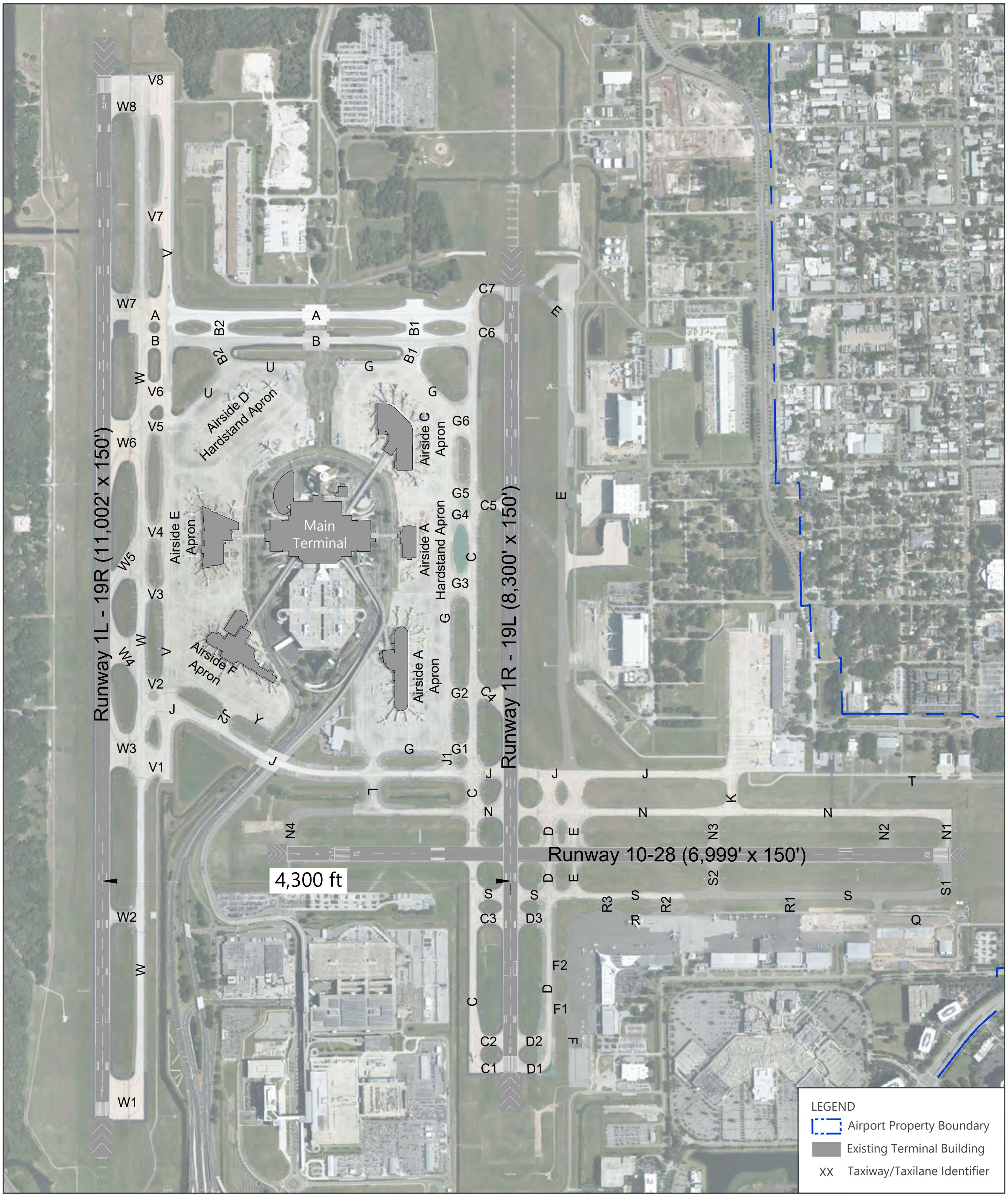
2.2.1 AIRFIELD INFRASTRUCTURE

Exhibit 2.2-1 depicts the current configuration of the TPA airfield. As shown, the airfield consists of three runways. Two of the runways (1L-19R and 1R-19L) are configured in a north–south origination, while Runway 10-28 is oriented east–west. All three runways are served by a network of taxiways providing access between the runways and apron/terminal areas. Each runway has a full-length parallel taxiway and at least one partial parallel taxiway to facilitate aircraft movements. The north–south parallel runways are connected by three crossfield taxiways, two north and one south of the Terminal Complex.

2.2.1.1 RUNWAYS

Table 2.2-1 summarizes the three runways' physical characteristics. As shown, the runways are 150 feet wide and consist of grooved concrete and asphalt with varying design strengths. The runways also vary in length, ranging from 6,999 feet to 11,002 feet. All runways have published instrument approaches, with Runways 1L-19R and 19L having precision instrument approaches.

A project to improve the runway safety areas associated with each runway including grading and drainage improvements, wetland mitigation and relocation of a service road is ongoing and anticipated to be substantially complete by May 2022. A second project consisting of miscellaneous asphalt pavement maintenance, including sections of mill and overlay, seal coating, and correction of concrete taxiway edge to asphalt shoulder drop-off conditions is anticipated to be substantially complete by February 2022. Additionally, by the end of May 2022, the Authority's Maintenance Department will have completed rubber removal, cleaning and re-painting of airfield markings, and lighting and signage repairs on all three runways.



SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport, Airport Layout Plan*, April 2016.

EXHIBIT 2.2-1

EXISTING AIRFIELD CONFIGURATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.2-1,2.3-22 Existing Airfield-Terminal.dwgLayout: 2.2-1 Plotted: May 15, 2024, 09:41AM

TABLE 2.2-1: TAMPA INTERNATIONAL AIRPORT EXISTING RUNWAY CHARACTERISTICS

CHARACTERISTIC	RUNWAY 1L-19R	RUNWAY 1R-19L	RUNWAY 10-28
Length (feet)	11,002	8,300	6,999
Width (feet)	150	150	150
Shoulder (feet)	35	35	None
Blast Pad (feet)	1L – 400 x 220 19R – 400 x 220	1LR– 400 x 220 19L – 400 x 220	10 – 200 x 200 28 – 150 x 200
Surface Type-Condition-Treatment	CONC-G-GRVD	ASPH-CONC-G-GRVD	ASPH-CONC-F
Pavement Classification Number	85 / R/B/W/T	76 /R/B/W/T	61 / F/A/W/T
Maximum Aircraft Gross Weight (in thousands of pounds)			
Single Wheel (S)	60	60	75
Dual Wheel (D)	210	210	200
2 Dual Wheels in Tandem (2D)	358	358	280
2 Dual Wheels in Tandem / 2 Dual Wheels in Double Tandem (2D/2D2)	850	850	380
FAA Part 77 Approach Surface Slope	50:1 / 50:1	34:1 / 50:1	34:1 / 34:1

NOTES:
CONC – Concrete
E – Excellent
G – Good
F – Fair
GRVD – Grooved
R – Rigid (pavement type)
A – High Strength (subgrade strength category)
B – Medium Strength (subgrade strength category)
W – Unlimited (maximum allowable tire pressure)
T – Technical (evaluation method)
SOURCE: US Department of Transportation, Federal Aviation Administration, Airport Data and Information Portal, December 2, 2021.

Table 2.2-2 summarizes each runway's design code, approach and departure reference codes, and visibility minimums. The Runway Design Code (RDC) is a coding system described in FAA Advisory Circular (AC) 150/5300-13A, Change 1, *Airport Design*; it is the basis for specifying applicable runway design standards. The intent of the RDC is to provide a simple method for compiling the numerous dimensional and performance specifications of aircraft operating at, or expected to operate at, an airport into criteria that define the dimensional and design standards for a given runway. The RDC consists of three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and approach visibility minimums. The approach visibility minimum is determined based on the capabilities of the runway's ground-based NAVAIDs and the published approach criteria. The Approach Reference Code (APRC) and Departure Reference Code (DRPC) signify the current operational capabilities of a runway in terms of landing and takeoff operations, respectively. The following subsections describe the RDC for each runway.

TABLE 2.2-2: RUNWAY DESIGN CODES

RUNWAY END	RUNWAY DESIGN CODE	APPROACH REFERENCE CODE	DEPARTURE REFERENCE CODE	LOWEST VISIBILITY MINIMUMS (FEET)
1L	D/V/1200	D/V/2400 D/IV/1600	D/IV D/V	600
19R	D/V/2400	D/V/2400 D/IV/1600	D/IV D/V	2400
1R	D/V/4000	D/V/4000 D/V/4000	D/IV D/V	4000
19L	D/V/1200	D/V/2400 D/IV/1600	D/IV D/V	1200
10	D/IV/5000	D/IV/5000 D/V/5000	D/IV D/V	5000
28	D/IV/5000	D/IV/5000 D/V/5000	D/IV D/V	5000

SOURCES: AECOM, *Tampa International Airport, Airport Layout Plan*, April 2016; US Department of Transportation, Federal Aviation Administration, Instrument Flight Procedures Information Gateway, https://www.faa.gov/air_traffic/flight_info/aeronav/procedures/application/?event=procedure.results (accessed January 12, 2022).

Runway 1L-19R

Runway 1L-19R is 11,002 feet long and 150 feet wide, with 35-foot shoulders. Blast pads extend from each runway end, both 400 feet long by 220 feet wide. The Runway 1L-19R pavement surface is grooved concrete. Load bearing capacities are summarized in Table 2.2-1. According to the Airport's Informal Runway Use (IRU) program, Runway 1L is the preferred arrival runway for jet aircraft in north flow and Runway 19R is the preferred departure runway for jet aircraft in south flow. The Airport's IRU program is further discussed in Section 2.2.4.4. The following criteria dictates the RDC for Runway 1L-19R:

- Aircraft Approach Category – The Boeing 747-400 is the design[2] aircraft; this aircraft is categorized as AAC D.
- Airplane Design Group – Based on wingspan, the Boeing 747-400 is the design aircraft; this aircraft is categorized as ADG V.
- Visibility Minimums – Runway 1L is equipped with a Category (CAT) II & III instrument landing system (ILS) approach, providing visibility minimums as low as 600 feet runway visual range (RVR), and Runway 19R is equipped with an ILS, providing visibility minimums as low as 2,400 feet RVR.

Runway 1R-19L

Runway 1R-19L is 8,300 feet long and 150 feet wide, with 35-foot shoulders. Similar to Runway 1L-19R, blast pads extend from each runway end, both 400 feet long by 220 feet wide. The Runway 1L-19R pavement surface is grooved asphalt concrete overlaid on Portland cement concrete. The following criteria dictates the RDC for Runway 1R-19L:

- Aircraft Approach Category – The Boeing 747-400 is the design aircraft; this aircraft is categorized as AAC D.
- Airplane Design Group – Based on wingspan, the Boeing 747-400 is the design aircraft; this aircraft is categorized as ADG V.
- Visibility Minimums – Runway 1R has a localizer performance with vertical guidance (LPV) approach, providing visibility minimums as low as 4,000 feet RVR, and Runway 19L is equipped with a CAT II ILS, providing visibility minimums as low as 1,200 feet RVR.

Runway 10-28

Runway 10-28 is 6,999 feet long and 150 feet wide, with no shoulders. The Runway 10 end blast bad is 200 feet long by 200 feet wide. The Runway 28 blast pad is 200 feet long by 150 feet wide. The Runway 10-28 pavement surface is asphalt concrete overlaid on Portland cement concrete. The following criteria dictates the RDC for Runway 10-28:

- Aircraft Approach Category – The Boeing 757-200/300[3] is the design aircraft; this aircraft is categorized as AAC D.
- Airplane Design Group – Based on wingspan, the Boeing 757-200/300 is the design aircraft; this aircraft is categorized as ADG IV.
- Visibility Minimums – Runway 10 has an LPV approach with visibility minimums as low as 5,000 feet RVR, and Runway 28 has an LPV approach with visibility minimums as low as 5,000 feet RVR (1-1/8 statute mile).

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[2] FAA AC 150/5300-13A defines the critical aircraft as "an aircraft with characteristics that determine the application of airport design standards for a specific runway, taxiway, taxilane, apron, or other facility. This aircraft can be a specific aircraft model or a composite of several aircraft using, expected, or intended to use the airport or part of the airport. (Also called "critical aircraft" or "critical design aircraft."

[3] The Boeing 757-200/300 was listed as the critical aircraft on the 2005 Airport Layout Plan (ALP). The 2016 ALP did not list critical aircraft for each runway.

2.2.1.2 TAXIWAYS

The existing taxiway system connects all runway ends to the Terminal Complex and to other Airport facilities. This section provides an overview of the most significant airfield circulation taxiways at TPA. **Exhibit 2.2-2** depicts TPA's existing taxiways' ADG classifications in accordance with the current lateral separations and safety /object free area configurations. As shown, most of the airfield is configured to comply with ADG V design standards; however, several taxiways are designed for ADG IV and ADG III.

Taxiway C

Taxiway C is a full-length parallel taxiway along the west side of Runway 1R-19L; it serves as the primary means for aircraft in the Terminal Complex to access the south end of the runway for departure to the north. Taxiway C is 75 feet wide, with asphalt shoulders along each side, and maintains a runway-to-taxiway centerline separation of 400 feet.

Taxiways E and D

Taxiway E is a partial parallel taxiway along the east side of Runway 1R-19L. The separation distance between the runway and taxiway centerlines is approximately 525 feet north of Taxiway J. At the south end, the separation between Taxiway F and Runway 1R-19L is approximately 665 feet, allowing Taxiway D to be situated between the runway and Taxiway E. Taxiway D is located 400 feet from the Runway 1R-19L centerline. Both taxiways are 75 feet wide, but only Taxiway D has paved shoulders. Taxiway E provides access to the existing maintenance hangars, and Taxiway D provides access to the general aviation (GA) ramp.

Taxiways N and S

Taxiway N is a full-length parallel taxiway north of Runway 10-28; it provides access to various GA hangars, as well as the FedEx facilities and associated apron. The centerline separation between the runway and taxiway is 450 feet.

Taxiway S is a partial parallel taxiway south of Runway 10-28; it serves the east end of the runway and terminates west of Runway 1R-19L at Taxiway C. The centerline separation between the runway and taxiway is approximately 425 feet. Both taxiways are 75 feet wide.

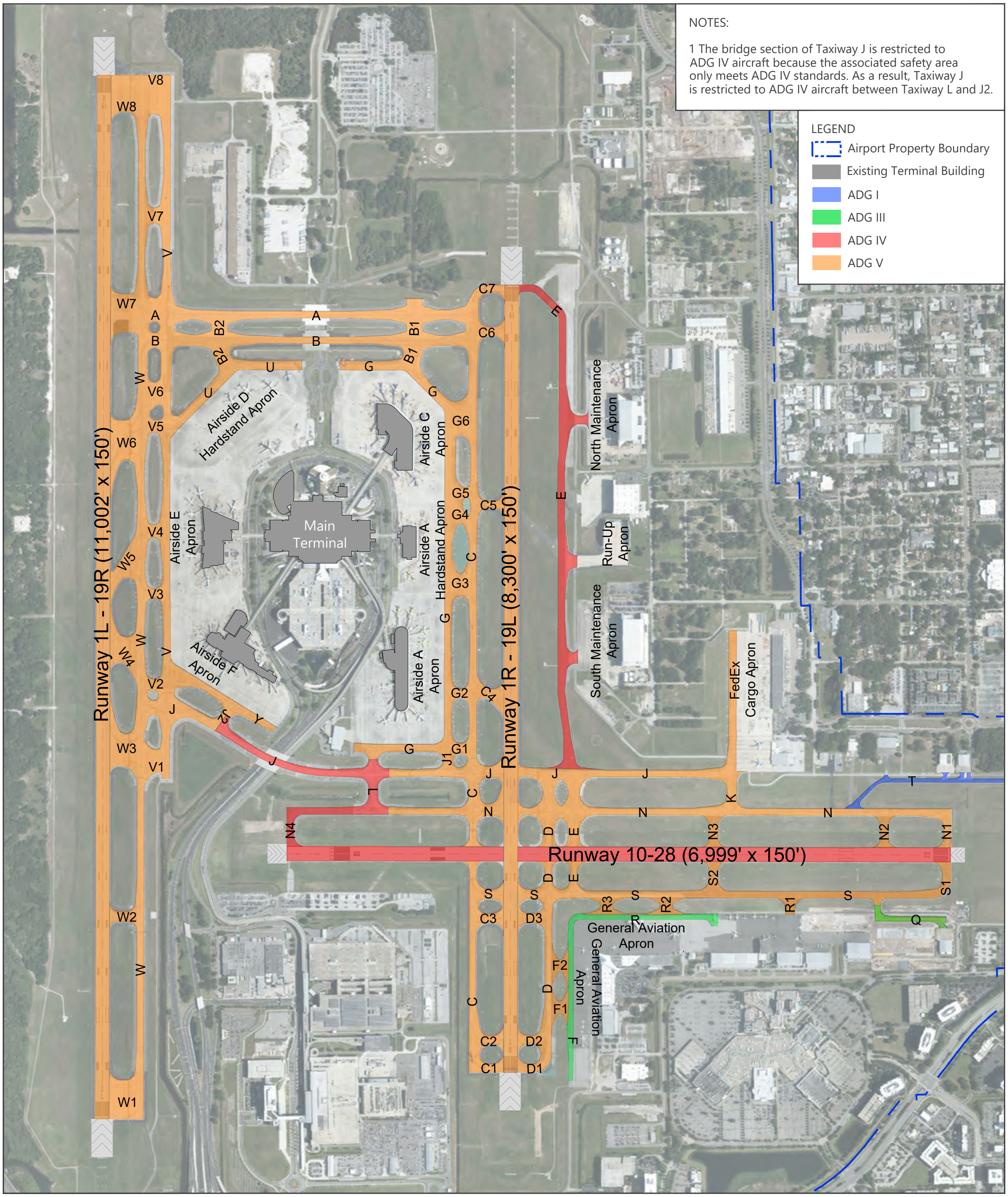
Taxiways W and V

Taxiway W is a full-length taxiway along the east side of Runway 1L-19R; it maintains a runway-to-taxiway centerline separation of 400 feet. Both ends of the taxiway are wider to provide for dual taxi lead-in lines to the runway, allowing for increased queuing of aircraft, as well as bypass capability.

Taxiway V is a partial parallel taxiway east of Runway 1L-19R and Taxiway W; it provides access to the west portion of the Landside/Airside Terminal Complex (Terminal Complex) and terminates approximately 650 feet south of Taxiway J. Both taxiways are 75 feet wide and have 35-foot asphalt shoulders their entire length.

Taxiways A, B, and J

Taxiways A and B are crossfield taxiways located north of the Terminal Complex. Each taxiway has a concrete bridged section that spans 230 feet to protect for a future transportation corridor between the Terminal Complex in the south and terminal development in the north. Both taxiways are 75 feet wide with 35-foot asphalt shoulders, except for the bridged sections that are concrete. Taxiway A opened in March 2021 and was built to replace Taxilane A for east/west crossing taxi movements.



SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); Hillsborough County Aviation Authority, *Airport Certification Manual*, July 2021;AECOM, *Tampa International Airport, Airport Layout Plan*, April 2016.

NORTH 0 1,500 ft

EXHIBIT 2.2-2

AIRFIELD MOVEMENT AREAS BY AIRPLANE DESIGN GROUP

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.2-2 Airfield by ADG.dwgLayout: 2.2 Plotted: May 15, 2024, 09:44AM

Taxiway J also provides crossfield access and is located south of the Terminal Complex. It connects Taxiways E and C and Runway 1L-19R with Runway 1R-19L at Taxiway W. Taxiway J is 75 feet wide and crosses George J. Bean Parkway via a concrete bridge. The taxiway has 35-foot asphalt shoulders, except for the bridged portion, which is concrete. The bridge section of Taxiway J is restricted to ADG IV aircraft because the associated safety area only meets ADG IV standards. As a result, Taxiway J is restricted to ADG IV aircraft between Taxiway L and J2.

2.2.1.3 OTHER AIRFIELD ELEMENTS

The following subsections describe the other areas of the airfield, such as the aprons, as well as nonstandard taxiway geometry.

Apron Areas

The Terminal Complex consists of two large apron areas. The east apron area accommodates the movement and parking of aircraft at Airside A, Airside C, and the Airside A hardstand (remote) aircraft parking. The west apron area serves Airside E, Airside F, and the Airside D hardstand (remote) aircraft parking positions. Taxilanes U, V, and Y serve Airsides E and F and the Airside D hardstand (remote) apron. Taxilane G serves Airsides A and C and the Airside A hardstand (remote) apron.

Several additional aircraft aprons are located at TPA. The GA apron is located south of Runway 10-28 and east of Runway 1R-19L. The maintenance, repair, and overhaul (MRO) aprons are located in the Eastside Aviation Development Area and are accessible via Taxiway E. The air cargo apron is located northeast of Taxiway K and north of Taxiways J and N.

Nonstandard Taxiway Elements

In 2014, the FAA issued a change to its airport design standards prescribed in FAA AC 150/5300-13A, *Airport Design*. Several of the more significant changes included revised taxiway design standards, aimed at minimizing the risk of potential runway incursions and increasing pilot awareness. As a result, several existing airfield elements were no longer in compliance with FAA airport design standards. In 2016, a study of the TPA airfield was completed to identify nonstandard taxiway configurations, evaluate alternative solutions, and recommend improvements. **Table 2.2-3** summarizes the nonstandard taxiway configurations at TPA.

TABLE 2.2-3: NONSTANDARD TAXIWAY CONFIGURATIONS

ID[1]	LOCATION	ISSUE
1	Taxiway W8	Two taxiway entrances lacking "no-taxi" island
2	Taxiway V8	Right-angled threshold Two taxiway entrances lacking "no-taxi" island
3	Taxiway W7	Wide expanse of pavement along a runway
4	Taxiway W6	High-speed exit with access to outer two parallel taxiways Greater than 4-node intersection
5	Taxiway W5	High-speed exit with access to outer of two parallel taxiways High-speed exit collocated with opposite direction
6	Taxiway W4	High-speed exit with access to outer of two parallel taxiways High-speed exit collocated with opposite direction
7	Taxiway W3	High-speed exit with access to outer of two parallel taxiways Taxiway crossing high-speed exit
8	Taxiway W1	Right-angled threshold Two taxiway entrances lacking "no-taxi" island
9	Taxiway C4	Direct access from apron to runway
10	Taxiway N	Right-angled threshold
11	Taxiway J	High-energy intersection (runway crossing) in middle-third of Runway 1R-19L
12	Taxiways D and E	High-energy intersection (runway crossing) in middle-third of Runway 10-28
13	Taxiway G6	Extra-wide-throated taxiway leading from apron directly to parallel taxiway
14	Taxiway C1	Right-angled threshold
15	Taxiway A	Crossover taxiway aligned with runway exit taxiway (Taxiway W7)

NOTE:

1. ID numbers correspond to locations illustrated on Exhibit 2.2-3.

SOURCE: AECOM, *Airfield Planning Study, Tampa International Airport*, February 2016.

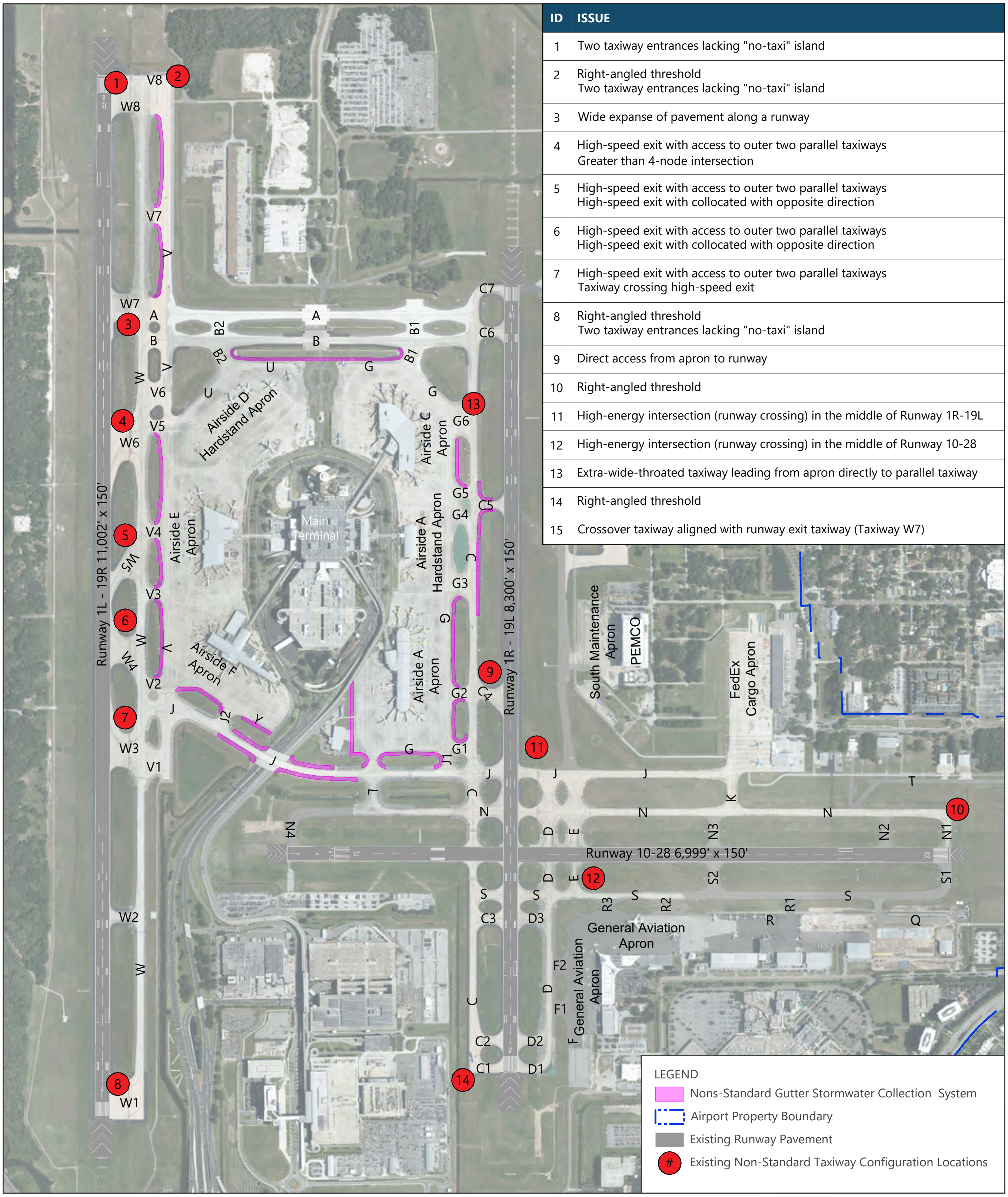
In addition to nonstandard taxiway geometry, there is a nonstandard taxiway/taxilane safety area gradient associated with the existing valley gutter stormwater collection system at various locations across the airfield. The system consists of a concrete valley gutter and backslope asphalt pavement that capture stormwater runoff from apron and taxiway pavements for collection and erosion control. Currently, the taxiway/taxilane safety area gradient along 2.7 miles of the existing concrete valley gutter and backslope pavement located outside the taxiway shoulder exceeds the 1.5 to 3.0 percent requirements.

Exhibit 2.2-3 illustrates the nonstandard taxiway elements at TPA.

2.2.1.4 AIRFIELD PAVEMENT CONDITION

The airfield pavements at TPA are primarily constructed with Portland cement concrete (PCC), while areas subjected to lighter loads or fewer operations are constructed with asphalt. **Exhibit 2.2-4** shows the Pavement Condition Index (PCI) map of the airfield in accordance with the Airport Pavement Management System (APMS) Update completed in September 2021. PCI maps provide a measure of pavement distress to inform decisions related to prioritization of repair and construction activities. Pavement inspections record distress type, severity, and quantity within a given sample unit. PCI values range from 100, for pavements in good condition, to 0, for pavements in failing condition. **Table 2.2-4** summarizes the PCI values as of 2021 for the major airfield elements at TPA.

ID	ISSUE
1	Two taxiway entrances lacking "no-taxi" island
2	Right-angled threshold Two taxiway entrances lacking "no-taxi" island
3	Wide expanse of pavement along a runway
4	High-speed exit with access to outer two parallel taxiways Greater than 4-node intersection
5	High-speed exit with access to outer two parallel taxiways High-speed exit with collocated with opposite direction
6	High-speed exit with access to outer two parallel taxiways High-speed exit with collocated with opposite direction
7	High-speed exit with access to outer two parallel taxiways Taxiway crossing high-speed exit
8	Right-angled threshold Two taxiway entrances lacking "no-taxi" island
9	Direct access from apron to runway
10	Right-angled threshold
11	High-energy intersection (runway crossing) in the middle of Runway 1R-19L
12	High-energy intersection (runway crossing) in the middle of Runway 10-28
13	Extra-wide-throated taxiway leading from apron directly to parallel taxiway
14	Right-angled threshold
15	Crossover taxiway aligned with runway exit taxiway (Taxiway W7)



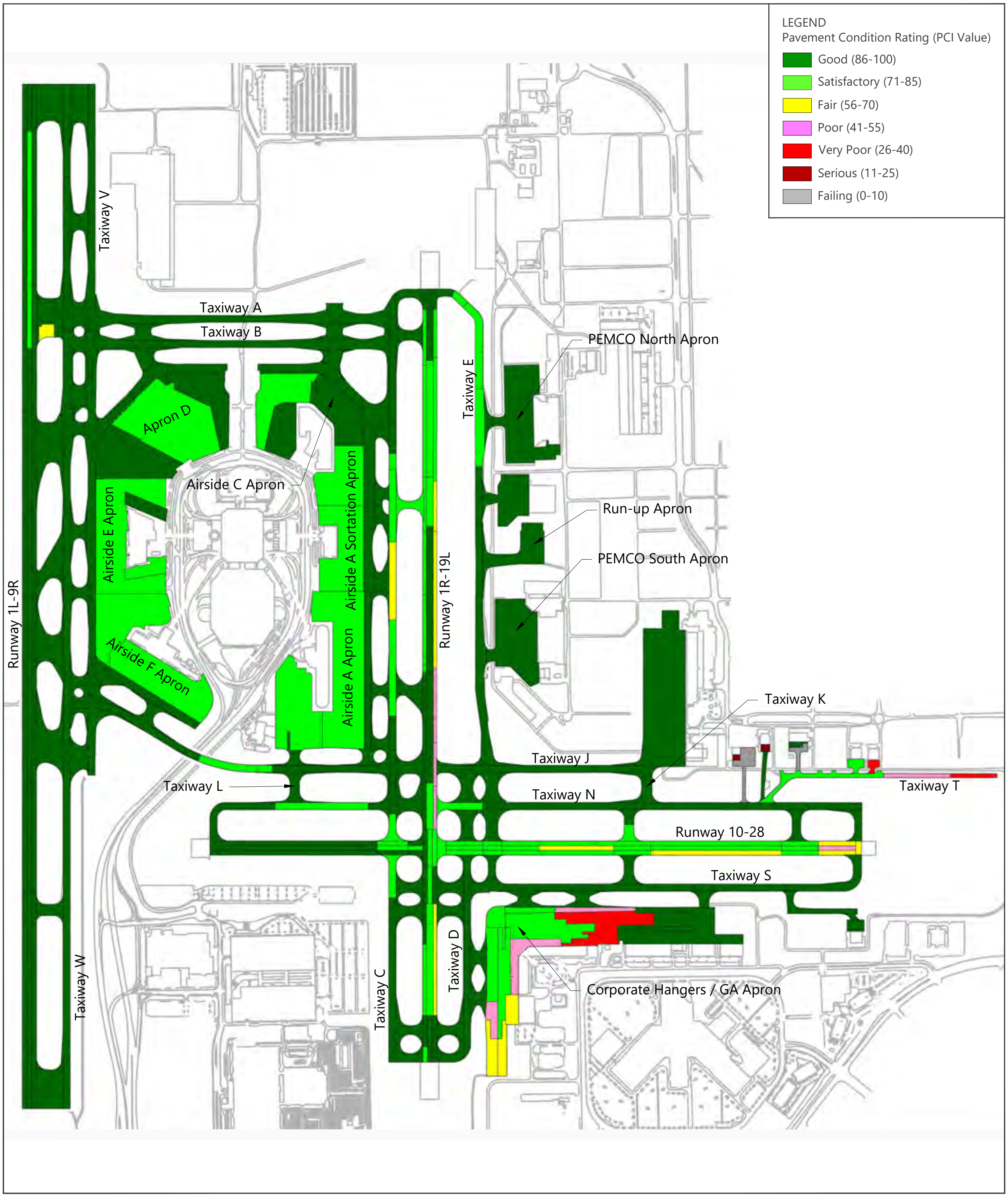
SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography); Hillsborough County Aviation Authority, *TPA Airport Certification Manual*, January 2022; AECOM, *Airfield Planning Study, Tampa International Airport*, February 2016; AECOM, *Tampa International Airport, Airport Layout Plan*, April 2016.

NORTH 0 1,500 ft

EXHIBIT 2.2-3

NONSTANDARD TAXIWAY ELEMENTS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.2-3 Nonstandard Twys.dwgLayout: 8.5x11P Plotted: May 15, 2024, 09:46AM



SOURCE: RS&H, Inc., *Airfield Pavement Management System(APMS) Update - FY21*, September 2021.

NORTH 0 Not To Scale

EXHIBIT 2.2-4

AIRFIELD PAVEMENT CONDITION (AS OF 2021)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.2-4 Airfield Pavement Condition.dwgLayout: 8.5x11P Plotted: May 15, 2024, 09:46AM

TABLE 2.2-4: PAVEMENT CONDITION INDEX (2021)

LOCATION	2021 PAVEMENT CONDITION INDEX
Airside A Apron	82
Airside A Sort Apron	84
Airside C Apron	84
Airside E Apron	83
Airside F Apron	85
Corporate Hangars / GA Area	52 - 96
D Apron	88
PEMCO North Apron	91
PEMCO South Apron	86
Runway 1L-19R	93
Runway 1R-19L	87 (66)
Runway 10-28	89 (73)
Runup Apron	93
Taxiway A	New Pavement (Not Inspected)
Taxiway B	91
Taxiway C	86
Taxiway D	90
Taxiway E	PCC - 90 / AC - 84
Taxilane G	91
Taxiway J	90
Taxiway K	95
Taxiway L	90
Taxiway N	88
Taxiway S	91
Taxiway T	56
Taxilane U	89
Taxiway V	94
Taxiway W	92
Taxilane Y	97

NOTES: AC – Asphalt Concrete
PCC – Portland Cement Concrete
SOURCE: RS&H, Inc., *Airfield Pavement Management System (APMS) Update – FY 21*, September 29, 2021.

2.2.1.5 NAVIGATIONAL AIDS

Table 2.2-5 lists the lighting, marking, and approach aids that serve each runway at TPA. As shown, the parallel north–south runways are equipped with high-intensity runway lights (HIRL), centerline lights, precision approach path indicators (PAPIs), and precision runway markings. Additionally, the north–south parallel runways are equipped with an approach lighting system consisting of either an approach lighting system with sequenced flashing lights (ALSF-2), a medium-intensity approach lighting system with runway alignment indicator lights (MALSR), or Runway end identifier lights (REIL). Runway 10-28 is a non-precision runway with HIRL and PAPIs. Runways 1L and 19L are equipped with Touchdown zone lights (TDZLs) which indicate the touchdown zone when landing under poor visibility conditions. These consist of rows of transverse light bars installed symmetrically about the runway centerline, extending 3,000 feet from the runway threshold.

TABLE 2.2-5: RUNWAY NAVIGATIONAL AIDS

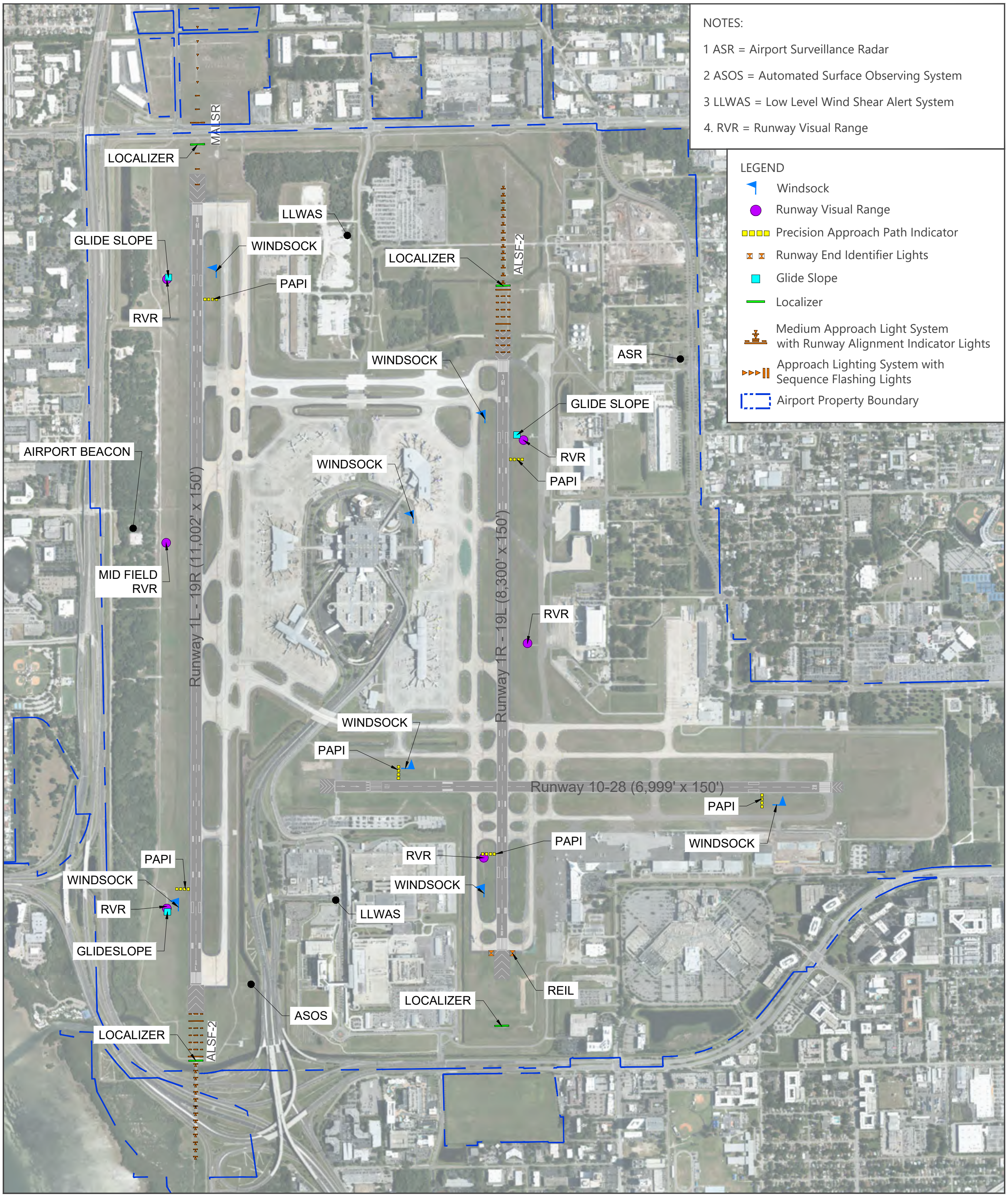
RUNWAY END	RUNWAY LIGHTING	VISUAL APPROACH AIDS	INSTRUMENT APPROACH AIDS	RUNWAY MARKING
1L	HIRL, CL	ALSF-2, TDZL, PAPI	LOC, DME, GS, GPS	Precision
19R	HIRL, CL	MALSR, PAPI	LOC, DME, GS, GPS	Precision
1R	HIRL, CL	PAPI, REIL	LOC, DME, GPS	Precision
19L	HIRL, CL	ALSF-2, TDZL, PAPI	LOC, GS, GPS	Precision
10	HIRL	PAPI	GPS	Non-Precision
28	HIRL	PAPI	GPS	Non-Precision

NOTES: ALSF-2 – Approach Lighting System with Sequenced Flashing Lights
CL – Centerline Lights
DME – Distance Measuring Equipment
GPS – Global Positioning System
GS – Glide Slope
HIRL – High-Intensity Runway Lights
LOC – Localizer
MALSR – Medium-Intensity Approach Lighting System with Alignment Indicator Lights
PAPI – Precision Approach Path Indicator
REIL – Runway End Identifier Lights
TDZL – Touchdown Zone Lights
SOURCES: US Department of Transportation, Federal Aviation Administration, Airport Data and Information Portal, December 2, 2021; Hillsborough County Aviation Authority, *Airport Certification Manual*, August 2021.

Exhibit 2.2-5 illustrates the location of the NAVAIDs associated with Runways 1L-19R, 1R-19L, and 10-28. These NAVAIDs include the components of the ILS, PAPIs, and runway visual range (RVR). The location of various non-runway-specific on-Airport NAVAIDs is also depicted, including the Airport rotating beacon, windsocks, and weather equipment. Additionally, medium-intensity taxiway edge lights are installed on all taxiways at TPA.

Instrument Landing Systems

TPA offers ILS approaches to Runways 1L, 19R, and 19L, localizer (LOC) approach to Runway 1R, and area navigation (RNAV) Global Positioning System (GPS) non-precision approaches to each runway end. **Table 2.2-6** lists the instrument approaches available at the Airport for each runway and provides the associated approach minimums. Runway 19L and 1R ILSs allow for CAT II and III precision approaches, respectively. If an aircraft is equipped accordingly, a CAT III ILS allows approaches with a cloud ceiling of 0 feet.



SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); US Department of Transportation, Federal Aviation Administration, *Airport Data and Information Portal*, December 2, 2021; AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

EXHIBIT 2.2-5

AIRFIELD NAVIGATIONAL AIDS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.2-5 Airfield Navigational Aids.dwgLayout: 8.5x11P Plotted: May 15, 2024, 09:49AM

TABLE 2.2-6: RUNWAY APPROACH SPECIFICATIONS

RUNWAY	PRECISION INSTRUMENT APPROACH	APPROACH VISIBILITY MINIMUMS 1/	DA/MDA 2/
1L	ILS or LOC	1800	211
	ILS SA CAT I	1400	155
	ILS CAT II	1200	105
	ILS CAT III	600	N/A
	RNAV (LPV)	1800	211
	RNAV (LNAV/VNAV)	4500	431
	RNAV (LNAV MDA)	2400	440
19R	ILS	2400	221
	LOC	2400	400
	RNAV (LPV)	2400	221
	RNAV (LNAV/VNAV)	5000	466
	RNAV (LNAV MDA)	2400	440
1R	RNAV (LPV)	4620	290
	RNAV (LNAV/VNAV)	7260	491
	RNAV (LNAV MDA)	5280	440
	LOC	6600	1300
19L	ILS	1800	226
	LOC	2400	440
	ILS SA CAT I	1400	150
	ILS CAT II	1200	101
	RNAV (LPV)	2400	226
	RNAV (LNAV/VNAV)	4500	440
	RNAV (LNAV MDA)	2400	460
10	RNAV (LPV)	5280	272
	RNAV (LNAV/VNAV)	7260	436
	RNAV (LNAV MDA)	5280	480
28	RNAV (LPV)	5940	389
	RNAV (LNAV/VNAV)	7920	468
	RNAV (LNAV MDA)	5280	520

NOTES:
CAT – Category; DA – Decision Altitude (feet above mean sea level; applies to precision approaches); ILS – Instrument Landing System; LNAV – Lateral Navigation; LPV – Localizer Performance with Vertical Guidance; MDA – Minimum Descent Altitude (feet above mean sea level); applies to non-precision approaches); RNAV – Area Navigation (Global Positioning System); VNAV – Vertical Area Navigation (Global Positioning System); RNP – Required Navigation Performance; SA - Special Authorization required.
1/ In feet
2/ In feet above mean sea level
SOURCE: Jeppesen Sandersen, Airport and Instrument Approach Charts, January 2021.

Distance Measuring Equipment

Distance Measuring Equipment (DME) provides distance information with a very high degree of accuracy. It can be used both by pilots transitioning the airspace and pilots landing at the Airport. There are three DME systems at the Airport which are associated with the Runway 1L, 19R, and 1R localizer/ILS approaches transmitting distance information over the localizer frequencies.

Rotating Beacon

The rotating beacon is located on the west side of the airfield and is operational at nighttime, during inclement weather, and during Instrument Flight Rule (IFR) conditions. The rotating beacon emits flashes of white and green colored lights which aid in the identification of a civilian land airport. The elevation of the beacon is 74 feet above MSL.

Automated Surface Observing System

Weather information is provided to pilots and airport users by an automated surface observing system (ASOS) located east of the Runway 1L approach end. ASOS are operated by the National Oceanic and Atmospheric Administration (NOAA) and provide the following: wind speed and direction, visibility, temperature and dewpoint, altimeter reading, density altitude, ceiling height, and precipitation type. TPA has a low-level wind shear alert system (LLWAS) to detect sudden changes of wind velocity/direction and microburst activity. The two LLWAS anemometers are located approximately equidistant between Runways 1L-19R and 1R-19L, at the north and south ends of the runways.

Airport Surveillance Radar

The Airport Surveillance Radar (ASR) is used to detect and display azimuth, range, and elevation of aircraft operating within terminal airspace. ASR antennas scan through 360 degrees to present an air traffic controller with the location of all aircraft within 60 nautical miles of the airport. The ASR is located on the east side of the Airport, immediately west of Air Cargo Road, south of W. Curtis Street and north of W. Cayuga Street. The elevation of the ASR antenna, including the lightning rods affixed atop the structure, is 150 feet AGL.

2.2.1.6 MODIFICATIONS OF STANDARDS

The FAA grants Modifications of Standards (MOSs) to airports for applicable airport design standard deviations. MOSs are not applicable for runway safety areas (RSAs). An airport sponsor must submit a request for an MOS to comply with FAA grant assurances and ensure viability for FAA funding. **Table 2.2-7** lists the approved MOSs at TPA.

TABLE 2.2-7: EXISTING MODIFICATIONS OF STANDARDS

NUMBER	STANDARD MODIFIED	FAA STANDARDS	EXISTING CONDITION	DATE APPROVED
1	Surface painted Taxiway D location	FAA AC 150/5340-1L, Chapter 4, Section 7	Phrase “Taxiway” supplements the legend “D” within the standard surface painted for the Taxiway D location sign	06/9/2009
2	Sign and enhanced taxiway centerline	FAA AC 150/5340-1L, Chapter 4, Section 3.d	The existing curved taxiway centerlines just west of the nonmovement boundary area surface marking that guide pilots onto Taxiway D are removed completely	06/29/2009
3	Marking for parallel Taxiways Q and P off Runway End 36R	FAA AC 150/5340-1L, Chapter 4, Section 5	Dual surface painted holding position signs are painted at the runway holding position location for parallel Taxiways Q and P	06/29/2009
4	Allowable gradient slope for taxiway	FAA AC 150/5300-13A, Change 1, Section 418, “Surface Gradient and Line of Sight”	Taxiway J gradient slope exceeds the maximum allowable slope	02/24/2015

NOTES:
AC – Advisory Circular
FAA – Federal Aviation Administration
MOS – Modifications of Standard
SOURCE: AECOM, *Tampa International Airport, Airport Layout Plan*, April 2016.

2.2.1.7 UPDATE OF EXISTING AIRFIELD COMPONENTS

Since the previous MPU, which was completed in 2016, there have been numerous changes to the airfield. These changes include the following:

- taxiway/taxilane nomenclature changes
- decommissioning of Taxiways F and H with pavement removal
- decommissioning of Taxilane E between the Runway 10-28 and Runway 1R threshold; replaced by an apron circulation taxilane (Taxilane F)
- construction of Taxilanes F1 and F2
- construction of Taxilanes R2 and R3
- construction of new crossfield Taxiway A (with bridge)
- Taxilane A pavement removal between Airside C and remote aircraft parking ramp
- decommissioning of Taxilane A; replaced by four apron circulation taxilanes (Taxilanes G, U, V, and Y)

2.2.2 METEOROLOGICAL CONDITIONS

Meteorological conditions were analyzed to determine historical wind and weather patterns at TPA. Wind and weather patterns significantly impact Airport operations, including runway use, runway capacity, and whether the pilot will use visual flight rules (VFR) or instrument flight rules (IFR). The data, obtained from the National Centers for Environmental Information and the FAA, consist of hourly observations for the 10-year period beginning October 1, 2011, through September 30, 2021. Ceiling height, visibility, wind velocity, wind direction, temperature, and airfield operating configuration were the criteria used to analyze the data for the MPU.

Visual meteorological conditions (VMC) and instrument meteorological conditions (IMC) are defined by cloud ceiling height above ground level (AGL) and visibility. These conditions, shown in **Table 2.2-8**, determine the procedures that can be used by air traffic control (ATC) and the operating rules for which pilots must abide. Cloud ceiling heights of 1,000 feet AGL or greater and visibility 3 statute miles or greater is considered VMC, allowing the use of VFR. When cloud ceiling heights are less than 1,000 feet AGL and/or visibility is less than 3 statute miles, conditions are IMC and IFR must be used. IMC is further divided into three categories: Category (CAT) I, CAT II, and CAT III.

TABLE 2.2-8: HISTORICAL OCCURRENCE OF VISUAL AND INSTRUMENT METEOROLOGICAL CONDITIONS

CATEGORY		CEILING HEIGHT (ABOVE GROUND LEVEL)		VISIBILITY	PERCENT OCCURRENCE
Visual Meteorological Conditions		1,000 feet or greater	and	3.0 miles or greater	96.9%
Instrument Meteorological Conditions	CAT I	Less than 1,000 feet and greater than or equal to 200 feet	and/or	Less than 3.0 miles and greater than or equal to 0.5 miles	2.8%
	CAT II	Less than 200 feet and greater than or equal to 100 feet	and/or	Less than 0.5 miles and greater than or equal to 1,200 feet RVR	0.2%
	CAT III	Less than 100 feet	and/or	Less than 1,200 feet RVR	0.1%
				Subtotal (All Weather Conditions)	**100.0%**

NOTES:
CAT – Category
RVR – Runway Visual Range
SOURCE: National Oceanic and Atmospheric Administration, National Centers for Environmental Information, January 11, 2022, (October 1, 2011, through September 30, 2021; 87,593 observations).

2.2.2.1 WIND VELOCITY AND DIRECTION

Wind velocity and direction affect all takeoff and departure operations. The direction of the wind will determine which runway configuration will be used. The direction and velocity of the wind relative to the orientation of a runway can result in crosswinds and/or tailwinds that make that runway unsuitable for landing and/or departing aircraft. **Exhibit 2.2-6** presents the percent occurrence of wind velocities by direction at the Airport. For the purposes of this analysis, wind velocities of 5 knots or less were considered calm.

2.2.2.2 TEMPERATURE

Temperature has a direct impact on runway length requirements. Higher temperatures require the aircraft to travel at a higher speed during takeoff to generate enough lift to take off due to lower air density. **Table 2.2-9** summarizes the average monthly temperatures at TPA from 1996 through 2021. The average maximum temperature of 89.6 degrees Fahrenheit occurs in August. The average minimum temperature of 53.1 degrees Fahrenheit occurs in January.

TABLE 2.2-9: AVERAGE MONTHLY TEMPERATURES (1996 – 2021 NORMALS)

MONTH	AVERAGE MAXIMUM TEMPERATURE	AVERAGE MINIMUM TEMPERATURE	AVERAGE TEMPERATURE[1]
January	69.6	53.1	60.8
February	72.8	56.7	64.0
March	76.7	60.3	68.0
April	81.5	65.7	73.1
May	86.6	71.2	78.4
June	88.9	75.5	81.7
July	89.2	77.2	82.5
August	89.6	77.2	82.7
September	88.4	75.6	81.2
October	84.2	69.4	76.4
November	77.5	60.8	68.7
December	72.9	57.0	64.4

NOTES: All temperatures are in degrees Fahrenheit.

1. Data was initially compiled in January 2022. Based upon a subsequent evaluation of average monthly temperatures in May 2024, it was determined that the inclusion of 2022 and 2023 data increases the monthly temperature by an average of 1.2 degrees Fahrenheit.

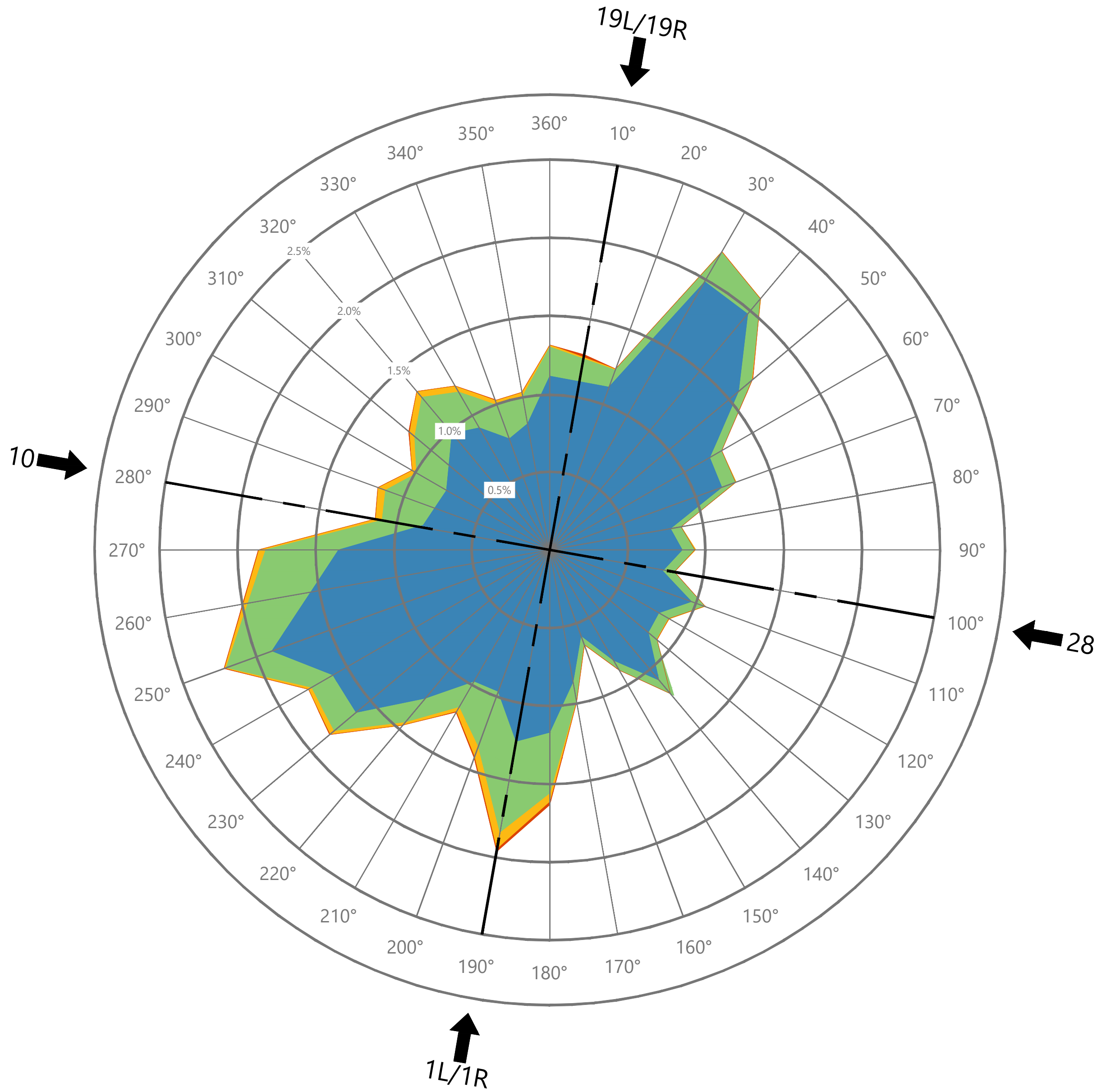
SOURCES: National Oceanic and Atmospheric Administration, National Centers for Environmental Information, *Summary of Monthly Normals (*July 1, 1996 – December 31, 2021), January 2022; High Plains Regional Climate Center, *Custom Climatology Tool*, (1996 – 2023); May 2024.

2.2.3 AIRFIELD AND AIRSPACE OPERATIONS

This section describes how air traffic flows into and out of the Airport, on the airfield, and in the airspace immediately surrounding the Airport. This information was obtained from various FAA publications and will support subsequent airfield planning analyses to be performed throughout the master planning process.

2.2.4 AIR TRAFFIC CONTROL PROCEDURES

The National Airspace System (NAS) consists of various components of airspace, which are monitored, controlled, and coordinated by ATC personnel. Three-dimensional volumes of airspace are defined based on the type of activity occurring in each and its relationship to the NAS. The ATC facilities that manage air traffic vary depending on the type of airspace. Coordination between facilities occurs when aircraft transition from one type of airspace to another.



LEGEND
- Wind Velocity 6-10 Knots
- Wind Velocity 11-15 Knots
- Wind Velocity 16-20 Knots
- Wind Velocity 21+ Knots
- Runway Orientation

NOTE:

1 Wind velocities of 5 knots or less are considered calm.

SOURCES: National Center for Environmental Information (NCEI), 3505 Surface Hourly Weather Observations from October 1, 2011 through September 30, 2021 (87,593 observations).

NORTH 0 Not To Scale

EXHIBIT 2.2-6

PERCENT OCCURRENCE OF WIND VELOCITY BY DIRECTION
ALL WEATHER CONDITIONS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.2-6 Wind Velocity and Direction.dwgLayout: 2.2-6 Plotted: May 15, 2024, 09:51AM

2.2.4.1 AIR ROUTE TRAFFIC CONTROL CENTER

Two Air Route Traffic Control Centers (ARTCC), the Jacksonville (ZJX) ARTCC and Miami (ZMA) ARTCC are responsible for managing traffic into, out of, and through Florida. The ZJX ARTCC is located in Hilliard, Florida (approximately 165 nautical miles to the northeast of TPA) and the ZMA ARTCC is located in Miami, Florida (approximately 175 nautical miles to the southeast of TPA). The surface boundary separating the areas that the two ARTCCs are responsible for is located approximately 40 nautical miles to the west, north, and east of the Airport.

2.2.4.2 TERMINAL RADAR APPROACH CONTROL FACILITY

The Tampa Terminal Radar Approach Control (TPA TRACON) is located at the base of the TPA Airport Traffic Control Tower (ATCT). This arrangement is referred to as an up down or combined TRACON. The TPA TRACON manages air traffic into and out of TPA's Class B, or terminal airspace. There are two small-hub commercial service airports[4] within 40 nautical miles of TPA, St. Pete-Clearwater International Airport (PIE) located 9 nautical miles to the southwest and Sarasota-Bradenton International Airport (SRQ) located 35 nautical miles to the south, that TPA TRACON also provides service to. **Exhibit 2.2-7** depicts the terminal airspace surrounding TPA and the location of other airports within the region.

2.2.4.3 AIRPORT TRAFFIC CONTROL TOWER

The TPA ATCT was commissioned in 1972 and has an elevation of 133 feet above mean seal level (AMSL). The TPA ATCT operates 24 hours every day and is responsible for controlling arrivals transferred from the TRACON on final approach to the airfield and clearing departures off the runways and transferring them to the TRACON. ATCT personnel are also responsible for aircraft activities within the movement area on the airfield. This includes the runways, taxiways, and other areas of the Airport that are used for aircraft taxiing, taking off, and landing, exclusive of loading ramps and aircraft parking areas.

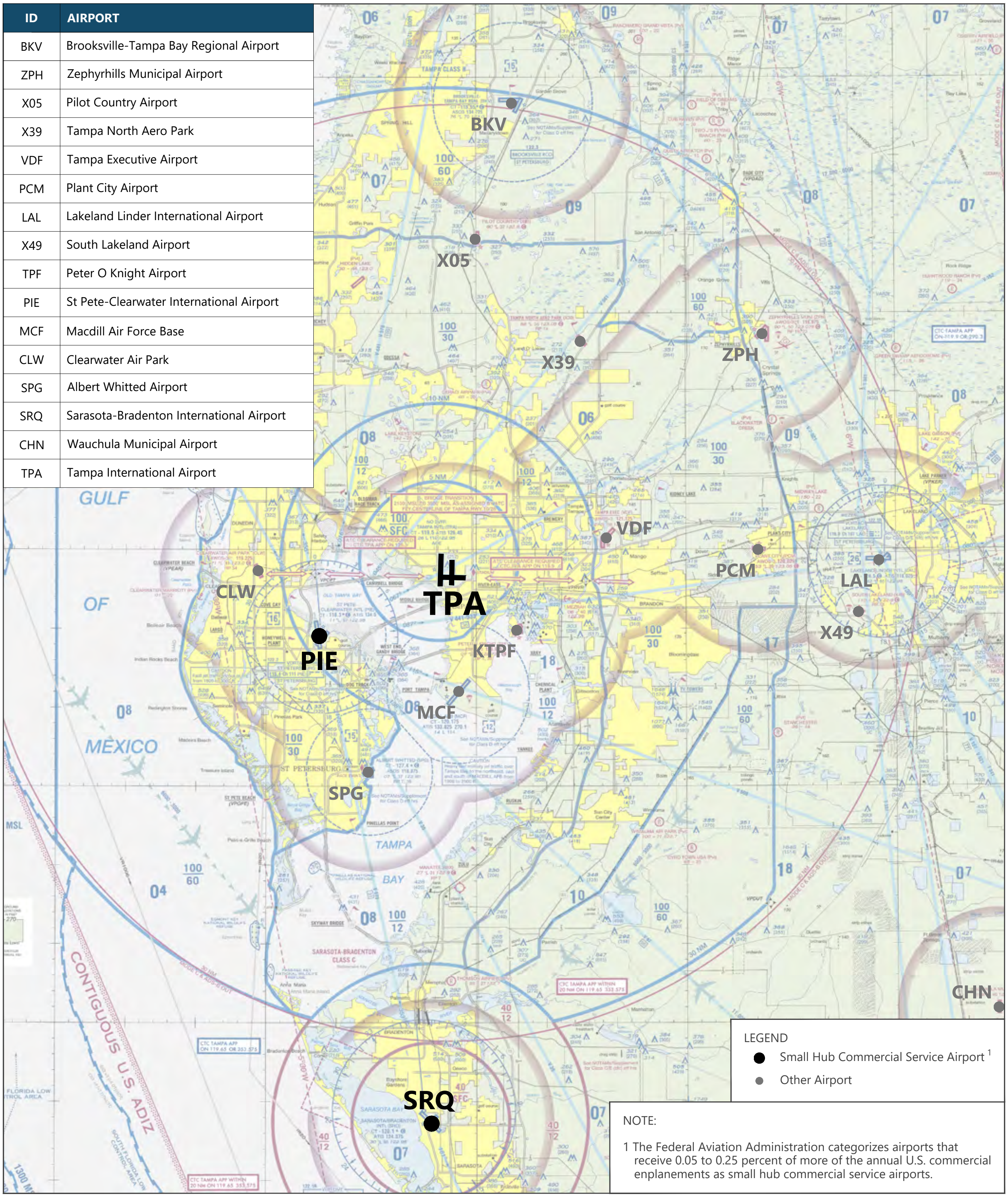
The areas of the airfield not expressly designated as movement areas comprise the nonmovement area. Pilots wanting to enter the movement area must hold their aircraft at the limits of the nonmovement area and request clearance from the ATCT before proceeding. Portions of Taxiways J, N, N1, T, and apron areas west of Airside E and south of Airside F are not visible from the ATCT due to line-of-sight obstructions.[5] **Exhibit 2.2-8** depicts the nonmovement areas and areas not visible from the ATCT.

To eliminate current and future line-of-sight constraints, a proposed ATCT has been proposed to the north-northwest of the existing terminal building, south of future Airside D. According to the siting report that was completed in 2018 by the FAA Eastern Service Area Technical Operations Engineering Services, the proposed tower cab floor elevation is 222 feet AMSL and the overall structure height is 257 feet AMSL. The TPA TRACON would be relocated next to the tower and is anticipated to be 21,000 square feet. All controlled movement areas of the Airport would be visible from the new ATCT including the proposed third parallel runway.

[4] The FAA categorizes airports that receive between 0.05 and 0.25 percent of annual US commercial enplaned passengers as small-hub commercial service airports.

[5] Hillsborough County Aviation Authority, *Airport Certification Manual*, August 2021.

ID	AIRPORT
BKV	Brooksville-Tampa Bay Regional Airport
ZPH	Zephyrhills Municipal Airport
X05	Pilot Country Airport
X39	Tampa North Aero Park
VDF	Tampa Executive Airport
PCM	Plant City Airport
LAL	Lakeland Linder International Airport
X49	South Lakeland Airport
TPF	Peter O Knight Airport
PIE	St Pete-Clearwater International Airport
MCF	Macdill Air Force Base
CLW	Clearwater Air Park
SPG	Albert Whitted Airport
SRQ	Sarasota-Bradenton International Airport
CHN	Wauchula Municipal Airport
TPA	Tampa International Airport



LEGEND
- Small Hub Commercial Service Airport [1]
- Other Airport

NOTE:

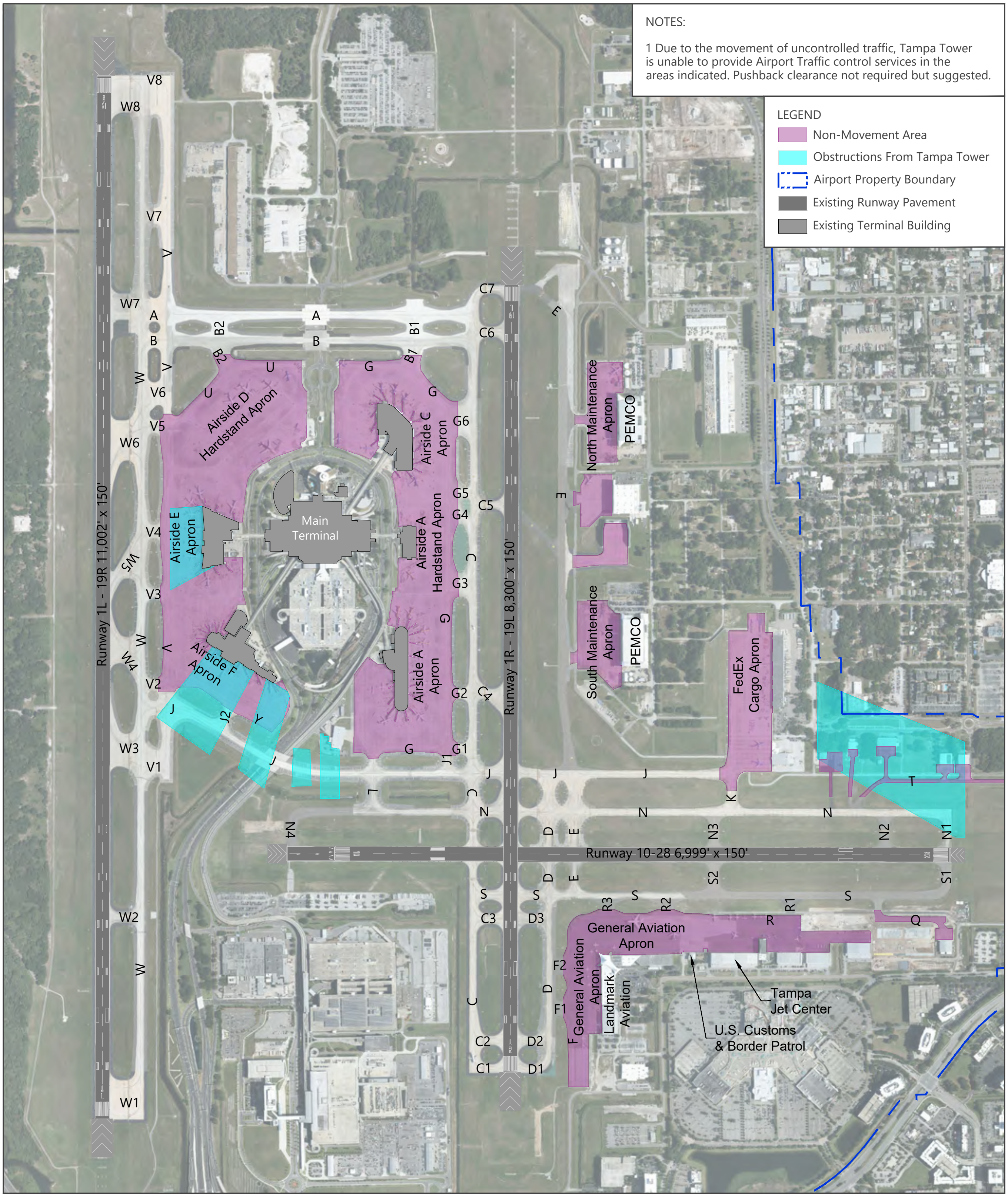
1 The Federal Aviation Administration categorizes airports that receive 0.05 to 0.25 percent of more of the annual U.S. commercial enplanements as small hub commercial service airports.

SOURCE: Federal Aviation Administration, Tampa/Orlando VFR Sectional Chart, December 2021.

NORTH 0 Not To Scale

EXHIBIT 2.2-7

TERMINAL AIRSPACE



SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); Hillsborough County Aviation Authority, *Airport Certification Manual*, July 2021; AECOM, *Tampa International Airport, Airport Layout Plan*, April 2016.

EXHIBIT 2.2-8

NORTH

0 1,500 ft

NON-MOVEMENT AREAS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.2-8 Nonmovement Areas.dwgLayout: 8.5x11P Plotted: May 15, 2024, 09:57AM

2.2.4.4 INFORMAL RUNWAY USE PROGRAM

Several operating configurations, defined by a combination of runways that are used for arrivals and departures, are used at the Airport. Weather conditions and aircraft operational demand generally dictate the operating configuration in use at any given time. Two primary operating configurations, north flow and south flow, are the most frequently used operating configurations at the Airport. **Table 2.2-10** details annual operating configuration utilization for the last 10 calendar years.

TABLE 2.2-10: ANNUAL OPERATING CONFIGURATION UTILIZATION

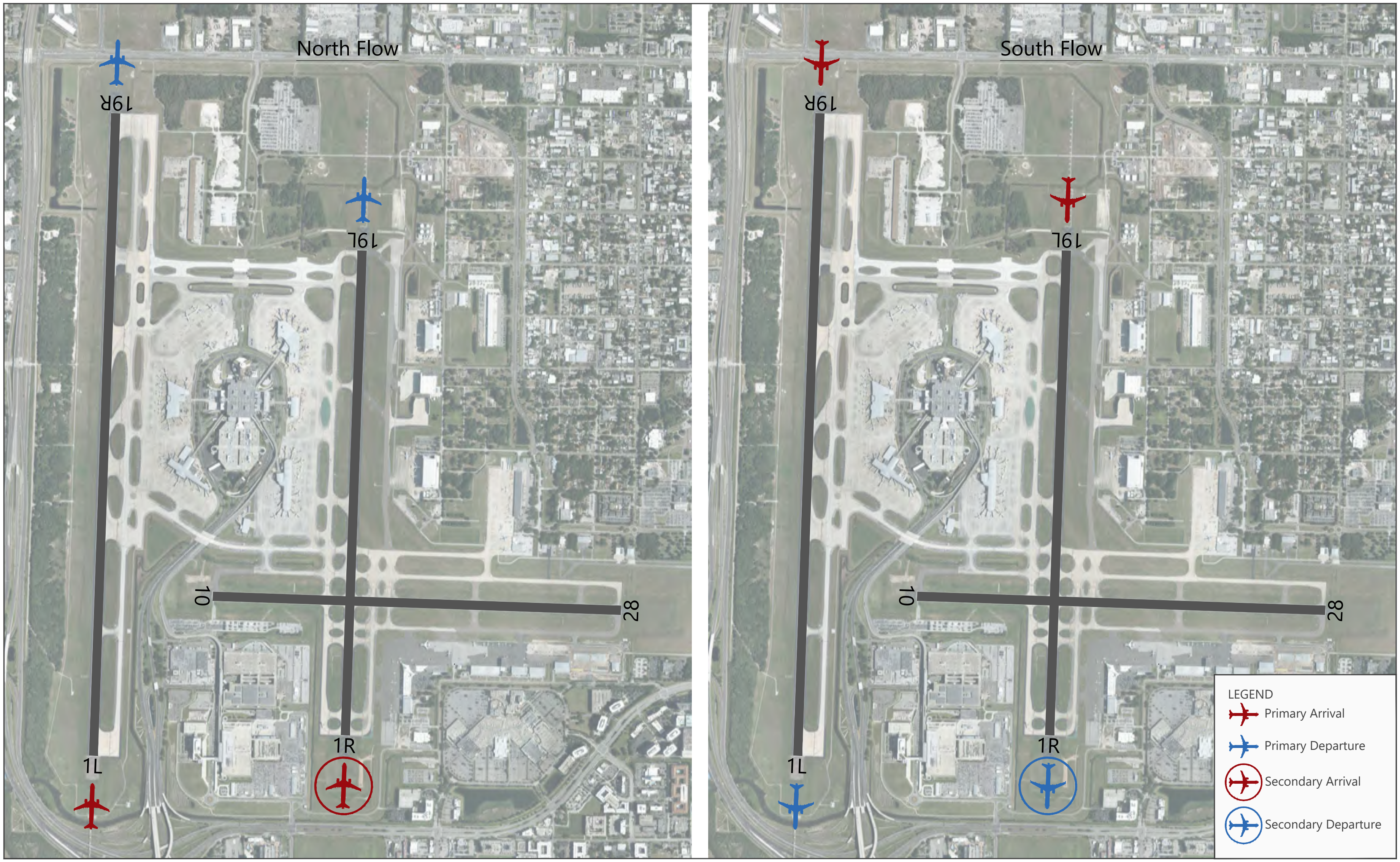
YEAR	NORTH FLOW	SOUTH FLOW	OTHER
2012	51.3%	47.9%	0.8%
2011	50.0%	48.9%	1.1%
2013	55.8%	42.8%	1.4%
2014	53.5%	45.3%	1.3%
2015	57.6%	41.2%	1.2%
2016	55.1%	44.0%	0.9%
2017	50.5%	48.6%	0.9%
2018	56.8%	42.9%	0.3%
2019	51.0%	47.9%	1.1%
2020	50.2%	49.8%	0.0%
2021	52.3%	45.9%	1.8%
Average	**51.3%**	**47.9%**	**0.8%**

SOURCES: US Department of Transportation, Federal Aviation Administration, Aviation System Performance Metrics Daily Weather by Hour Report, January 2022 (data for January 1, 2012, through December 31, 2021); Ricondo & Associates, Inc., January 2022 (analysis).

A voluntary preferential runway use program, first developed in the 1950s and often referred to as the Informal Runway use Program (IRU), prescribes the preferred arrival and departure runways for jet aircraft in each configuration. The preferred arrival and departure runways prescribed in the IRU are followed to the extent possible but are subject to deviation for reasons including but not limited to wind, weather, runway conditions, air traffic activity, airspace constraints, emergencies, and safety. The IRU does not provide preferred runways for turboprop or piston aircraft. **Exhibit 2.2-9** depicts the runways used for arrival and departure operations during these configurations.

2.2.4.5 NORTH FLOW

For jet aircraft, the preferred arrival runway is Runway 1L. Runway 1R can also be used for arrivals but is considered a secondary arrival runway. There are no preferred runways for turboprop or piston aircraft. Some non-commercial turboprop, piston, and jet aircraft use Runway 10-28, but this does not comprise a significant proportion of activity at the Airport. **Table 2.2-11** details the 2020 runway utilization for arrivals and departures while the Airport was operating in north flow. **Exhibit 2.2-10** depicts the arrival and departure routes within the terminal airspace when the Airport is operating in north flow.



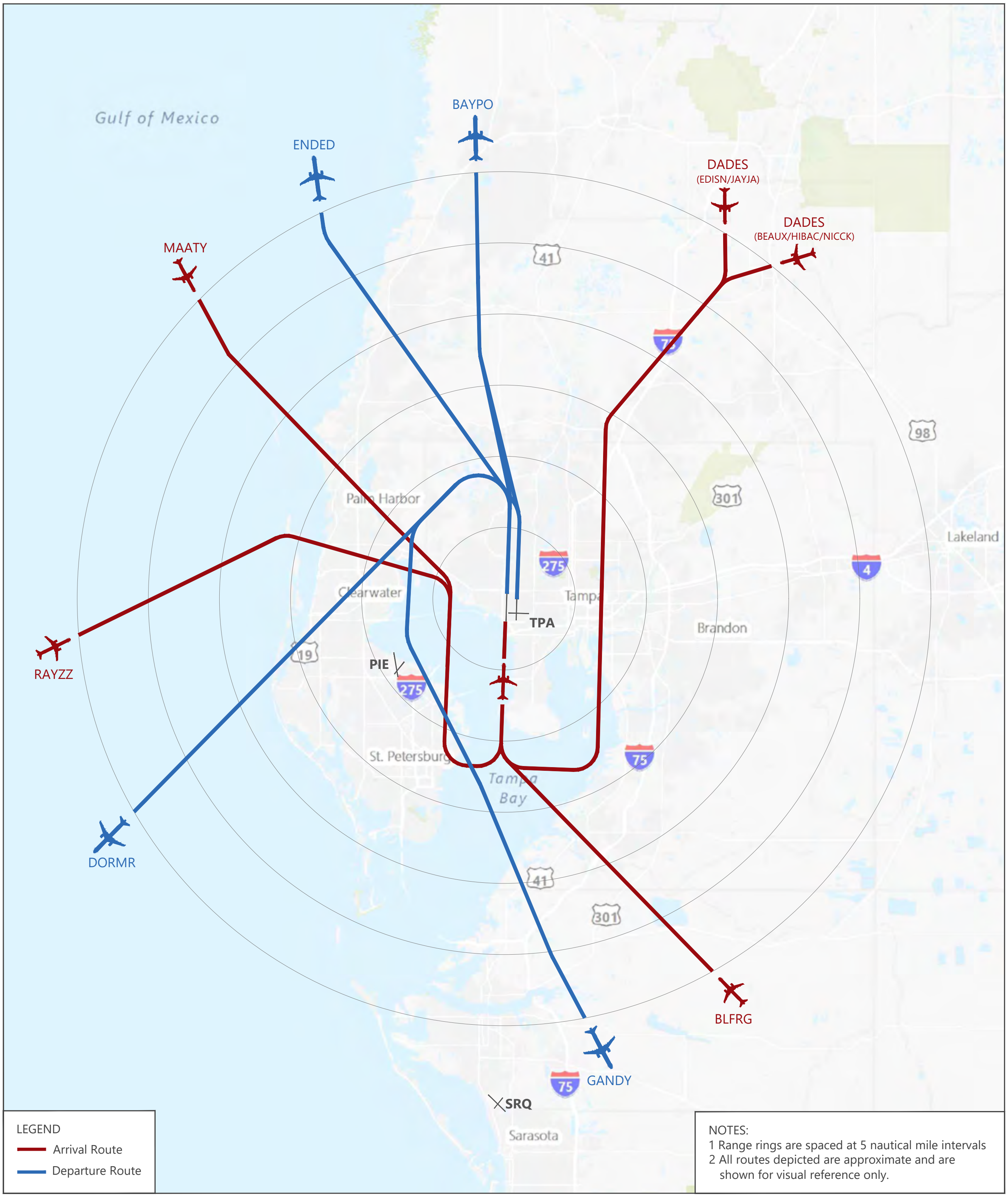
SOURCES: AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); Ricondo & Associates, Inc., January 2022.

NORTH 0 Not to Scale

EXHIBIT 2.2-9

AIRPORT OPERATING CONFIGURATIONS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Airspace and ATC\04-Drawings&Models\AutoCAD\Op Config.dwgLayout: Operating Configurations Plotted: May 15, 2024, 10:16AM

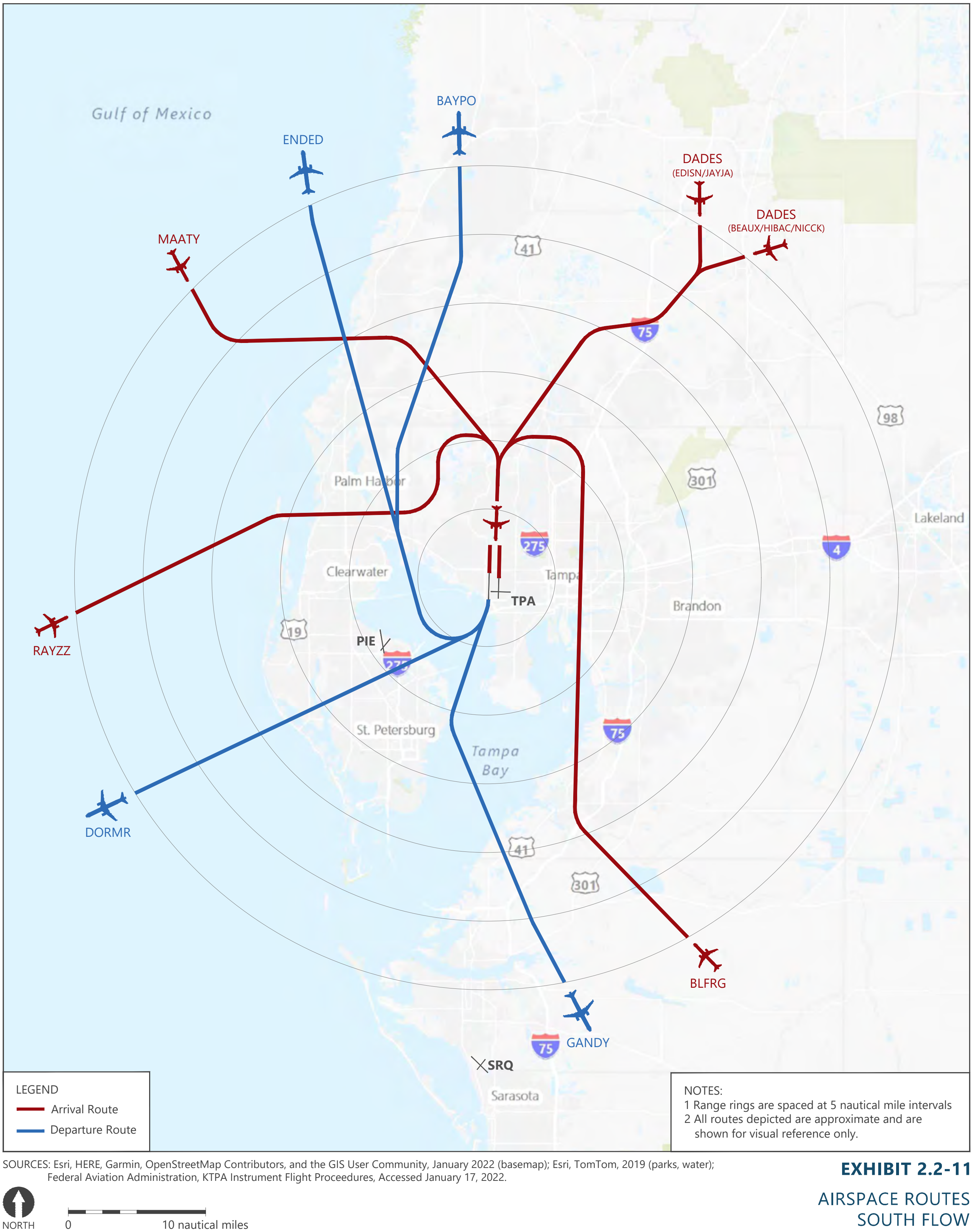


SOURCES: Esri, HERE, Garmin, OpenStreetMap Contributors, and the GIS User Community, January 2022 (basemap); Esri, TomTom, 2019 (parks, water); Federal Aviation Administration, KTPA Instrument Flight Proceedures, Accessed January 17, 2022.

EXHIBIT 2.2-10

AIRSPACE ROUTES
NORTH FLOW

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Airspace and ATC\04-Drawings&Models\AutoCAD\Routes.dwgLayout: North Flow_30 Plotted: May 15, 2024, 10:25AM



SOURCES: Esri, HERE, Garmin, OpenStreetMap Contributors, and the GIS User Community, January 2022 (basemap); Esri, TomTom, 2019 (parks, water); Federal Aviation Administration, KTPA Instrument Flight Proceedures, Accessed January 17, 2022.

EXHIBIT 2.2-11

AIRSPACE ROUTES
SOUTH FLOW

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Airspace and ATC\04-Drawings&Models\AutoCAD\Routes.dwgLayout: South Flow_30 Plotted: May 15, 2024, 10:20AM

TABLE 2.2-11: 2020 NORTH FLOW RUNWAY UTILIZATION

	ARRIVALS				DEPARTURES			
CATEGORY	RUNWAY 1L	RUNWAY 1R	RUNWAY 10	RUNWAY 28	RUNWAY 1L	RUNWAY 1R	RUNWAY 10	RUNWAY 28
Commercial	75.0%	4.9%	0.0%	0.0%	40.0%	39.9%	0.0%	0.0%
Non-Commercial	6.9%	10.4%	0.5%	2.3%	2.7%	14.4%	2.2%	0.8%
Total	**81.9%**	**15.3%**	**0.5%**	**2.3%**	**42.7%**	**54.3%**	**2.2%**	**0.8%**

SOURCES: US Department of Transportation, Federal Aviation Administration, Aviation System Performance Metrics Daily Weather by Hour Report, January 2022 (data for January 1, 2020, through December 31, 2020); Hillsborough County Aviation Authority, Casper Airport Solutions Operations Monitoring, January 2022 (data for January 1, 2020, through December 31, 2020); Ricondo & Associates, Inc., January 2022 (analysis).

2.2.4.6 SOUTH FLOW

For jet aircraft, the preferred departure runway is Runway 19R. Runway 19L can also be used for departures but is considered a secondary departure runway. There is no preferred arrival runway, thus both Runway 19L and 19R are used by arrivals. There are no preferred runways for turboprop and piston aircraft. Some non-commercial turboprop, piston, and jet aircraft use Runway 10-28, but this does not comprise a significant proportion of activity at the Airport. **Table 2.2-12** details the 2020 runway utilization for arrivals and departures while the Airport was operating in south flow. **Exhibit 2.2-11** depicts the arrival and departure routes within the terminal airspace when the Airport is operating in south flow.

TABLE 2.2-12: 2020 SOUTH FLOW RUNWAY UTILIZATION

	ARRIVALS				DEPARTURES			
CATEGORY	RUNWAY 19L	RUNWAY 19R	RUNWAY 10	RUNWAY 28	RUNWAY 19L	RUNWAY 19R	RUNWAY 10	RUNWAY 28
Commercial	42.6%	36.1%	0.0%	0.0%	8.1%	70.7%	0.0%	0.0%
Non-Commercial	15.2%	2.3%	0.3%	3.5%	15.1%	2.0%	2.2%	1.9%
Total	**57.8%**	**38.4%**	**0.3%**	**3.5%**	**23.2%**	**72.7%**	**2.2%**	**1.9%**

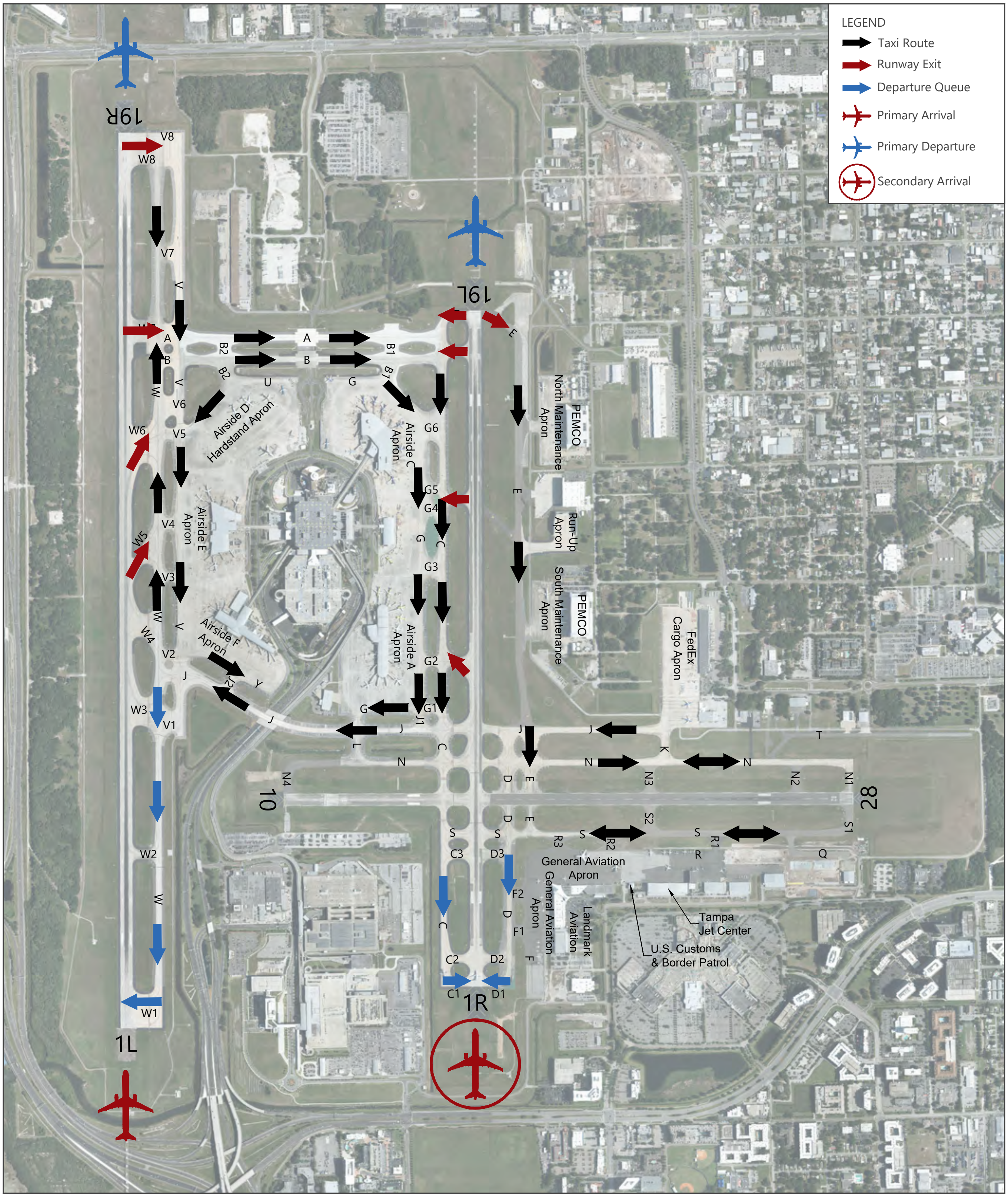
SOURCES: US Department of Transportation, Federal Aviation Administration, Aviation System Performance Metrics Daily Weather by Hour Report, January 2022 (data for January 1, 2020, through December 31, 2020); Hillsborough County Aviation Authority, Casper Airport Solutions Operations Monitoring, January 2022 (data for January 1, 2020, through December 31, 2020); Ricondo & Associates, Inc., January 2022 (analysis).

2.2.5 AIRFIELD MOVEMENTS

Aircraft ground movements are dynamic, and controllers continually monitor conditions and make adjustments to manage aircraft queues and optimize efficiency. The ground movements discussed in this subsection are generally indicative of how the airfield operates in each flow, but specific circumstances may dictate movements that are not shown or discussed in this document.

2.2.5.1 NORTH FLOW

Exhibit 2.2-12 depicts the generalized ground movements in north flow. Aircraft arriving on Runway 1L taxi southbound on Taxiway V or northbound on Taxiway W to access Airside E and Airside F. Runway 1L arrivals destined for Airside A and Airside C taxi eastbound on Taxiways A or B and then southbound on Taxiway C. Aircraft arriving on Runway 1R taxi southbound on Taxiway C to access Airside A and Airside C. Runway 1R arrivals destined for Airside E and Airside F taxi westbound on Taxiway J and then northbound on Taxiway W.



SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); Hillsborough County Aviation Authority, *Airport Certification Manual*, July 2021; AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016; Ricondo & Associates, Inc., January 2022.

EXHIBIT 2.2-12

TYPICAL AIRCRAFT GROUND MOVEMENTS NORTH FLOW

NORTH 0 Not To Scale

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Airspace and ATC\04-Drawings&Models\AutoCAD\Op Config.dwgLayout: North Flow Plotted: May 15, 2024, 10:20AM

Runway 1L and 1R departures use Taxiways W and C southbound, respectively, to join the departure queues. Runway 1L departures from Airside A and Airside C cross from east to west using Taxiway J. Runway 1R departures from Airside E and Airside F cross from west to east using Taxiways A and B.

2.2.5.2 SOUTH FLOW

Exhibit 2.2-13 depicts the generalized ground movements in south flow. Aircraft arriving on Runway 19L taxi northbound on Taxiway C to access Airside A and Airside C. Runway 19L arrivals destined for Airside E and Airside F taxi westbound on Taxiways A or B and then southbound on Taxiway V. Aircraft arriving on Runway 19R taxi northbound on Taxiway W to access Airside E and Airside F. Runway 19R arrivals destined for Airside A and Airside C taxi eastbound on Taxiway J and then northbound on Taxiway C.

Runway 19L and 19R departures use Taxiways C and W northbound, respectively, to join the departure queues. Runway 19L departures from Airside E and Airside F cross from west to east using Taxiway J. Runway 19R departures from Airside A and Airside C cross from east to west using Taxiways A and B.

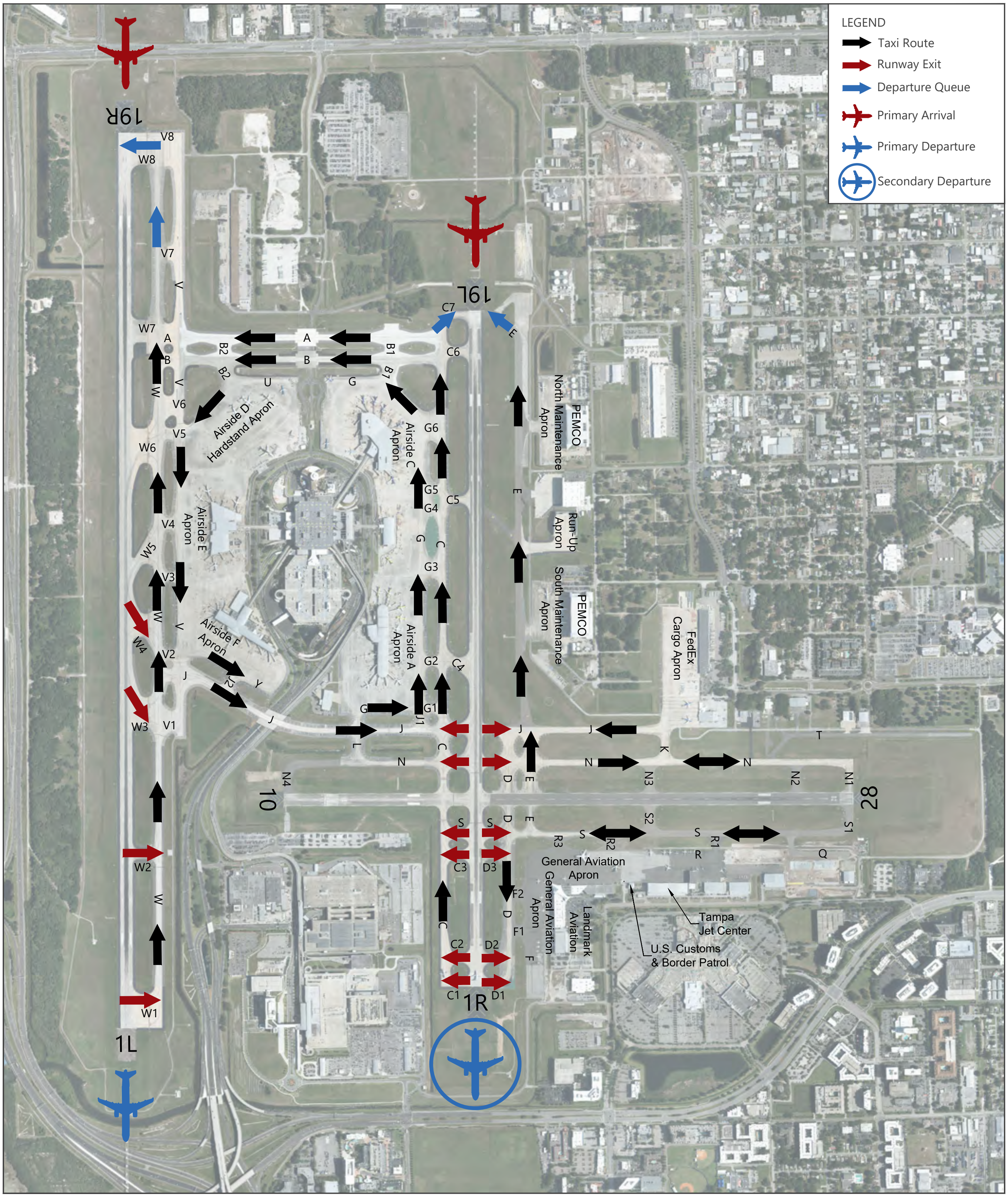
2.2.6 NIGHTTIME OPERATIONS

The Airport is operational 24 hours every day and has a voluntary noise abatement program.[6] Some components of the voluntary program are specifically related to reducing noise from nighttime operations[7] including:

- Expanding preferential use of Runway 1L for arrivals and Runway 19R for departures to all aircraft types; and
- Limiting turboprop aircraft departing Runways 1L and 1R to a turn of no more than 30 degrees left of runway heading until the aircraft has reached three nautical miles from the runway.

[6] A noise abatement program is used to minimize the effects of noise cause by aircraft operations in communities surrounding the Airport through the utilization of preferential runways and flight tracks.

[7] Operations between 10:00 p.m. and 6:59 a.m. are considered nighttime for aircraft noise.



SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); Hillsborough County Aviation Authority, *Airport Certification Manual*, July 2021; AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016; Ricondo & Associates, Inc., January 2022.

NORTH 0 Not To Scale

EXHIBIT 2.2-13

TYPICAL AIRCRAFT GROUND MOVEMENTS SOUTH FLOW

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Airspace and ATC\04-Drawings&Models\AutoCAD\Op Config.dwgLayout: South Flow Plotted: May 15, 2024, 10:19AM

2.3 PASSENGER TERMINAL FACILITIES AND AIRCRAFT GATES (TERMINAL COMPLEX)

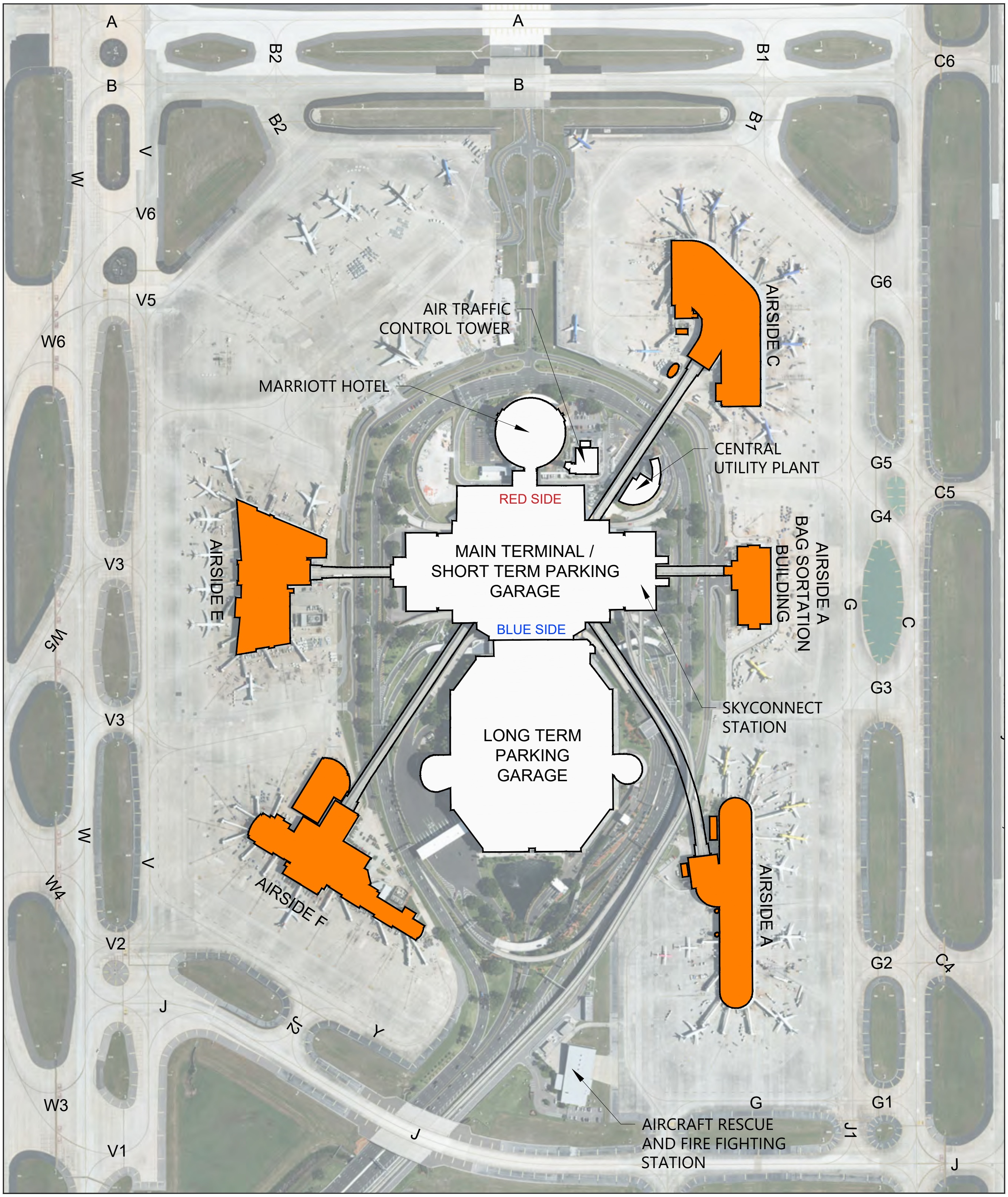
This section provides information on facilities located within the Terminal Complex that are used to process passengers and their baggage. These facilities include the Main Terminal, where ticketing, baggage check-in, and baggage reclaim functions take place, and four satellite airsides, where airlines embark and disembark passengers. The airside facilities include Airside A, the Airside A Bag Sortation Building, Airside C, Airside E, and Airside F. In total, these buildings provide approximately 2.0 million square feet of enclosed area. This section also provides information related to the SkyConnect automated people mover (APM) stations and maintenance facility. The SkyConnect system connects the Main Terminal to the Economy Parking Garage and the Rental Car Center (RCC) in the Gateway Development Area.

Exhibit 2.3-1 shows the Terminal Complex. In addition to facilities used to process passengers and their baggage, the Terminal Complex contains roadways; curbs; the Short-Term Parking Garage, consisting of six parking levels located above the Main Terminal; the SkyConnect Main Terminal station; a standalone multilevel Long-Term Parking Garage; the Marriott Hotel; FAA Air Traffic Control Tower; and the Central Utility Plant. The Terminal Complex, which began operations in 1971, consisted of the Main Terminal and Airsides A, B, C, and D. All the original airsides were demolished, and they were reconstructed after 1985, except for Airside D, which ceased operation in 2005 and was the last of the original airsides to be demolished in 2007. The Airside D site has since been converted into hardstands for airline and cargo aircraft parking. Each airside facility is connected to the Main Terminal by an elevated APM system. The APM is outside of the sterile zone since passengers undergo Transportation Security Administration (TSA) security screening at each airside facility. The Airside Terminal Complex supports 58 contact gates and 22 remain overnight (RON) aircraft parking positions. The RON positions are at the site of Airside D and in proximity to the Airside A Bag Sortation Building.

Goods and other materials deliveries are delivered to the Main Terminal and four satellite airsides from a Concessions Receiving and Distribution Center (CRDC) located on east side of the Airport, east of Runway 1R-19L. All concessionaires are required to have their deliveries made to the CRDC, except where delivery to a third party is prohibited by law or as otherwise approved in writing by Authority[8]. The CRDC operator is also responsible for the collection of all return items, including, but not limited to, empty beer kegs, totes, pallets, bread racks, bottles, and expired magazines and newspapers to the CRDC. The CRDC is discussed in further detail in Section 2.6.6.

The space inventory includes all the existing areas of the Terminal Complex, as well as any capital improvements that are approved and planned, under design, or under construction as of January 2022. **Table 2.3-1** summarizes the inventory of spaces by space category and floor level for the Main Terminal, Airsides A, C, E, and F, and the Airside A Bag Sortation Building. The following subsections describe each space category.

[8] Hillsborough County Aviation Authority, Concessions Handbook, Version 05, June 2017.



SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale);
AECOM, *Tampa International Airport, Airport Layout Plan*, April 2016.

EXHIBIT 2.3-1

NORTH 0 600 ft.

TERMINAL COMPLEX SITE PLAN

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.3-1 Terminal Complex.dwgLayout: Layout1 Plotted: May 15, 2024, 10:32AM

TABLE 2.3-1: INVENTORY OF TERMINAL COMPLEX SPACE BY MAJOR CATEGORIES

SPACE CATEGORY	MAIN TERMINAL (SQ FT)	AIRSIDE A (SQ FT)	AIRSIDE A SORTATION (SQ FT)	AIRSIDE C (SQ FT)	AIRSIDE E (SQ FT)	AIRSIDE F (SQ FT)	TOTAL (SQ FT)
Airline Facilities	140,543	78,938	846	78,068	79,138	60,279	437,812
Baggage Handling Systems	21,814	-	32,391	40,371	37,169	35,169	166,914
Department of Homeland Security	21,372	20,413	11,219	34,384	19,641	90,183	197,212
Commercial Programs	56,299	27,714	-	30,184	24,297	28,014	166,508
Airport and Other Agencies	59,811	12,796	-	2,311	20,041	-	94,959
Automated People Movers	13,940	12,350	-	16,904	12,515	15,000	70,709
Building Services	45,503	31,887	2,820	35,326	41,257	22,280	179,073
Other Common	446,505	84,863	2,148	82,514	84,416	51,100	751,546
Total	**805,787**	**268,961**	**49,424**	**320,062**	**318,474**	**302,025**	**2,064,733**

NOTE:
Values may not add due to rounding.
SOURCES: Hillsborough County Aviation Authority, 2018; Ricondo & Associates, Inc., March 2021.

2.3.1 AIRLINE FACILITIES

Airline facilities use areas refer to those areas and facilities of the terminal leased to an airline for its sole use and occupancy. The terminal areas considered to be airline facilities use areas include the following:

- Check-in: space used by passengers to obtain boarding passes and check baggage
- Airline Ticket Office: back-of-house office space used by airline personnel for administrative functions associated with the check-in process.
- Airline Office and Operations: space on the secure side of the terminal used by airline personnel for administrative and operational functions.
- Baggage Service Office (BSO): space used by airline personnel for addressing issues related to lost or late arriving baggage.
- Holdroom: space allocated for passengers waiting for aircraft boarding or used for disembarkation; it includes seating/standing area, circulation to/from the gate door, and gate processing equipment (i.e., agent desk and boarding pass reader podium)
- Airline Club: membership-based passenger lounge areas
- Airline Curbside Check-in Counters: check-in equipment and associated areas located right at departures curb for passengers convenience.
- Baggage Claim: baggage claim device(s) and associated inbound baggage feeds for inbound checked baggage presentation and pick-up.

2.3.2 BAGGAGE HANDLING SYSTEMS

The baggage handling systems (BHSs) at the Airport are operated and maintained by the HCAA. The areas allocated for baggage processing include the following:

- Baggage Sortation: device(s) and associated areas for sorting and transporting outbound checked bags to proper makeup device.
- Baggage Makeup: device(s) and associated work areas for loading outbound checked bags onto baggage carts or baggage containers for delivery to the aircraft.
- Baggage Support: equipment and associated area to control and support baggage processing.

2.3.3 DEPARTMENT OF HOMELAND SECURITY

Department of Homeland Security functions include the TSA and US Customs and Border Protection (US CBP). Areas dedicated to the TSA for screening passengers and baggage prior to aircraft boarding may include the following:

- Security Screening Checkpoints (SSCPs): space to conduct security screening of passengers and their carry-on possessions before the passengers enter the sterile or secured area; includes screening equipment, queuing area, and manual search areas or rooms.
- TSA Office: office space dedicated to the TSA personnel for administrative and operational functions.
- Checked Baggage Screening: dedicated area for baggage conveyance and baggage screening rooms to conduct security screening of outbound checked bags; includes enclosed and non-enclosed rooms, explosive detection system (EDS), checked baggage resolution areas (CBRAs), baggage conveyance, and rights-of-way.

The following are areas operated by US CBP for screening passengers entering the United States from a foreign airport (except in cases where passengers undergo screening at a US Preclearance facility):

- Federal Inspection Services (FIS) Facility: space dedicated for international arriving passengers and baggage for primary inspection, international baggage claim, secondary inspection, and baggage recheck.
- CBP Office: space dedicated to CBP personnel for administrative and operational functions.

2.3.4 COMMERCIAL PROGRAMS

The commercial area(s) leased to vendors for merchandise, retail, or food and beverage sales may include the following:

- Concessions: public space for merchandise, retail, or food and beverage sales
- Concessions Back-of-House: space for administrative and operational functions and space for concessionaires to store merchandise for sale and prepare food.

2.3.5 AIRPORT AND OTHER AGENCY

These areas include space for Airport staff administration and operations, as well as other spaces not leased by the airlines, such as the following:

- Administration and Executive: space used by Airport personnel for administrative and operational functions.
- Operations and Maintenance: space used by Airport staff for functions related to maintaining building systems.
- Police: space used by the Airport police organization for administrative and operational functions

- Miscellaneous: all other spaces used by Airport personnel, other agency personnel, or third-party contractors handling Airport or airline-related operations, maintenance, or special works; areas include office, conference room, storage, and other miscellaneous spaces

2.3.6 BUILDING SERVICES

These areas are dedicated to loading docks and mechanical, electrical, plumbing, communication, and life safety operations and functions within the Terminal Complex.

2.3.7 AUTOMATED PEOPLE MOVER

These areas are dedicated to the airside/landside APM shuttle system in the building footprint. An independent landside APM, the SkyConnect, is discussed in further detail in Section 2.3.15.

2.3.8 OTHER COMMON SPACES

These areas include common spaces within the Terminal Complex, such as the following:

- Circulation: areas used for secure, nonsecure, and egress circulation of passengers throughout the terminal facilities
- Vertical Circulation: includes stairs, escalators, and elevators used for secure, nonsecure, and egress circulation of passengers and employees throughout the passenger terminal facilities.
- Restrooms: areas include toilet and comfort facilities provided by the Authority under the provisions of the governing building code or the Airport's design standards
- Unassigned: areas include vacant or currently unassigned spaces within the terminal facilities

2.3.9 MAIN TERMINAL BUILDING

The Main Terminal (also referred to as the Landside Terminal) and the Short-Term Parking Garage are in the same building structure. The Main Terminal occupies Levels 1 through 3 of the structure, and the Short-Term Parking Garage occupies Levels 4 through 9. Since its opening in 1971, the Landside Terminal Complex has used a two-color coding system to assist passenger wayfinding throughout the Main Terminal building and landside (roadways and curbs). Airlines that operate on the north side of the Main Terminal are color-coded Red, while airlines operating on the south side of the Main Terminal are color-coded Blue.

Since the adoption of the CIP recommended by the 2012 MPU – 2016 Addendum, several major improvements to the Main Terminal have been completed or are underway. These include the SkyConnect Main Terminal station that is accessed from Level 3 of the Main Terminal, expansion and renovation of the Transfer Level (Level 3), and the demolition of administration and service buildings to widen the roadway and construct the express curbside lanes on the Red and Blue Sides of the Main Terminal. The express curbsides increase the number of curbside lanes used for passenger pick-up or drop-off and provide direct access to and from the Main Terminal Transfer Level for passengers without checked bags. In conjunction with these improvements, the new 10,000-square-foot Central Utility Plant, which is located east of the FAA ATCT, was commissioned in December 2021 to provide heating and cooling for the Main Terminal and SkyConnect Main Terminal station.

The Main Terminal's passenger functions on each of the three levels are as follows:

- Level 3 (Transfer), as shown on **Exhibit 2.3-2**, includes APM stations to the airside facilities, meeter and greeter spaces, commercial programs, amenities, restrooms, Marriott Hotel, Airport offices, and support spaces.

- Level 2 (Ticketing), as shown on **Exhibit 2.3-3**, includes passenger departure curbs, airline check-in facilities, oversize / out-of-gauge bag screening facility, and restrooms.
- Level 1 (Baggage Claim), as shown on **Exhibit 2.3-4**, includes passenger arrival curbs, baggage claim, baggage screening facilities, BHSs, building services, limited concessions, restrooms, and airline baggage offices.

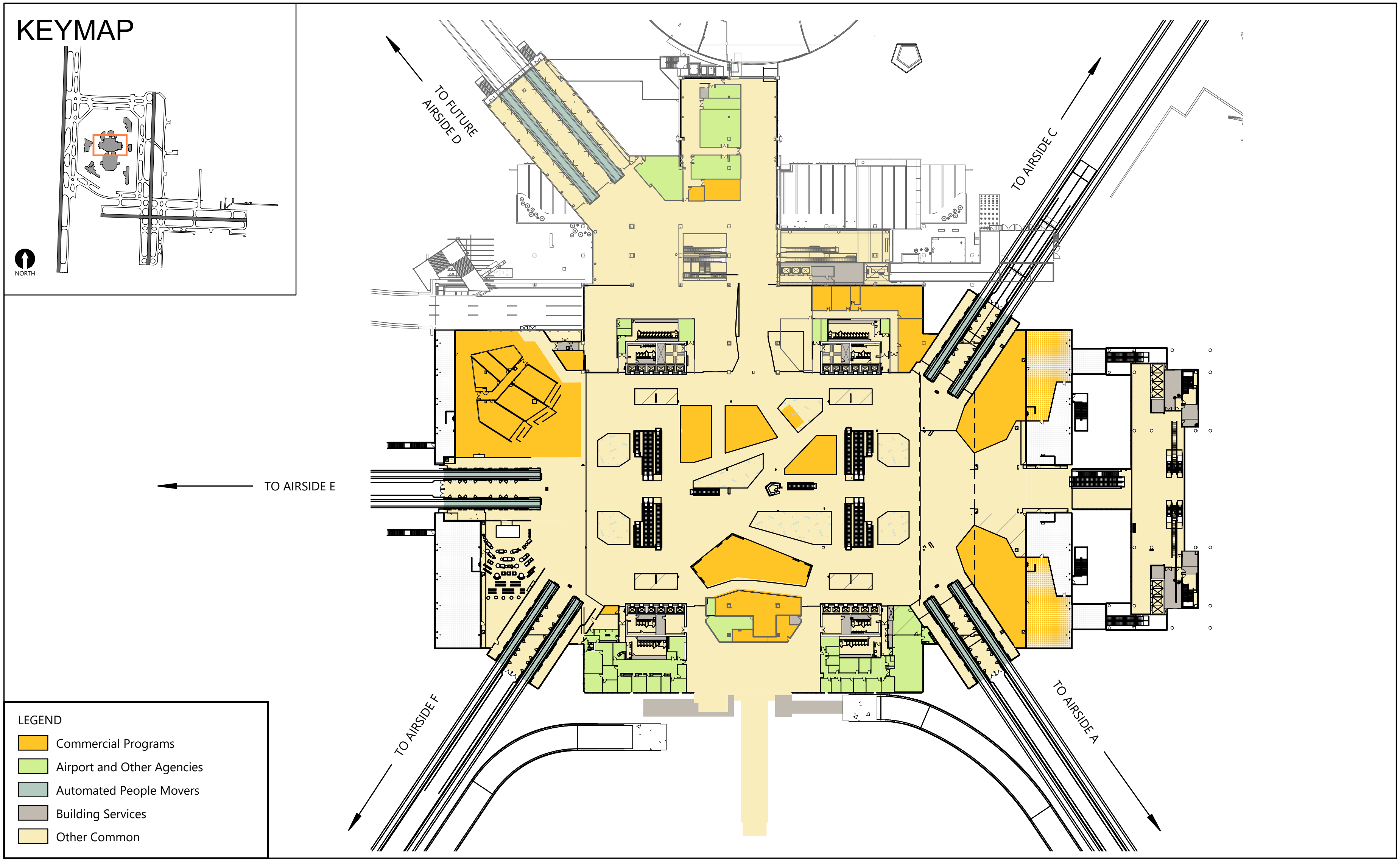
Table 2.3-2 summarizes the inventory of spaces by space category and floor level for the Main Terminal.

TABLE 2.3-2: MAIN TERMINAL INVENTORY BY MAJOR CATEGORIES

SPACE CATEGORY	LEVEL 3 (SQ FT)	LEVEL 2 (SQ FT)	LEVEL 1 (SQ FT)	TOTAL (SQ FT)
Airline Facilities	-	79,212	61,331	140,543
Baggage Handling Systems	-	17,811	4,003	21,814
Department of Homeland Security	-	19,479	1,893	21,372
Commercial Programs	52,024	4,275	-	56,299
Airport and Other Agencies	19,002	34,375	6,434	59,811
Automated People Movers	13,940	-	-	13,940
Building Services	9,530	16,314	19,659	45,503
Other Common	216,466	109,123	120,916	446,505
Total	**310,962**	**280,589**	**214,236**	**805,787**

NOTE:
Values may not add due to rounding.
SOURCES: Hillsborough County Aviation Authority, 2018; Ricondo & Associates, Inc., March 2021.

Departing passengers are dropped off from private and commercial vehicles along the Red or Blue Express and traditional curbs located on the Departures Level. Passengers using SkyConnect disembark at the Main Terminal station and escalate down to the Main Terminal Transfer Level. Passengers accessing the Main Terminal from the Short-Term Parking Garage use elevators to descend to the Departures Level or to the Transfer Level if they want to bypass terminal check-in. Passengers who require terminal check-in functions proceed to airline check-in facilities located at the Departures Level before ascending to the Transfer Level to board their respective airside APM. **Table 2.3-3** provides the check-in counter linear footage that is allocated to each airline.



SOURCE: Hillsborough County Aviation Authority, 2018.

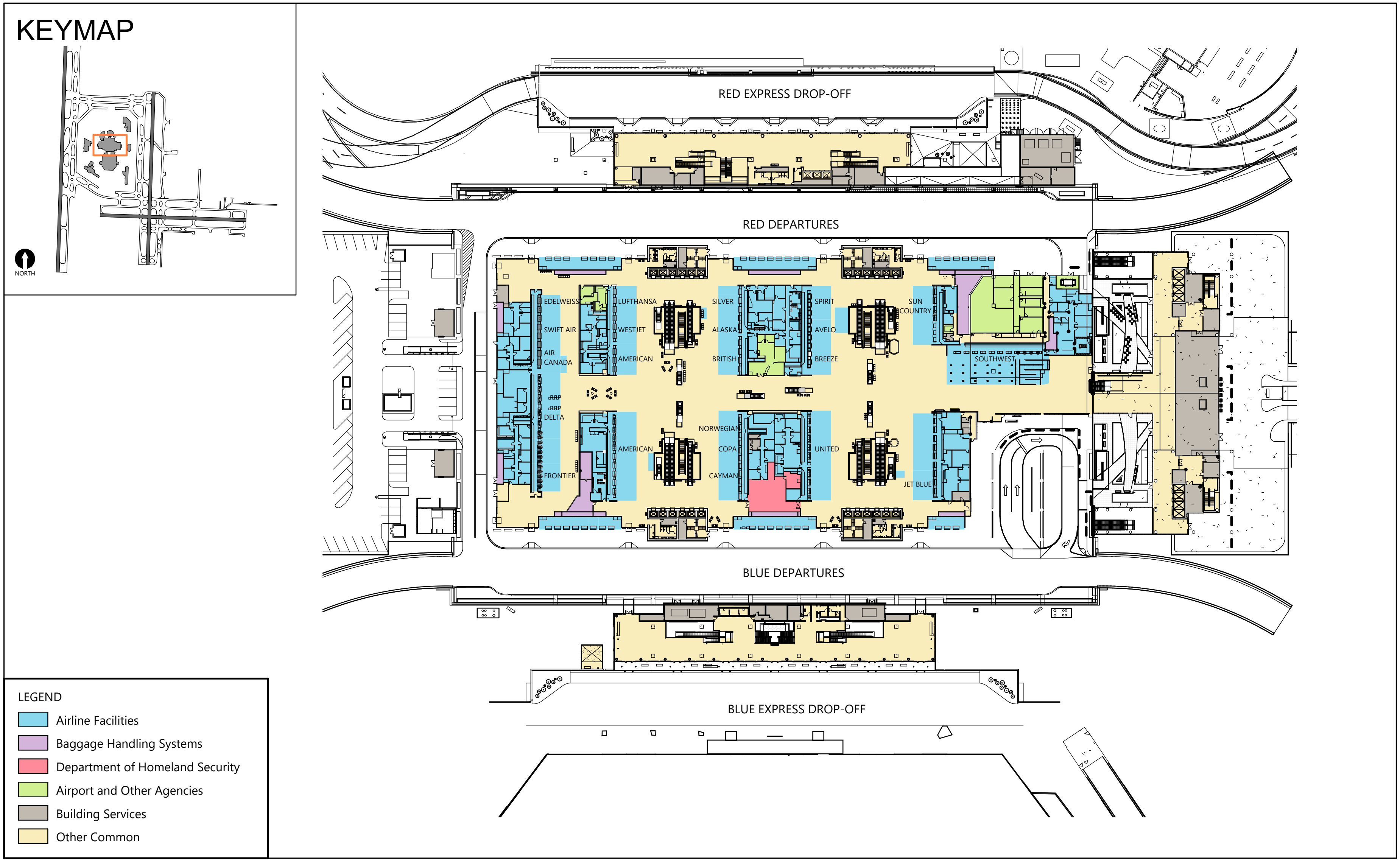
NORTH 0 150 ft

EXHIBIT 2.3-2

MAIN TERMINAL
LEVEL 3 (TRANSFER)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_TM_INV RA_r20.rvt

KEYMAP



LEGEND

- Airline Facilities
- Baggage Handling Systems
- Department of Homeland Security
- Airport and Other Agencies
- Building Services
- Other Common

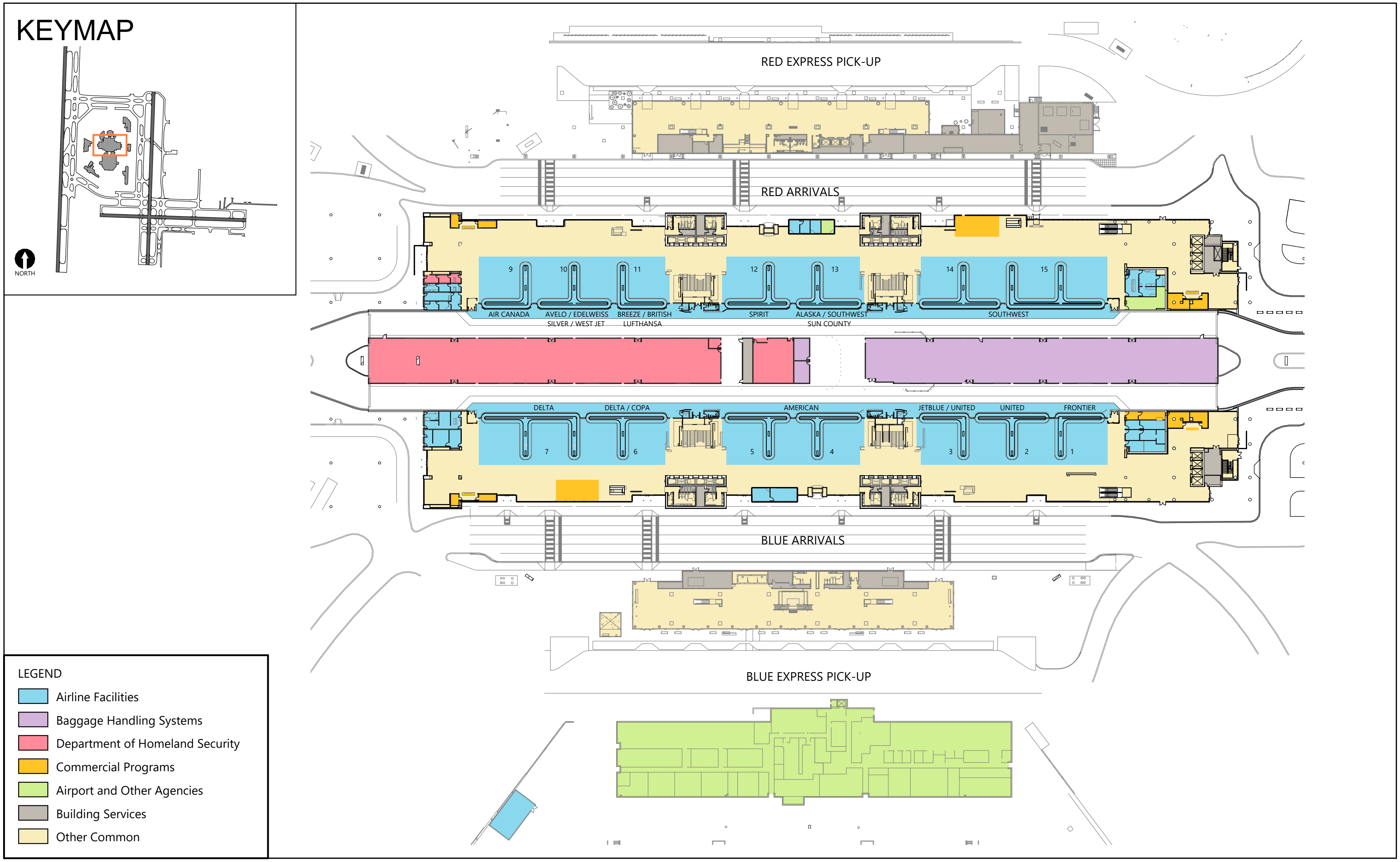
SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 150 ft

EXHIBIT 2.3-3

MAIN TERMINAL
LEVEL 2 (TICKETING)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_TM_INV RA_r20.rvt



SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 150 ft

EXHIBIT 2.3-4

MAIN TERMINAL
LEVEL 1 (BAGGAGE CLAIM)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_TM_INV RA_r20.rvt

TABLE 2.3-3: AIRLINE CHECK-IN COUNTER ASSIGNMENT (AS OF DECEMBER 2021)

AIRLINE	SIDE	COUNTER FRONTAGE (LINEAR FT)	CURBSIDE CHECK-IN
Alaska Airlines	Red	40	No
Air Canada	Red	40	No
American Airlines	Blue	122	Yes
Avelo Airlines	Red	24	No
Breeze Airways	Red	16	No
British Airways	Red	40	No
Cayman Airways	Blue	30	No
Copa Airlines	Blue	30	No
Delta Air Lines	Blue	66	Yes
Edelweiss Air	Red	18	No
Frontier Airlines	Blue	30	No
JetBlue Airways	Blue	30	Yes
Lufthansa	Red	30	No
Silver Airways	Red	9	No
Norwegian	Blue	18	No
Southwest Airlines	Red	100	Yes
Spirit Airlines	Red	34	No
Sun Country Airlines	Red	36	No
iAero Airways	Blue	18	No
United Airlines	Blue	93	Yes
WestJet	Red	30	No

NOTE: The information presented above is based on the most recent assignments as of December 2021. Check-in counter assignments are periodically reassessed over time as HCAA deems necessary.
SOURCES: Hillsborough County Aviation Authority, 2018; Ricondo & Associates, Inc., December 2021.

Arriving passengers enter the Main Terminal at the Transfer Level after disembarking an airside APM at their respective Main Terminal station. Passengers without checked baggage can proceed directly from the Transfer Level to the Red or Blue Express Curbside for vehicular pick-up, as well as access the SkyConnect Main Terminal station. Passengers claiming baggage descend to the Arrivals Level and can be picked up along the Red Side or Blue Side traditional curb or escalate back up to the Transfer Level to access the SkyConnect Main Terminal station. Arriving passengers use elevators from the Transfer Level or Arrivals Level to access the Short-Term Parking Garage. **Table 2.3-4** lists the linear feet of presentation for each domestic bag claim unit that is located on the Red Side and Blue Side bag claim. International passengers (except those departing to the United States from a US Preclearance facility) claim their checked baggage at the Airside F FIS facility.

TABLE 2.3-4: AIRLINE BAG CLAIM ASSIGNMENT (AS OF DECEMBER 2021)

CLAIM DEVICE	AIRLINE	SIDE	PRESENTATION LENGTH (LINEAR FT)	ACTIVE CLAIM AREA (SQ FT)
1	Frontier Airlines	Blue	130	1,530
2	United Airlines	Blue	150	1,705
3	United Airlines JetBlue Airways	Blue	130	1,530
4	American Airlines	Blue	140	1,700
5	American Airlines	Blue	140	1,700
6	Delta Air Lines Copa Airlines	Blue	160	1,845
7	Delta Air Lines	Blue	250	2,915
9	Air Canada	Red	130	1,530
10	Avelo Airlines Edelweiss Air Silver Airways WestJet	Red	150	1,705
11	Breeze Airways British Airways Lufthansa	Red	130	1,530
12	Spirit Airlines	Red	140	1,700
13	Alaska Airlines Southwest Airlines Sun Country Airlines	Red	140	1,700
14	Southwest Airlines	Red	160	1,845
15	Southwest Airlines	Red	250	2,915

SOURCES: Hillsborough County Aviation Authority, 2018; Ricondo & Associates, Inc., December 2021.

Outbound (departing) bags can be checked in using airline check-in facilities located on the Departures Level or at the HCAA-operated remote bag-check counter located adjacent to the SkyConnect RCC station. The HCAA accepts domestic passenger bags at the remote bag-check counter up to 90 minutes prior to scheduled departure. Bags from this location are transported using vans and inducted into the Main Terminal BHS at either the Red or Blue Departures Level depending on the airline. All outbound bags are conveyed by the BHS to outbound bag makeup facilities located either at the Apron Level of each airside or Airside A Bag Sortation Building. Bags that are transported to Airsides A and C are screened at TSA EDS facilities located in the airside. Airsides E and F bags are screened in the Main Terminal at TSA EDS facilities located on Level 1. Inbound domestic bags are tugged from the airsides to either the Red or Blue Arrivals Level bag claim depending on the airline. Refer to Section 2.3.14 for information on international bag reclaim at Airside F.

Goods and other materials are delivered from the CRDC to the Main Terminal loading docks, which are located below HCAA administrative offices on the north side of the terminal building (between the red curb and Airport Marriott Hotel). The goods and other materials are transferred from the docks to Level 3 and distributed to the concessionaires via the pedestrian bridge which connects the Airport Marriott Hotel to the Main Terminal transfer level.

2.3.10 AIRSIDE A

Airside A, which is located southeast of the Main Terminal, was commissioned in March 1995. It is a three-level building that supports 15 aircraft parking positions. JetBlue Airways, Silver Airways, Spirit Airlines, and United Airlines operate from Airside A. A 1,400-foot-long dual-guideway airside APM connects Airside A to the Main Terminal. The airside APM is outside the sterile airside zone. The APM stations have the capability to support up to a pair of two-car trains. Each car has the capacity to carry 105 passengers. The APM maintenance facility is located beneath the airside APM station.

While international flights can depart from Airside A, it has no facilities to support non-precleared international flight arrivals. The Airside A functions on each of the three levels are as follows:

- Level 3 (Mezzanine), as shown on **Exhibit 2.3-5**, includes vacant space that was formerly airline clubs.
- Level 2 (Boarding/Deplaning), as shown on **Exhibit 2.3-6**, includes airline gates, holdrooms, concessions, circulation, restrooms, passenger SSCP, and the APM station.
- Level 1 (Apron), as shown on **Exhibit 2.3-7**, includes airline and Airport operations, building services, APM maintenance facility, CUP, and apron-level holdrooms for commuter airline operations.

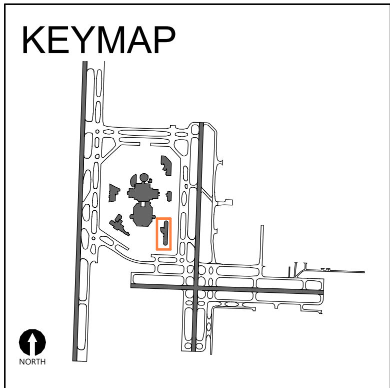
Table 2.3-5 summarizes the inventory of spaces by space category and floor level for Airside A.

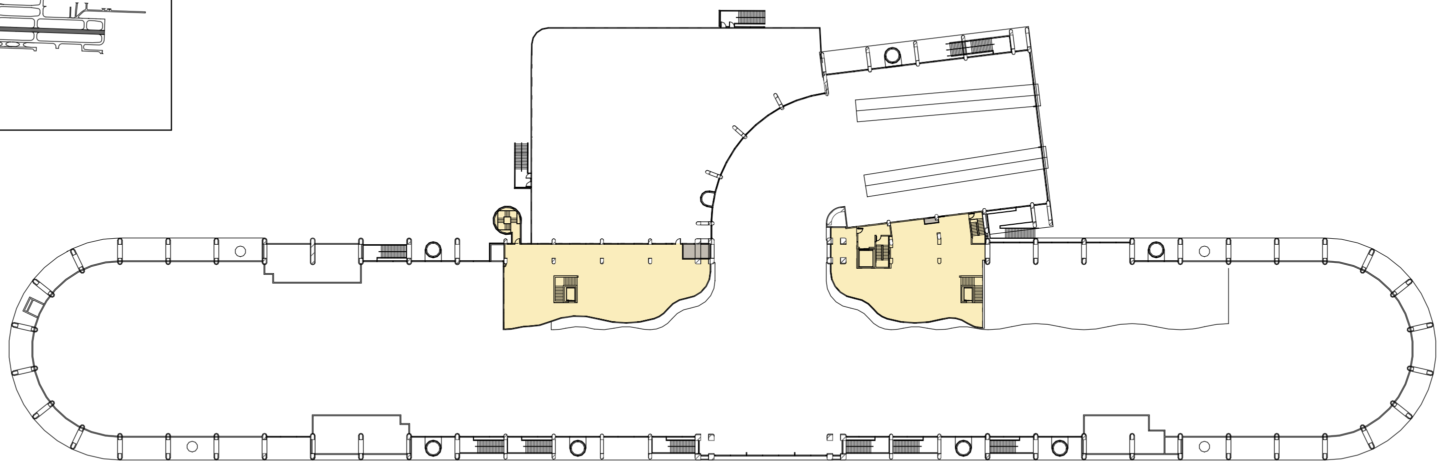
All passenger functions are located on Level 2, except for limited areas on Level 1 that are used for the ground-level commuter airline boarding/deboarding operations. Departing passengers enter the TSA passenger screening checkpoint after disembarking the airside APM. The TSA checkpoint shown on Exhibit 2.3-6 is scheduled to be operational by spring 2024. While the TSA had not yet determined the screening technology that will be deployed at this checkpoint, the design is capable of housing three modular sets (six lanes) of full-size checkpoint property screening systems and one advanced technology X-ray–equipped special assistance lane. Once cleared to enter the sterile airside zone, passengers will have access to restrooms, commercial programs, holdrooms, and gates.

Outbound baggage operations are conducted at the Airside A Bag Sortation Building. Inbound (arriving) bags are transported to the Main Terminal's Red Side or Blue Side domestic bag claim, depending on the airline, via a ground service vehicle tunnel. The airside entry to the tunnel is opposite the west side of the Airside A Bag Sortation Building.

Airside A is heated and cooled by a CUP that is located adjacent to the west side of Airside A. There is a controlled vehicular forecourt along the west side of Airside A that is accessed from Bessie Coleman Boulevard. The forecourt is used for permitted parking, deliveries, and waste removal, and it provides access to an airfield gate.

A project to install new passenger boarding bridges, pre-conditioned air and air handling units, and ground power units (GPUs) at fifteen gates is underway. This project is scheduled for substantial completion in July 2022.





LEGEND
Building Services
Other Common

SOURCE: Hillsborough County Aviation Authority, 2018.

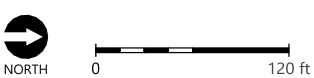
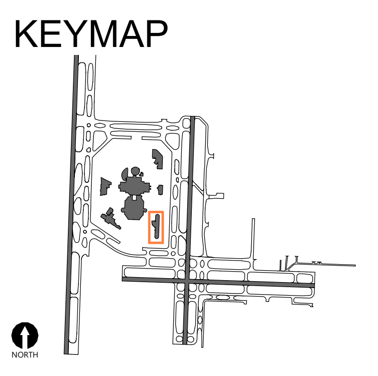
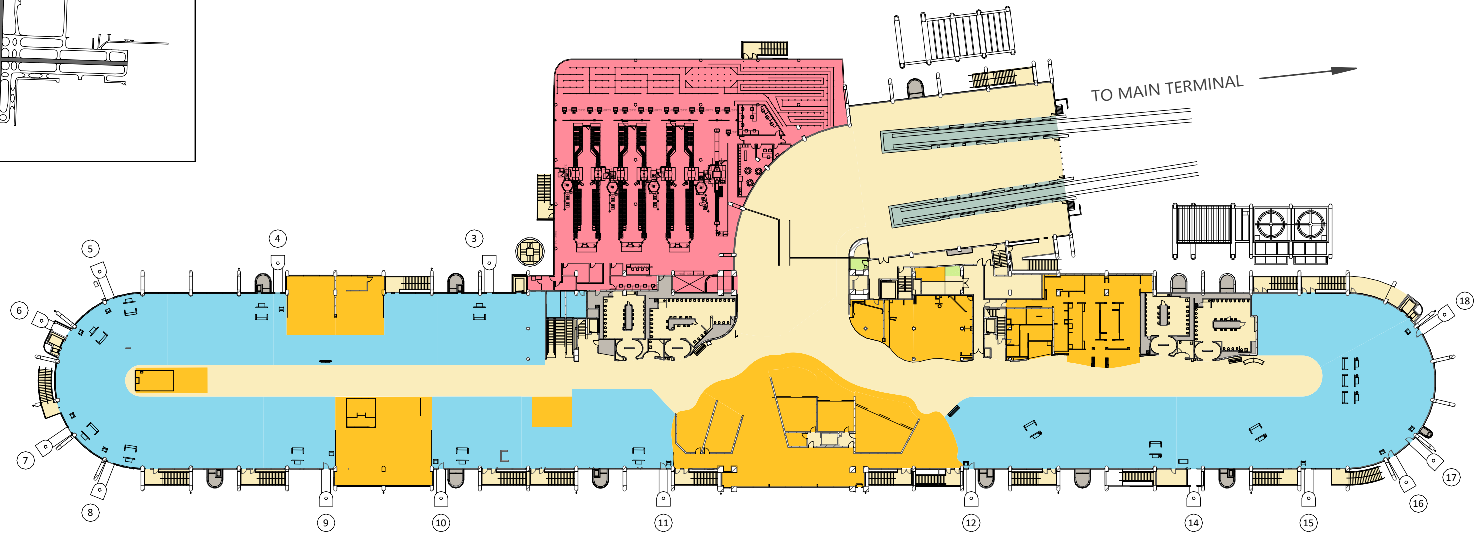


EXHIBIT 2.3-5

AIRSIDE A
LEVEL 3 (MEZZANINE)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-A_INV RA_r20.rvt





LEGEND

- Airline Facilities
- Department of Homeland Security
- Commercial Programs
- Airport and Other Agencies
- Automated People Movers
- Building Services
- Other Common

SOURCE: Hillsborough County Aviation Authority, 2018.

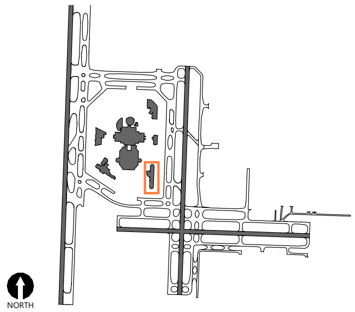
NORTH 0 120 ft

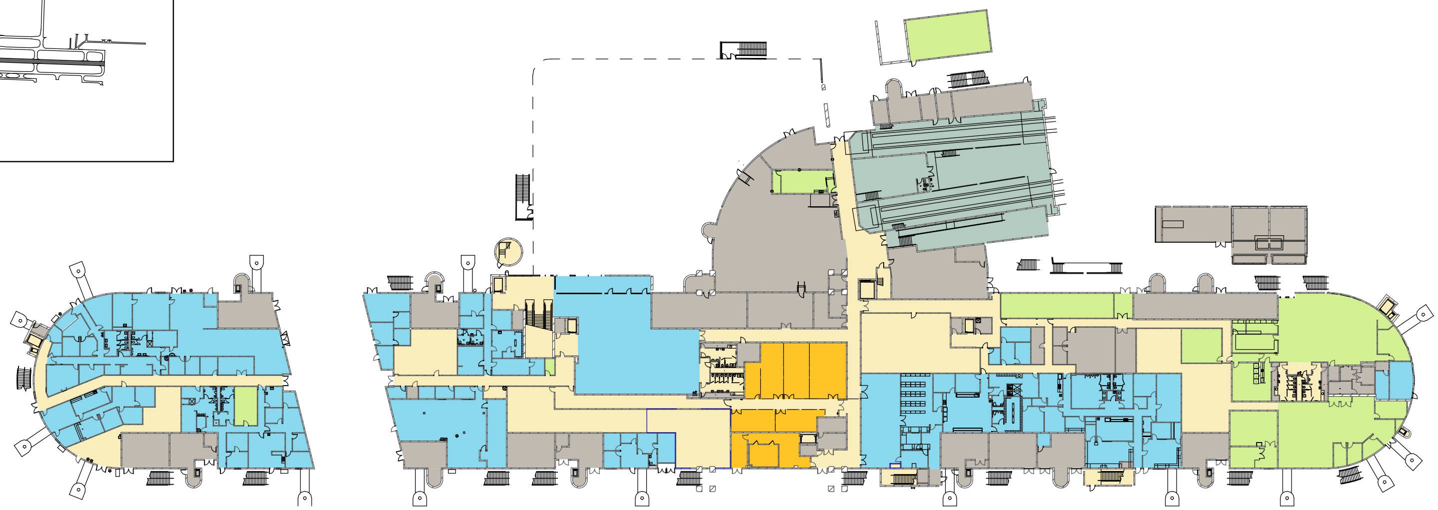
EXHIBIT 2.3-6

AIRSIDE A
LEVEL 2 (BOARDING/DEPLANING)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-A_INV RA_r20.rvt

KEYMAP





LEGEND

- Airline Facilities
- Commercial Programs
- Airport and Other Agencies
- Automated People Movers
- Building Services
- Other Common

SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH

0 120 ft

EXHIBIT 2.3-7

AIRSIDE A
LEVEL 1 (APRON)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-A_INV RA_r20.rvt

TABLE 2.3-5: AIRSIDE A INVENTORY BY SPACE CATEGORIES

SPACE CATEGORY	MEZZANINE (SQ FT)	BOARDING (SQ FT)	APRON (SQ FT)	TOTAL (SQ FT)
Airline Facilities	-	45,233	33,705	78,938
Department of Homeland Security	-	20,413	-	20,413
Commercial Programs	-	23,874	3,840	27,714
Airport and Other Agencies	-	141	12,655	12,796
Automated People Movers	-	3,039	9,311	12,350
Building Services	205	2,981	28,701	31,887
Other Common	11,371	48,709	24,783	84,863
Total	**11,576**	**144,390**	**112,995**	**268,961**

NOTE:
Values may not add due to rounding.
SOURCES: Hillsborough County Aviation Authority, 2018; Ricondo & Associates, Inc., March 2021.

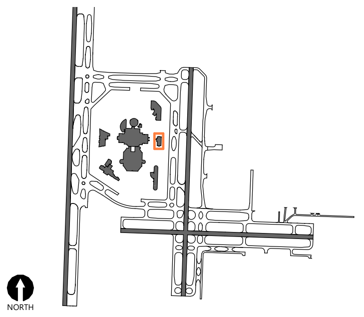
2.3.11 AIRSIDE A BAG SORTATION BUILDING

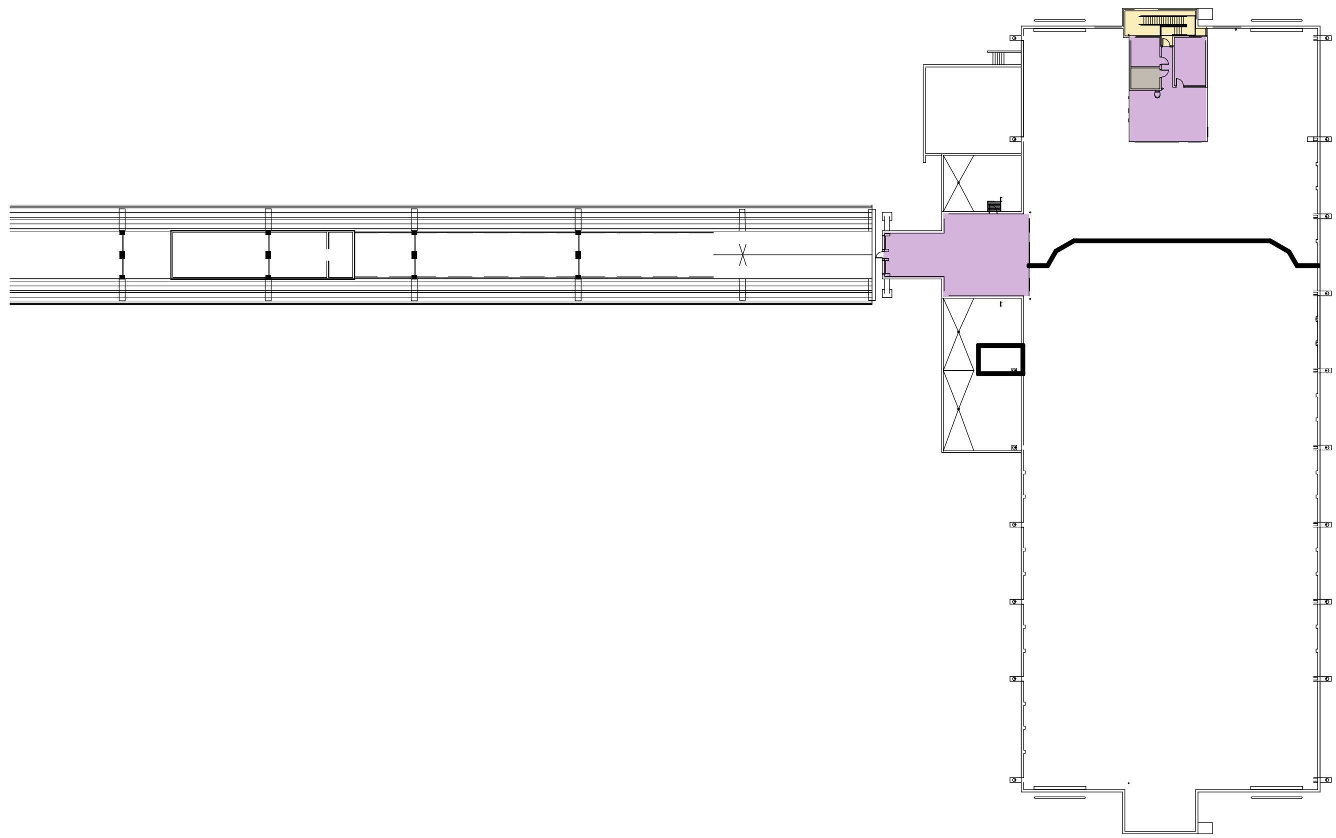
The Airside A Bag Sortation Building, which was commissioned in 2004, is located on the former site of Airside B. This two-level baggage facility contains TSA checked baggage screening functions and airline outbound baggage makeup operations for airlines operating at Airside A. Outbound bags are transported from the Main Terminal Blue Side check-in by BHS conveyors supported below the original Airside B APM guideway structure. The building houses six sloped-plate outbound bag makeup carousels. Each carousel can accommodate 10 staged baggage carts. Exhibits showing the functional floor layouts are as follows:

- Level 2, as shown on **Exhibit 2.3-8**, includes baggage sortation and building services.
- Level 1, as shown on **Exhibit 2.3-9**, includes baggage screening facility, baggage makeup area, and airline operations.

Table 2.3-6 summarizes the inventory of spaces by space category and floor level for the Airside A Bag Sortation Building.

KEYMAP





LEGEND

- Baggage Handling Systems
- Building Services
- Other Common

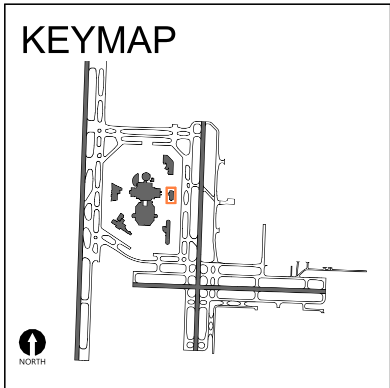
SOURCE: Hillsborough County Aviation Authority, 2018.

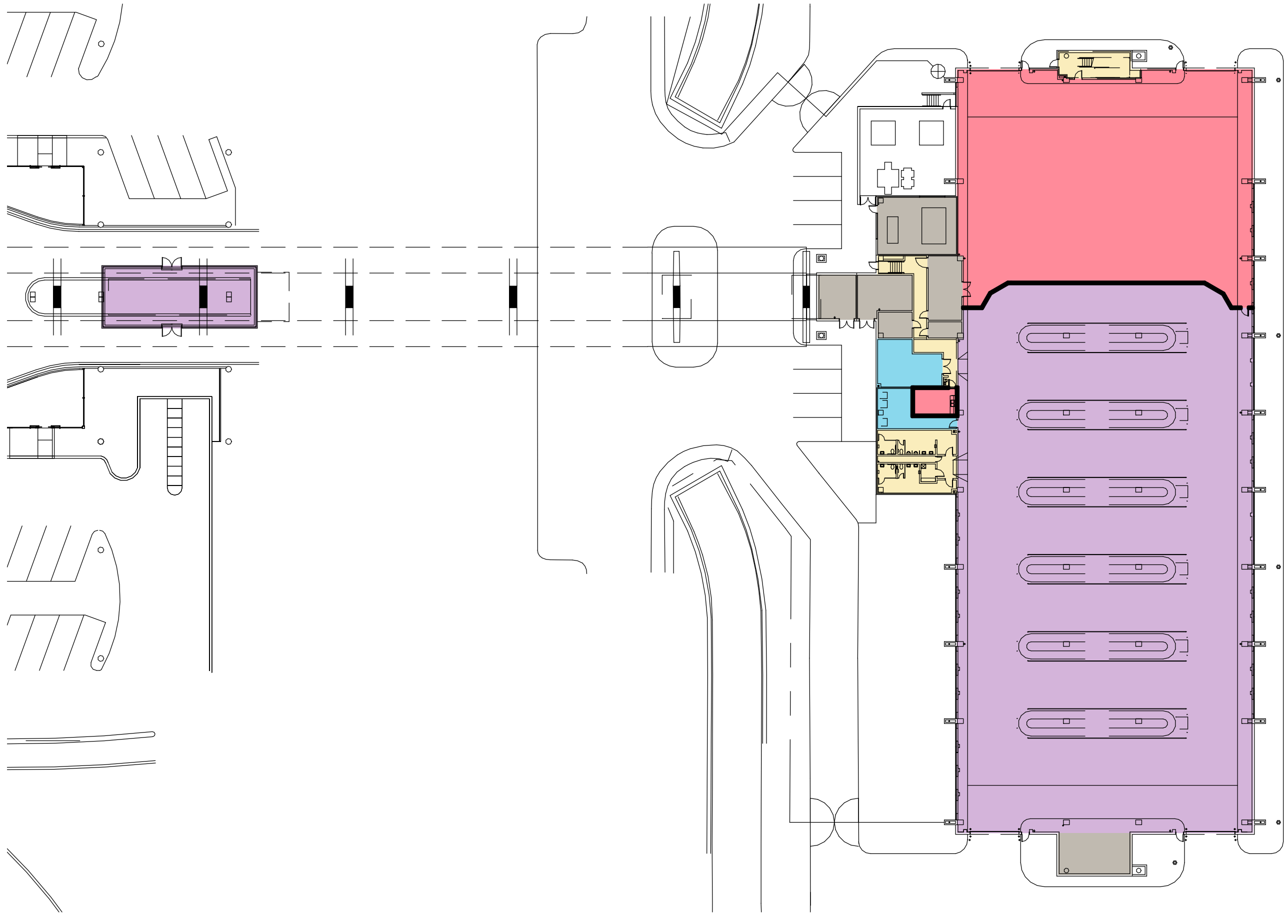
NORTH 0 80 ft

EXHIBIT 2.3-8

AIRSIDE A BAG SORTATION BUILDING
LEVEL 2 (MEZZANINE)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-B_INV RA_r20.rvt





LEGEND

- Airline Facilities
- Baggage Handling Systems
- Department of Homeland Security
- Building Services
- Other Common

SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 80 ft

EXHIBIT 2.3-9

AIRSIDE A BAG SORTATION BUILDING
LEVEL 1 (RAMP)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-B_INV RA_r20.rvt

TABLE 2.3-6: AIRSIDE A BAG SORTATION BUILDING INVENTORY BY SPACE CATEGORIES

SPACE CATEGORY	LEVEL 2 (SQ FT)	LEVEL 1 (SQ FT)	TOTAL (SQ FT)
Airline Facilities	-	846	846
Baggage Handling Systems	2,953	29,438	32,391
Department of Homeland Security	-	11,219	11,219
Building Services	118	2,702	2,820
Other Common	379	1,769	2,148
Total	**3,450**	**45,974**	**49,424**

NOTE:
Values may not add due to rounding.
SOURCES: Hillsborough County Aviation Authority, 2018; Ricondo & Associates, Inc., March 2021.

2.3.12 AIRSIDE C

Airside C, which is located northeast of the Main Terminal, was commissioned in April 2005. It is a two-level building that supports 16 aircraft parking positions. Alaska Airlines, Breeze Airways, Southwest Airlines, and Sun Country Airlines operate from Airside C. A 1,000-foot-long dual-guideway airside APM connects Airside C to the Main Terminal. The airside APM station is outside the sterile airside zone. The APM stations have the capability to support up to a pair of two-car trains. Each car has the capacity to carry 105 passengers. The APM maintenance facility is located beneath the airside APM station.

While international flights can depart from Airside C, it has no facilities to support non-precleared international flight arrivals. Airside C functions on each of the two levels are as follows:

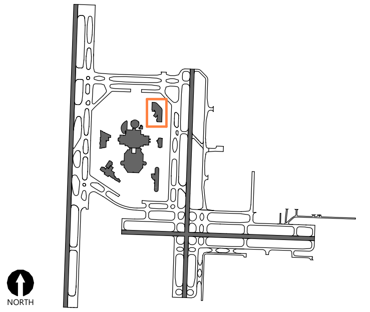
- Level 2 (Boarding/Deplaning), as shown on **Exhibit 2.3-10**, includes airline gates, holdrooms, concessions, circulation, restrooms, passenger SSCP, and the APM station.
- Level 1 (Apron), as shown on **Exhibit 2.3-11**, includes airline and Airport operations, the baggage screening facility, baggage handling systems, building services, APM maintenance facility, CUP, and apron-level holdrooms for commuter airline operations.

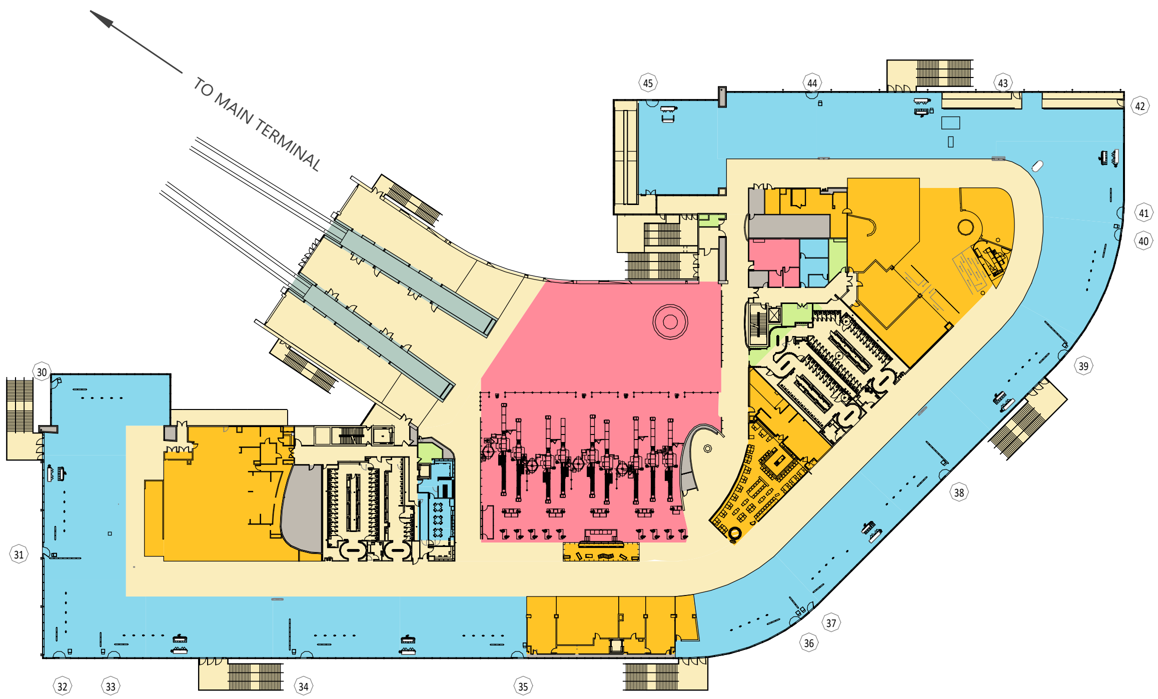
Table 2.3-7 summarizes the inventory of spaces by space category and floor level for Airside C.

All passenger functions are located on Level 2, except for limited areas on Level 1 that are used for the ground-level commuter airline boarding/deboarding operations. Departing passengers enter the TSA passenger screening checkpoint after disembarking the airside APM. Once cleared to enter the sterile airside zone, passengers will have access to restrooms, commercial programs, holdrooms, and gates.

Outbound baggage operations are conducted on Level 1. Inbound (arriving) bags are transported to the Main Terminal's Red Side domestic bag claim via a ground service vehicle tunnel. The airside entry to the tunnel is opposite the west side of the Airside A Bag Sortation Building.

KEYMAP





LEGEND

- Airline Facilities
- Department of Homeland Security
- Commercial Programs
- Airport and Other Agencies
- Automated People Movers
- Building Services
- Other Common

SOURCE: Hillsborough County Aviation Authority, 2018.

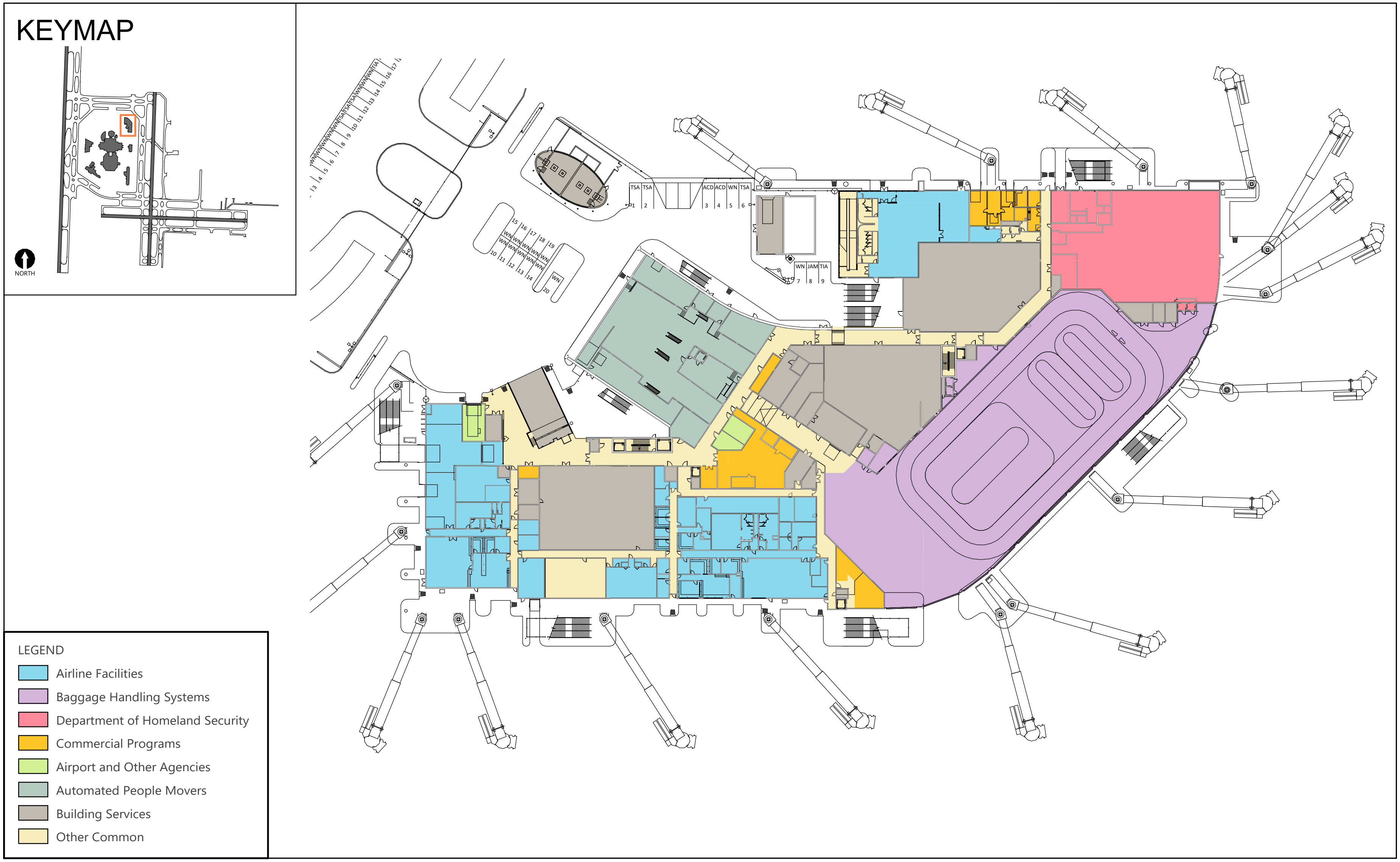
NORTH

0 120 ft

EXHIBIT 2.3-10

AIRSIDE C
LEVEL 2 (BOARDING/DEPLANING)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-C_INV RA_r20.rvt



SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 120 ft

EXHIBIT 2.3-11

AIRSIDE C
LEVEL 1 (APRON)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-C_INV RA_r20.rvt

TABLE 2.3-7: AIRSIDE C INVENTORY BY SPACE CATEGORIES

SPACE CATEGORY	LEVEL 2 (SQ FT)	LEVEL 1 (SQ FT)	TOTAL (SQ FT)
Airline Facilities	50,903	27,165	78,068
Baggage Handling Systems	-	40,371	40,371
Department of Homeland Security	22,162	12,222	34,384
Commercial Programs	24,297	5,887	30,184
Airport and Other Agencies	1,108	1,203	2,311
Automated People Movers	3,309	13,595	16,904
Building Services	3,398	31,928	35,326
Other Common	61,597	20,917	82,514
Total	**166,774**	**153,288**	**320,062**

NOTE:
Values may not add due to rounding.
SOURCES: Hillsborough County Aviation Authority, 2018; Ricondo & Associates, Inc., March 2021.

Airside C is heated and cooled by a CUP that is located adjacent to the southwest corner of Airside C. There is a controlled vehicular forecourt along the southwest side of Airside C that is accessed from Bessie Coleman Boulevard. The forecourt is used for permitted parking, deliveries, and waste removal, and it provides access to an airfield gate.

2.3.13 AIRSIDE E

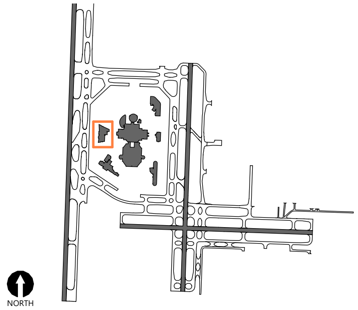
Airside E, which is located west of the Main Terminal, was commissioned in October 2002. It is a three-level building that supports 13 aircraft parking positions. Air Canada, Delta Air Lines, and Frontier Airlines operate from Airside E. An 800-foot-long dual-guideway airside APM connects Airside E to the Main Terminal. The airside APM station is outside the sterile airside zone. The APM stations have the capability to support up to a pair of two-car trains. Each car has the capacity to carry 105 passengers. The APM maintenance facility is located beneath the airside APM station.

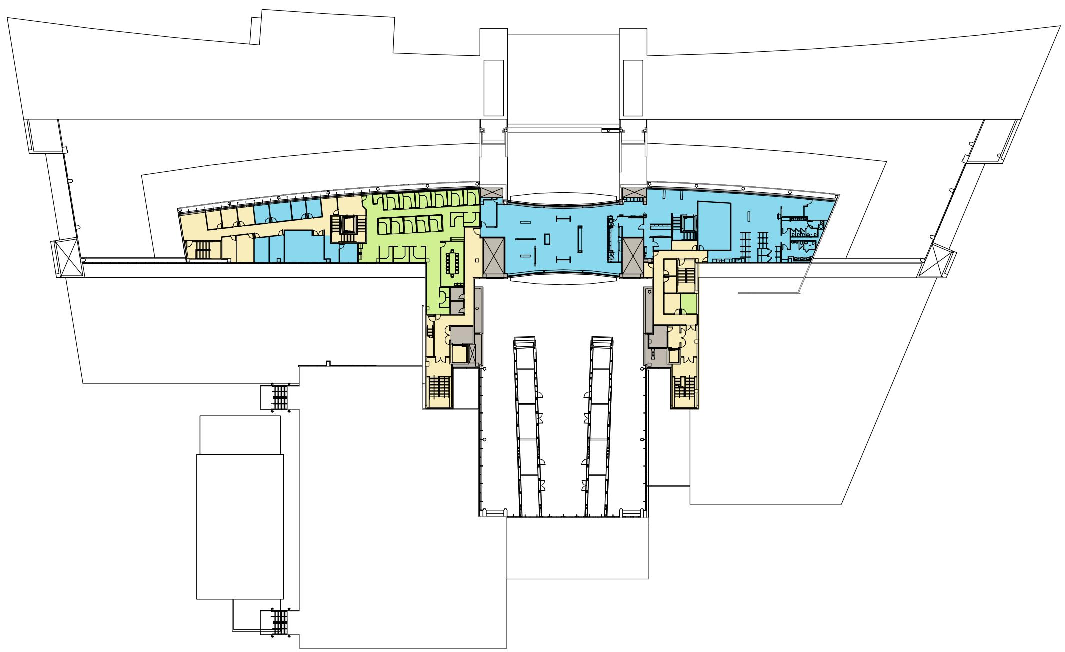
While international flights can depart from Airside E, it has no facilities to support non-precleared international flight arrivals. Airside E functions on each of the three levels are as follows:

- Level 3 (Mezzanine), as shown on **Exhibit 2.3-12,** includes airline clubs, Airport operations and vacant space.
- Level 2 (Boarding/Deplaning), as shown on **Exhibit 2.3-13**, includes airline gates, holdrooms, concessions, circulation, restrooms, passenger SSCP, and APM station.
- Level 1 (Apron), as shown on **Exhibit 2.3-14**, includes airline and Airport operations, BHSs, building services, APM maintenance facility, and CUP.

Table 2.3-8 summarizes the inventory of spaces by space category and floor level for Airside E.

KEYMAP





LEGEND

- Airline Facilities
- Airport and Other Agencies
- Building Services
- Other Common

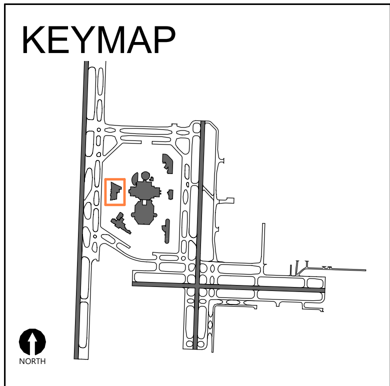
SOURCE: Hillsborough County Aviation Authority, 2018.

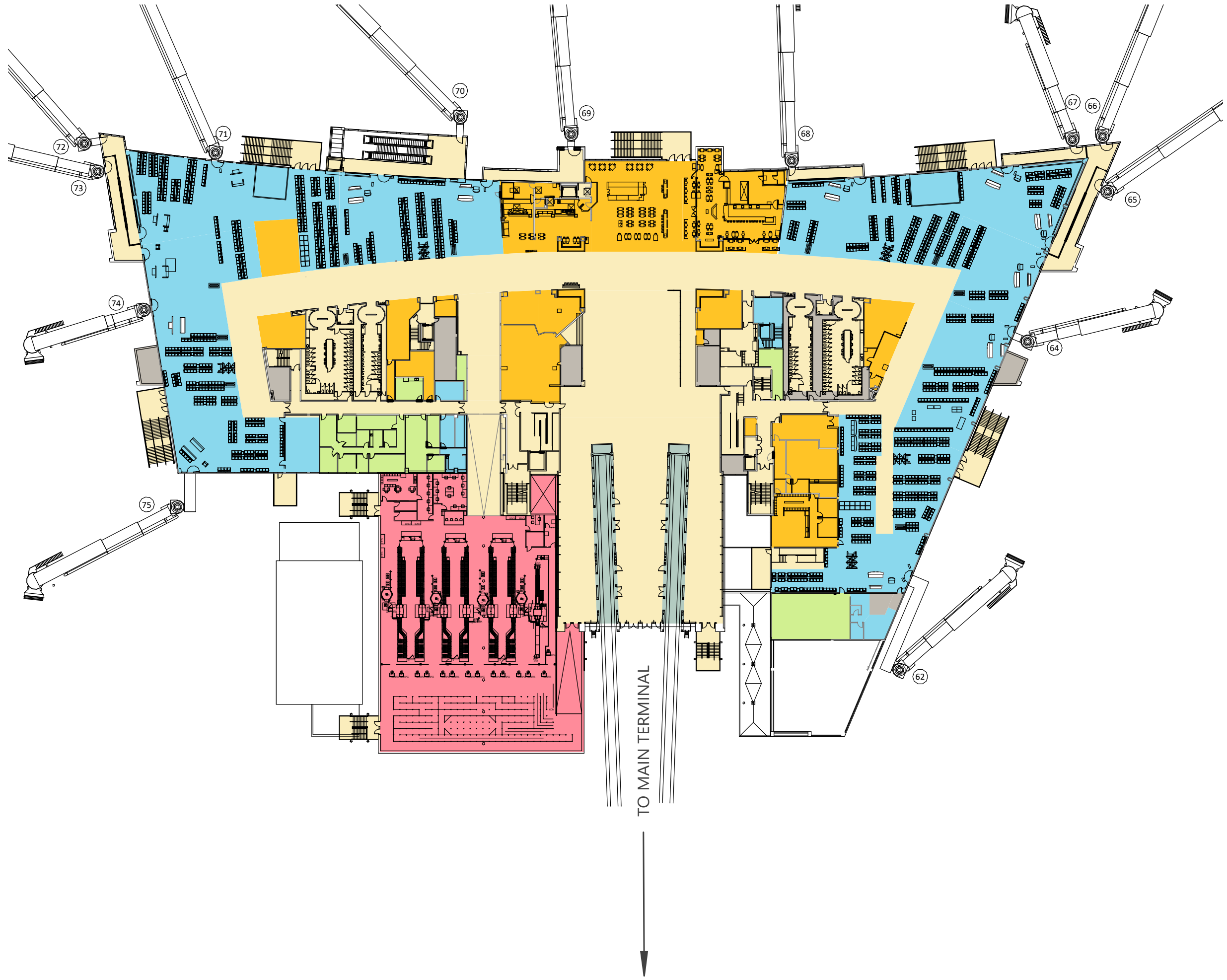
NORTH 0 120 ft

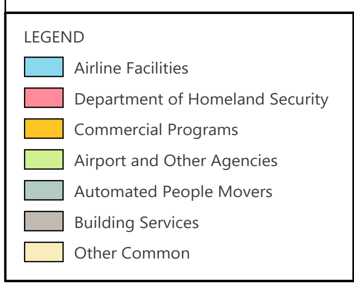
EXHIBIT 2.3-12

AIRSIDE E
LEVEL 3 (MEZZANINE)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-E_INV RA_r20.rvt







SOURCE: Hillsborough County Aviation Authority, 2018.

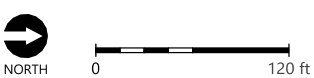


EXHIBIT 2.3-13

AIRSIDE E
LEVEL 2 (BOARDING/DEPLANING)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-E_INV RA_r20.rvt

SOURCE: Hillsborough County Aviation Authority, 2018.

EXHIBIT 2.3-14

AIRSIDE E
LEVEL 1 (APRON)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-E_INV RA_r20.rvt

TABLE 2.3-8: AIRSIDE E INVENTORY BY SPACE CATEGORIES

SPACE CATEGORY	LEVEL 3 (SQ FT)	LEVEL 2 (SQ FT)	LEVEL 1 (SQ FT)	TOTAL (SQ FT)
Airline Facilities	9,874	44,532	24,732	79,138
Baggage Handling Systems	-	-	37,169	37,169
Department of Homeland Security	-	19,641	-	19,641
Commercial Programs	-	20,295	4,002	24,297
Airport and Other Agencies	3,779	4,958	11,304	20,041
Automated People Movers	-	3,103	9,412	12,515
Building Services	2,140	3,788	35,329	41,257
Other Common	6,707	58,978	18,731	84,416
Total	**22,500**	**155,295**	**140,679**	**318,474**

NOTE:
Values may not add due to rounding.
SOURCES: Hillsborough County Aviation Authority, 2018; Ricondo & Associates, Inc., March 2021.

All passenger functions are located on Level 2. Departing passengers enter the TSA passenger SSCP after disembarking the airside APM. The TSA checkpoint shown on Exhibit 2.3-13 is scheduled to be operational by spring 2024. While the TSA had not yet determined the screening technology that will be deployed at this checkpoint, the design is capable of housing three modular sets (six lanes) of full-size checkpoint property screening systems and one advanced technology X-ray–equipped special assistance lane. Once cleared to enter the sterile airside zone, passengers will have access to restrooms, commercial programs, holdrooms, and gates. Arriving passengers exit the sterile zone through a pair of automated breach control exits to access the airside APM.

Outbound baggage operations are conducted on Level 1. Inbound (arriving) bags are transported to the Main Terminal's Red Side or Blue Side domestic bag claim, depending on the airline, via a ground service vehicle tunnel. The airside entry to the tunnel is on the east side of Airside E.

Airside E is heated and cooled by a CUP that is located adjacent to the east side of Airside E. There is a controlled vehicular forecourt along the east side of Airside E that is accessed from Bessie Coleman Boulevard. The forecourt is used for permitted parking, deliveries, and waste removal, and it provides access to an airfield gate.

2.3.14 AIRSIDE F

Airside F, which is located southwest of the Main Terminal, was commissioned in November 1997. It is a three-level building that supports 14 aircraft parking positions. American Airlines, British Airways, Cayman Airways, Copa Airlines, Edelweiss Air, Eurowings Discover, Havana Air, Lufthansa, WestJet, and Delta Air Lines (Delta Air Lines international flight arrivals only) operate from Airside F. A 1,200-foot-long dual-guideway airside APM connects Airside F to the Main Terminal. The airside APM station is outside the sterile airside zone. The APM stations have the capability to support up to a pair of two-car trains. Each car has the capacity to carry 105 passengers. The APM maintenance facility is located beneath the airside APM station.

Airside F is the only airside facility with an FIS facility; consequently, all non-precleared international flight arrivals must deplane passengers at Airside F. Airside F functions on each of the three levels are as follows:

- Level 3 (Mezzanine), as shown on **Exhibit 2.3-15**, includes the airline club.
- Level 2 (Boarding/Deplaning), as shown on **Exhibit 2.3-16**, includes sterile CBP corridors, airline gates, holdrooms, concessions, circulation, restrooms, passenger SSCP, and APM station.
- Level 1 (Apron), as shown on **Exhibit 2.3-17**, includes airline and Airport operations, sterile CBP corridors, FIS, baggage handling operations, building services, and APM maintenance facility.

Table 2.3-9 summarizes the inventory of spaces by space category and floor level for Airside F.

All departing passenger, as well as arriving domestic passenger functions are located on Level 2. Arriving international passengers deplane on Level 2 into sterile CBP corridors that connect to the FIS facility located on Level 1. Departing passengers enter the TSA passenger SSCP after disembarking the airside APM. The TSA checkpoint shown on Exhibit 2.3-16 consists of 6 screening lanes, which include 2 PreCheck lanes. The TSA equipment used to screen passengers' carry-on property includes 5 advanced multi-view X-ray units and 1 Computed Tomography (CT) X-ray system. Once cleared to enter the sterile airside zone, passengers will have access to restrooms, commercial programs, holdrooms, and gates. Arriving passengers exit the sterile zone adjacent to the checkpoint to access the airside APM.

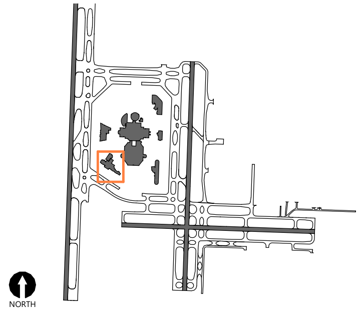
Arriving international passengers enter the FIS facility and present travel documents at CBP primary inspection. CBP has implemented the Simplified Arrivals process so only passengers enrolled in Global Entry use the kiosks. After clearing primary inspection, passengers can reclaim checked baggage at one of the three through-the-wall flat-plate baggage carousels. The following lists the linear feet of presentation for each bag claim unit (starting from the western-most unit):

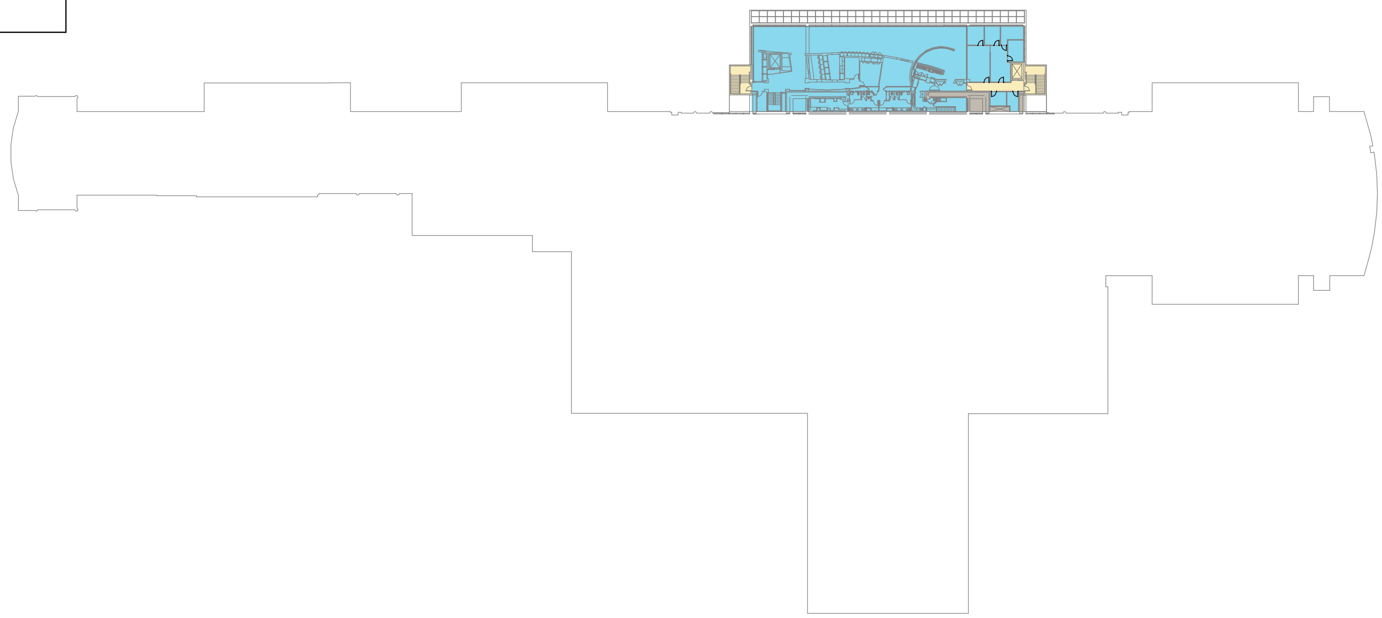
- Claim 1: 210 Linear FT
- Claim 2: 235 Linear FT
- Claim 3: 205 Linear FT

After exiting the FIS facility, connecting passengers can recheck their baggage prior to ascending to the airside APM station on Level 2, or they would enter the Airside F TSA checkpoint prior to re-entering the sterile Airside A zone. Airport baggage carts are allowed on the airside APM.

Outbound baggage makeup operations occur inside a single-story building in the northwest corner of Airside F. Outbound bags are screened at the Main Terminal prior to being placed on BHS conveyors that are routed to Airside F under the Airside F APM elevated guideway. Three sloped-plate carousels are used for outbound bag makeup. Each carousel can accommodate 20 staged baggage carts. Domestic inbound (arriving) bags are transported to the Main Terminal's Red Side or Blue Side domestic bag claim, depending on the airline, via a ground service vehicle tunnel. The airside entry into the tunnel is opposite the east side of Airside E.

KEYMAP





LEGEND

- Airline Facilities
- Building Services
- Other Common

SOURCE: Hillsborough County Aviation Authority, December 2020.

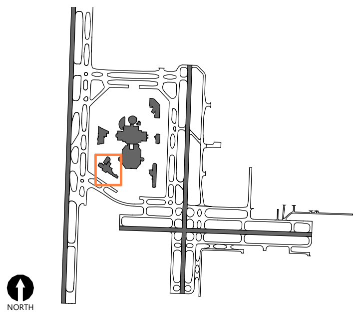
EXHIBIT 2.3-15

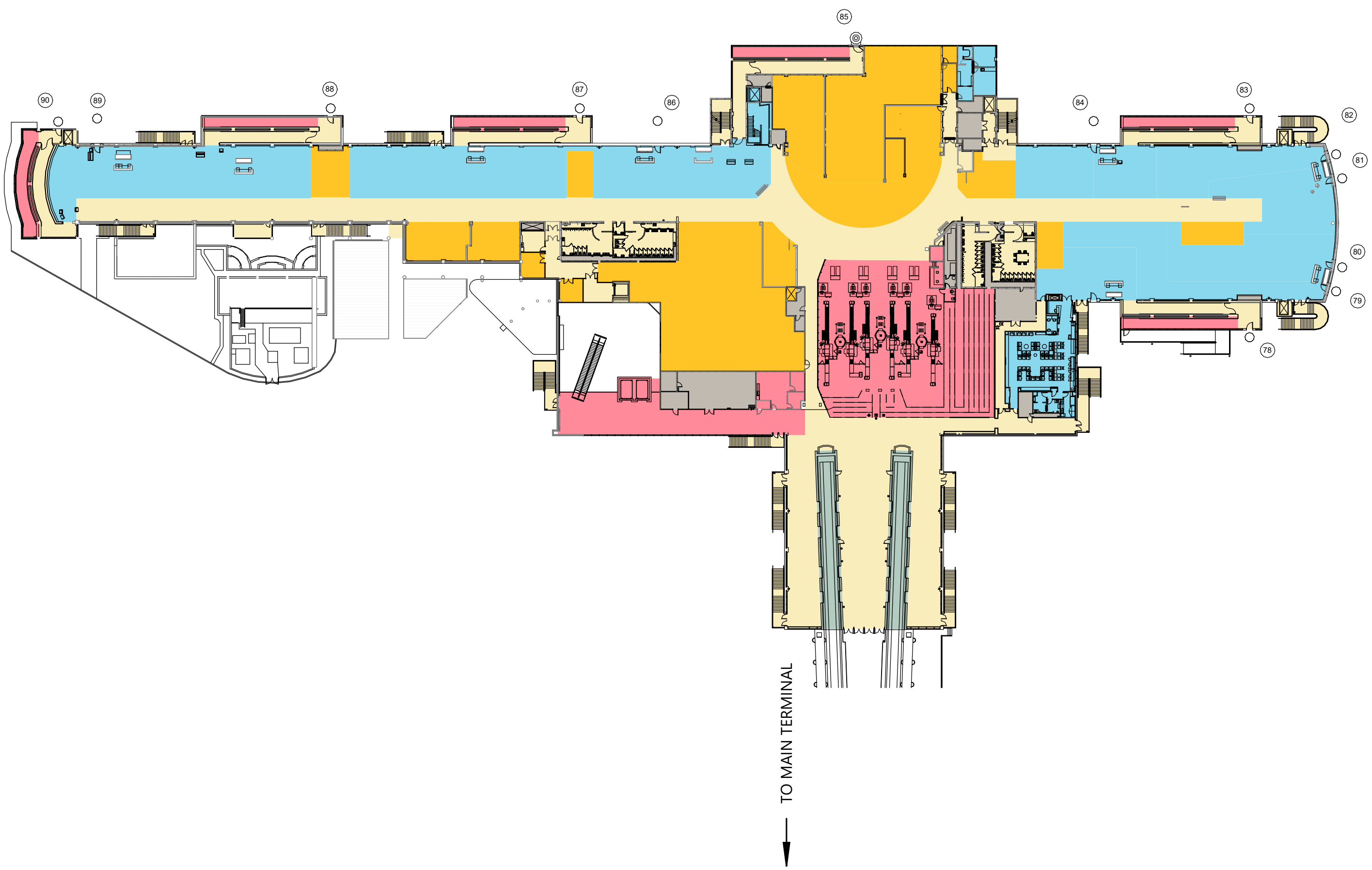
NORTH 0 120 ft

AIRSIDE F
LEVEL 3 (MEZZANINE)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-F_INV RA_r20.rvt

KEYMAP





LEGEND

- Airline Facilities
- Department of Homeland Security
- Commercial Programs
- Automated People Movers
- Building Services
- Other Common

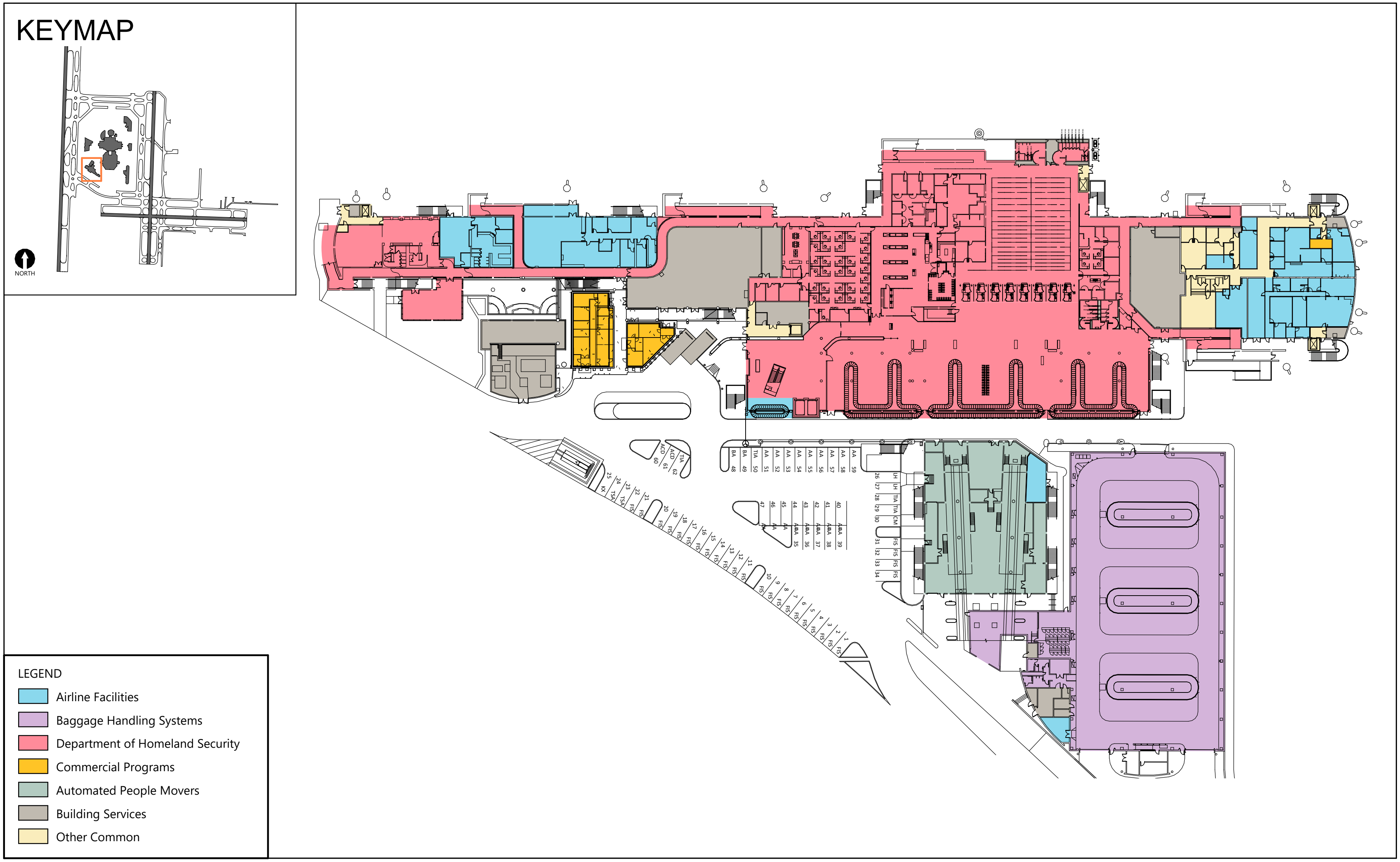
SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 120 ft

EXHIBIT 2.3-16

AIRSIDE F
LEVEL 2 (BOARDING/DEPLANING)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-F_INV RA_r20.rvt



SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 120 ft

EXHIBIT 2.3-17

AIRSIDE F
LEVEL 1 (RAMP)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_AS-F_INV RA_r20.rvt

TABLE 2.3-9: AIRSIDE F INVENTORY BY SPACE CATEGORIES

SPACE CATEGORY	LEVEL 3 (SQ FT)	LEVEL 2 (SQ FT)	LEVEL 1 (SQ FT)	TOTAL (SQ FT)
Airline Facilities	8,381	34,415	17,483	60,279
Baggage Handling Systems	-	-	35,169	35,169
Department of Homeland Security	-	18,877	71,306	90,183
Commercial Programs	-	24,871	3,143	28,014
Automated People Movers	-	3,200	11,800	15,000
Building Services	378	4,629	17,273	22,280
Other Common	829	44,476	5,795	51,100
Total	**9,588**	**130,468**	**161,969**	**302,025**

NOTE:
Values may not add due to rounding.
SOURCES: Hillsborough County Aviation Authority, 2018; Ricondo & Associates, Inc., March 2021.

2.3.15 SKYCONNECT AUTOMATED PEOPLE MOVER

SkyConnect is an APM system connecting the Main Terminal with several landside facilities. It opened in 2018 and was built in conjunction with the rental car center (RCC), the SkyCenter One development, and a series of renovations in the Main Terminal. Currently, SkyConnect operates two-car trains in a pinched loop operation. It can increase capacity by operating four-car trains. The 1.4-mile SkyConnect guideway is both elevated above ground and at grade level along the Airport entrance road, and it passes underneath Taxiway J, as shown on **Exhibit 2.3-18**. It has three stations with a dedicated offline maintenance facility.

2.3.15.1 MAIN TERMINAL STATION

The SkyConnect Main Terminal station is located on the east end of the Main Terminal. The station level is aligned with Level 4 of the Main Terminal building, as shown on **Exhibit 2.3-19**. It has a central platform configuration. Passenger flows are separated by different vertical cores. The central vertical core conveys passengers between the station and Level 3 of the Main Terminal. An additional vertical core on Level 3 is used for connecting SkyConnect passengers between Level 3 and Level 2 of the Main Terminal. A separate vertical core at each end of the Main Terminal station serves the Red Side and Blue Side, respectively. These two end cores accommodate passengers directly from baggage claim on Level 1 to the station on Level 4.

2.3.15.2 ECONOMY PARKING GARAGE STATION

SkyConnect trains stop at the Economy Parking Garage station to serve passengers that parked in the Economy Parking Garages. The Economy Parking Garage station is also a central platform configuration with a vertical core on each end of the station with elevators only, as shown on **Exhibit 2.3-20**.

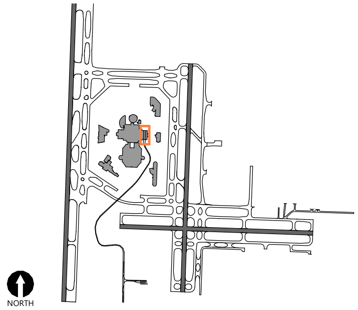
SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport, Airport Layout Plan*, April 2016.

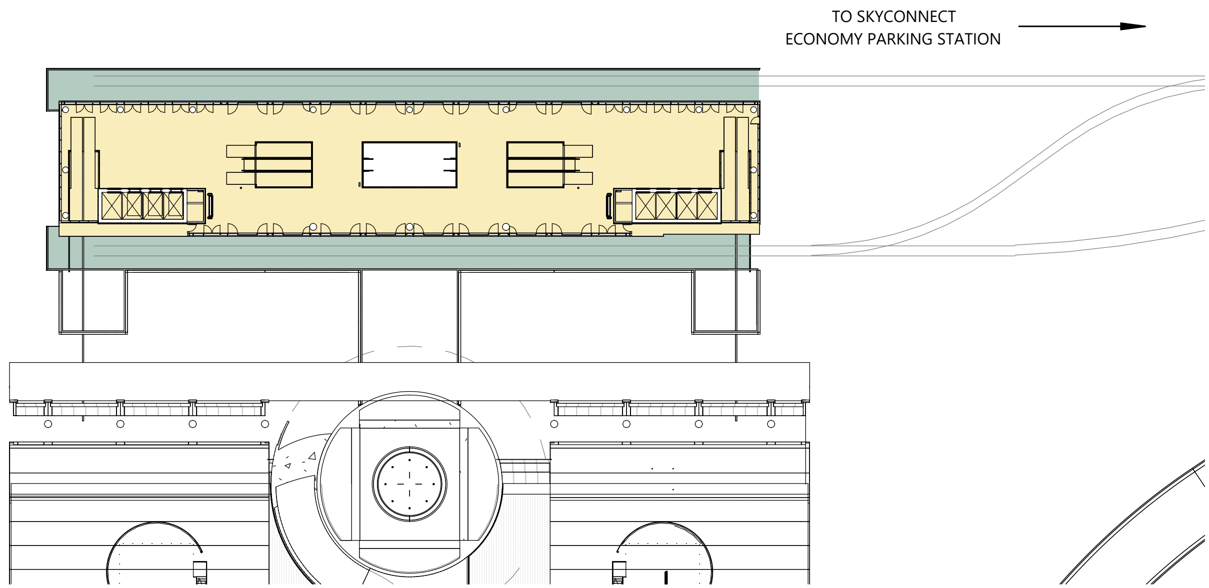
EXHIBIT 2.3-18

SKYCONNECT ALIGNMENT

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.3-18 APM SITE PLAN.dwgLayout: Layout1 Plotted: May 29, 2024, 09:47AM

KEYMAP





LEGEND

- Automated People Movers
- Other Common

SOURCE: Hillsborough County Aviation Authority, 2018.

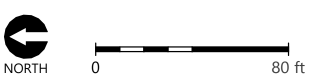
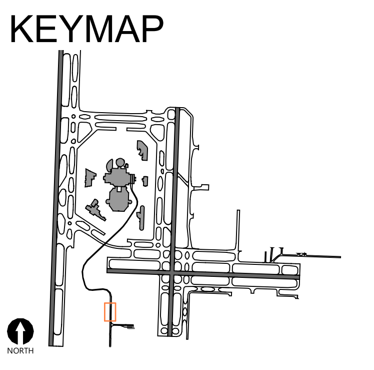
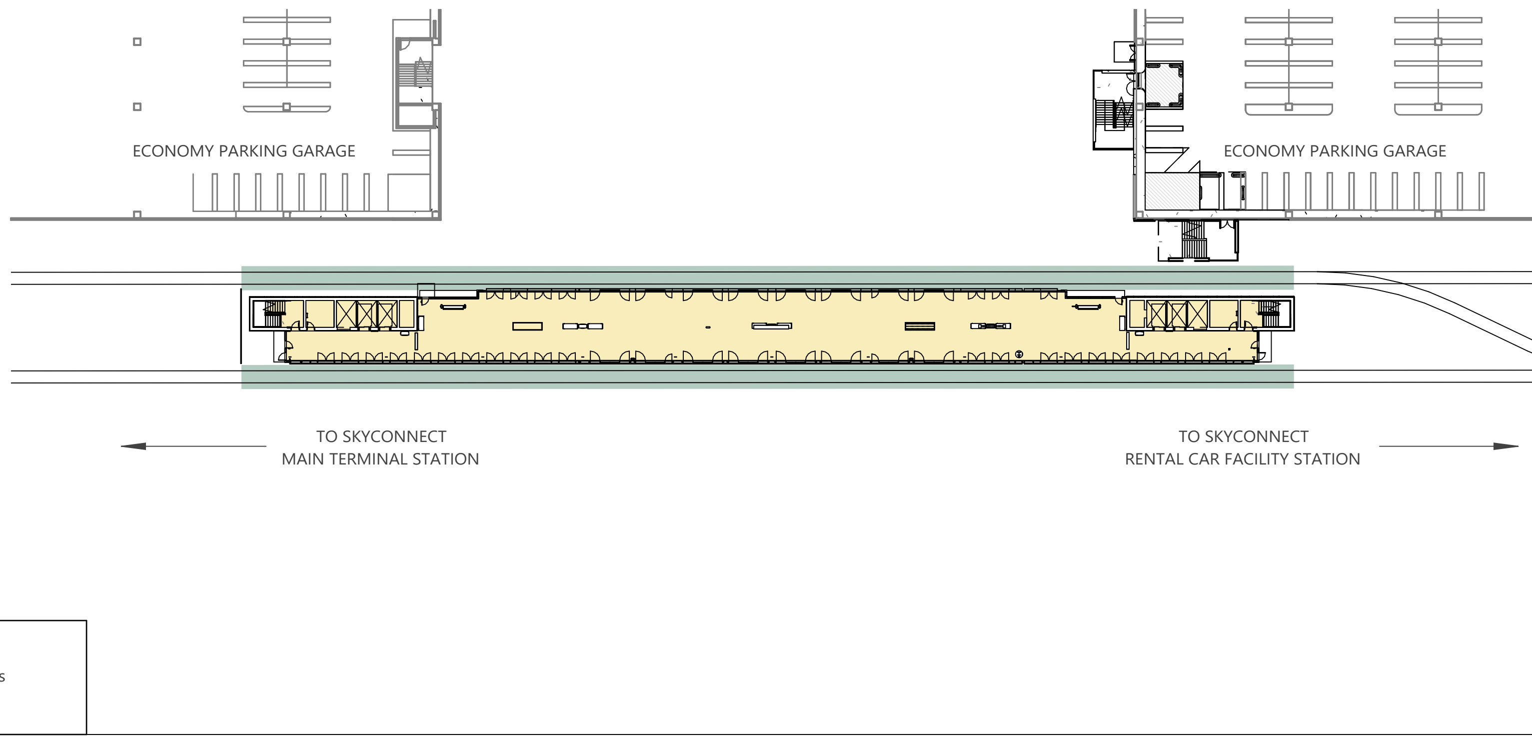


EXHIBIT 2.3-19

SKYCONNECT MAIN TERMINAL
LEVEL 4

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_TM_INV RA_r20.rvt





SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 80 ft

EXHIBIT 2.3-20

SKYCONNECT ECONOMY PARKING STATION
LEVEL 4

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_APM 2.rvt

2.3.15.3 RENTAL CAR CENTER STATION

This SkyConnect station is integrated with the RCC and provides direct access to the rental car counters. Upon arrival at the station, arriving passengers exit on one side of the train and immediately proceed to the rental car counters. Departing passengers that are leaving the RCC for the Main Terminal board SkyConnect trains on the opposite side from arriving passenger trains to avoid crossflow. As shown on **Exhibit 2.3-21**, a remote check-in facility is provided on the south end of the station. It allows passengers to check in and drop their bags before boarding Skyconnect towards the Main Terminal and all Airside gates. The service is currently available to American Airlines, Delta, JetBlue, Southwest, Spirit and United passengers.

2.3.15.4 MAINTENANCE FACILITY

The SkyConnect maintenance facility is elevated and located between the Economy Parking Garages and the RCC. This facility provides offline full vehicle inspections, servicing, and overhauls for the SkyConnect system.

2.3.16 GATE INVENTORY

The existing Terminal Complex at TPA has undergone several expansions and modifications since the existing facility opened in 1971. This section provides an inventory of existing passenger aircraft gates at TPA, which are distributed between four passenger airside facilities (Airsides A, C, E, and F) and serve all commercial scheduled departing and arriving flights.

In narrowbody configuration, the airside facilities provide a total of 58 contact gates and 22 remote aircraft parking positions. Contact gates can be defined as aircraft parking positions adjacent to the terminal/airside building that allow for direct access to and from the building to a parked aircraft. Contact gates are typically equipped with a passenger boarding bridge (PBB) or multiple PBBs used for passenger loading and unloading directly from the holdroom area in an environmentally controlled space. In widebody configuration, the airside facilities provide a total of 50 contact gates and 22 remote aircraft parking positions. Six of the contact gates at Airside F provide access to FIS.

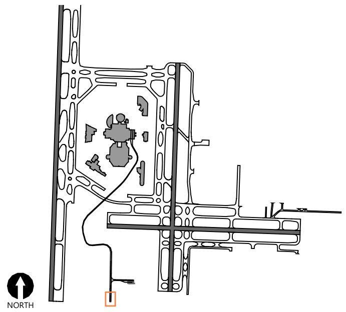
At TPA, the remote positions are located around the area of the Airside A Bag Sortation Building, which accommodates 7 hardstand positions, and in the apron area of the former Airside D facility, which accommodates 15 hardstand positions.

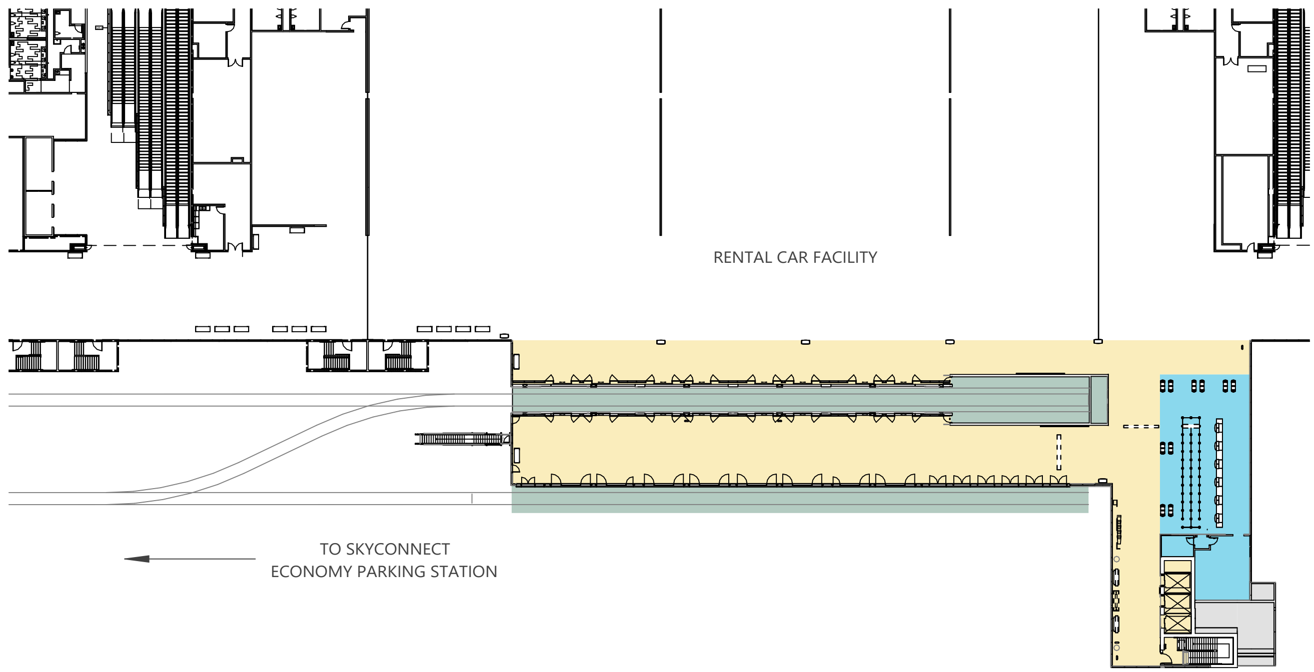
Additionally, some airlines are assigned to contact gates on an exclusive/preferential use agreement. Authority-operated gates at TPA are A1, A3, A5, A7, A10, C41 to C45, E66, E70 to E72, F82 to F83, and F85 to F90.

Exhibit 2.3-22 shows the existing terminal area. **Exhibit 2.3-23** to **Exhibit 2.3-26** depict the current aircraft configuration of the existing airsides, **Exhibit 2.3-27 and Exhibit 2.3-28** illustrate the current aircraft configuration of A and D hardstands.

Table 2.3-10 summarizes the aircraft gate inventory by gate capability for narrowbody and widebody configurations.

KEYMAP





LEGEND

- Airline Facilities
- Automated People Movers
- Other Common

SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 80 ft

EXHIBIT 2.3-21

SKYCONNECT RENTAL CAR FACILITY STATION
LEVEL 4

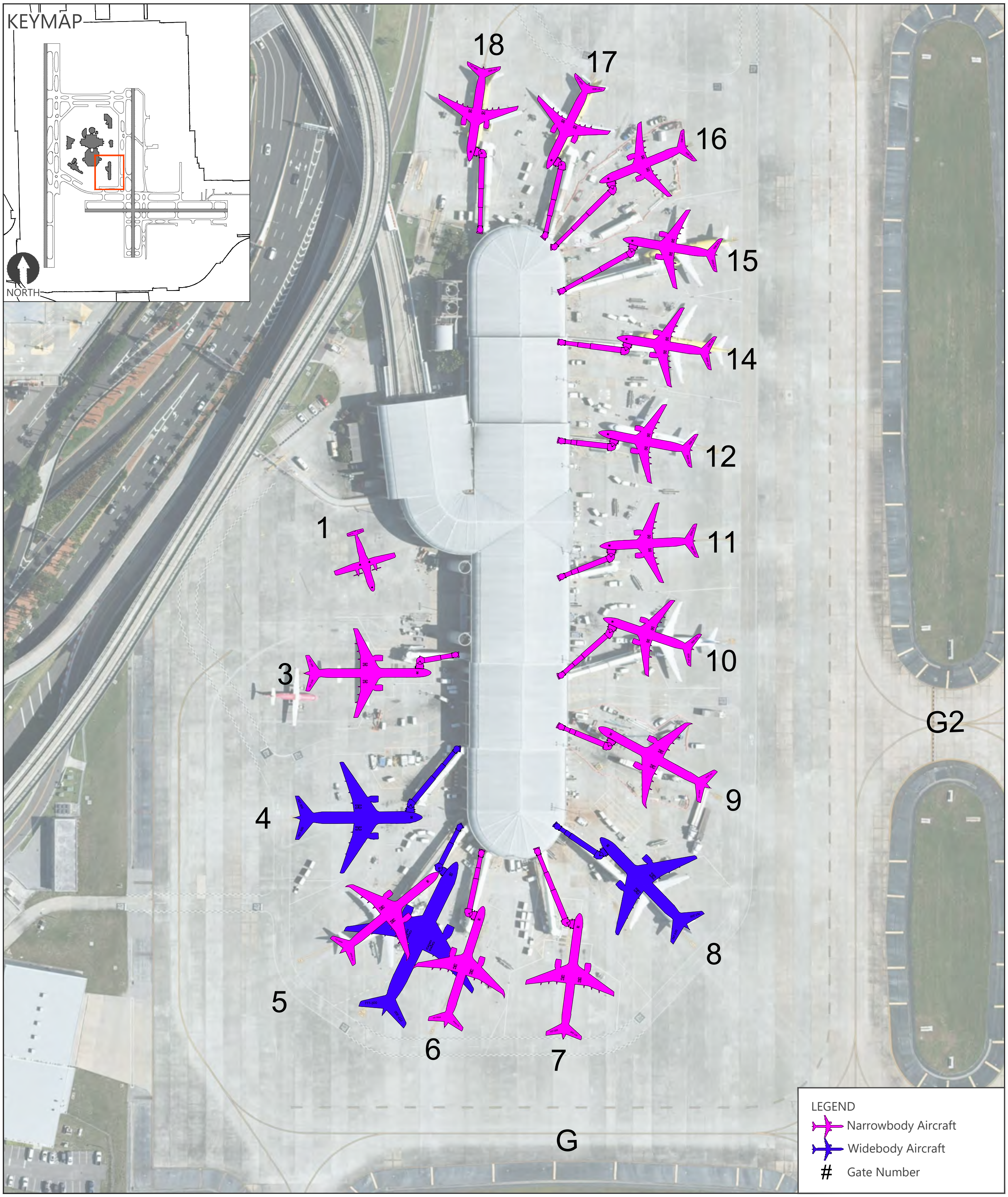
Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\Revit\Working\TPA_APM 3.rvt

SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale);
AECOM, *Tampa International Airport, Airport Layout Plan*, April 2016.

EXHIBIT 2.3-22

EXISTING TERMINAL CONFIGURATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.2-1,2.3-22 Existing Airfield-Terminal.dwgLayout: 2.3-22 Plotted: May 15, 2024, 09:42AM



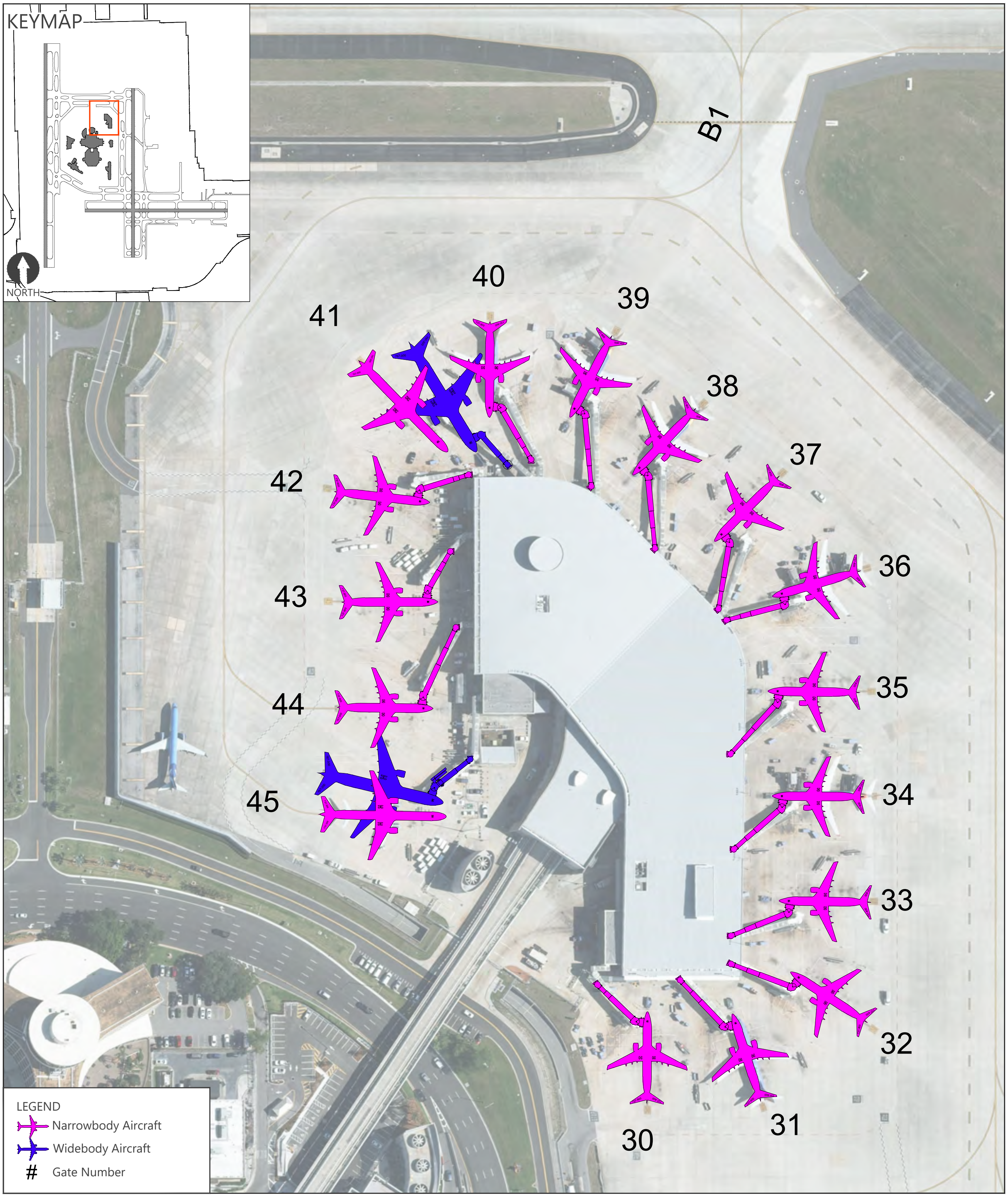
SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale);
Tampa International Airport, *Gate Map Tools 11-10-21v1*, November 2021; AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 200 ft

EXHIBIT 2.3-23

EXISTING AIRSIDE A GATE CONFIGURATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibits 2.3-23-28 Gate.dwgLayout: AIRSIDE A Plotted: May 15, 2024, 12:01PM



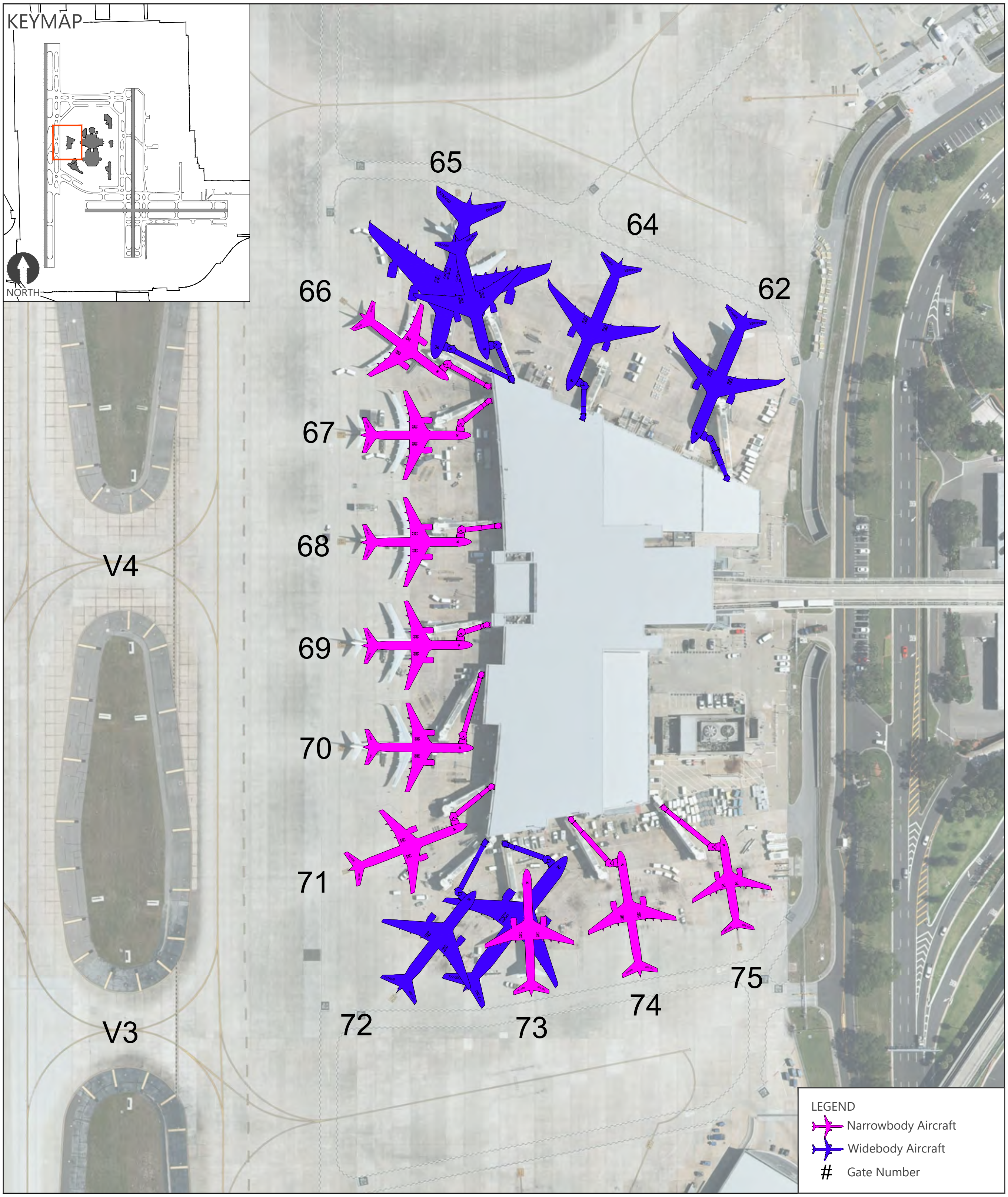
SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale);
Tampa International Airport, *Gate Map Tools 11-10-21v1*, November 2021; AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 200 ft

EXHIBIT 2.3-24

EXISTING AIRSIDE C
GATE CONFIGURATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibits 2.3-23-28 Gate.dwgLayout: AIRSIDE C Plotted: May 15, 2024, 12:02PM



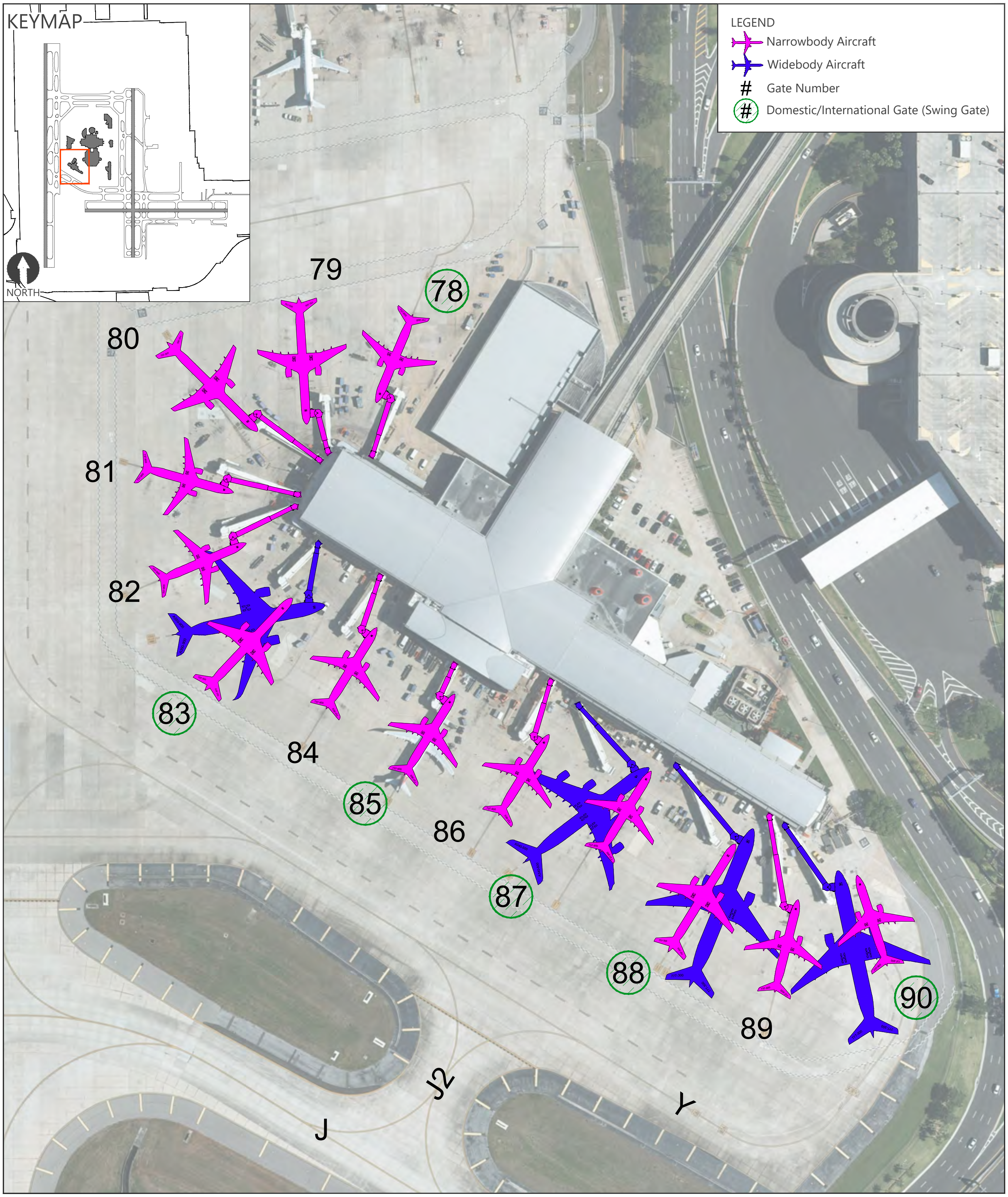
SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale);
Tampa International Airport, *Gate Map Tools 11-10-21v1*, November 2021; AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 200 ft

EXHIBIT 2.3-25

EXISTING AIRSIDE E GATE CONFIGURATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibits 2.3-23-28 Gate.dwgLayout: AIRSIDE E Plotted: May 15, 2024, 12:03PM



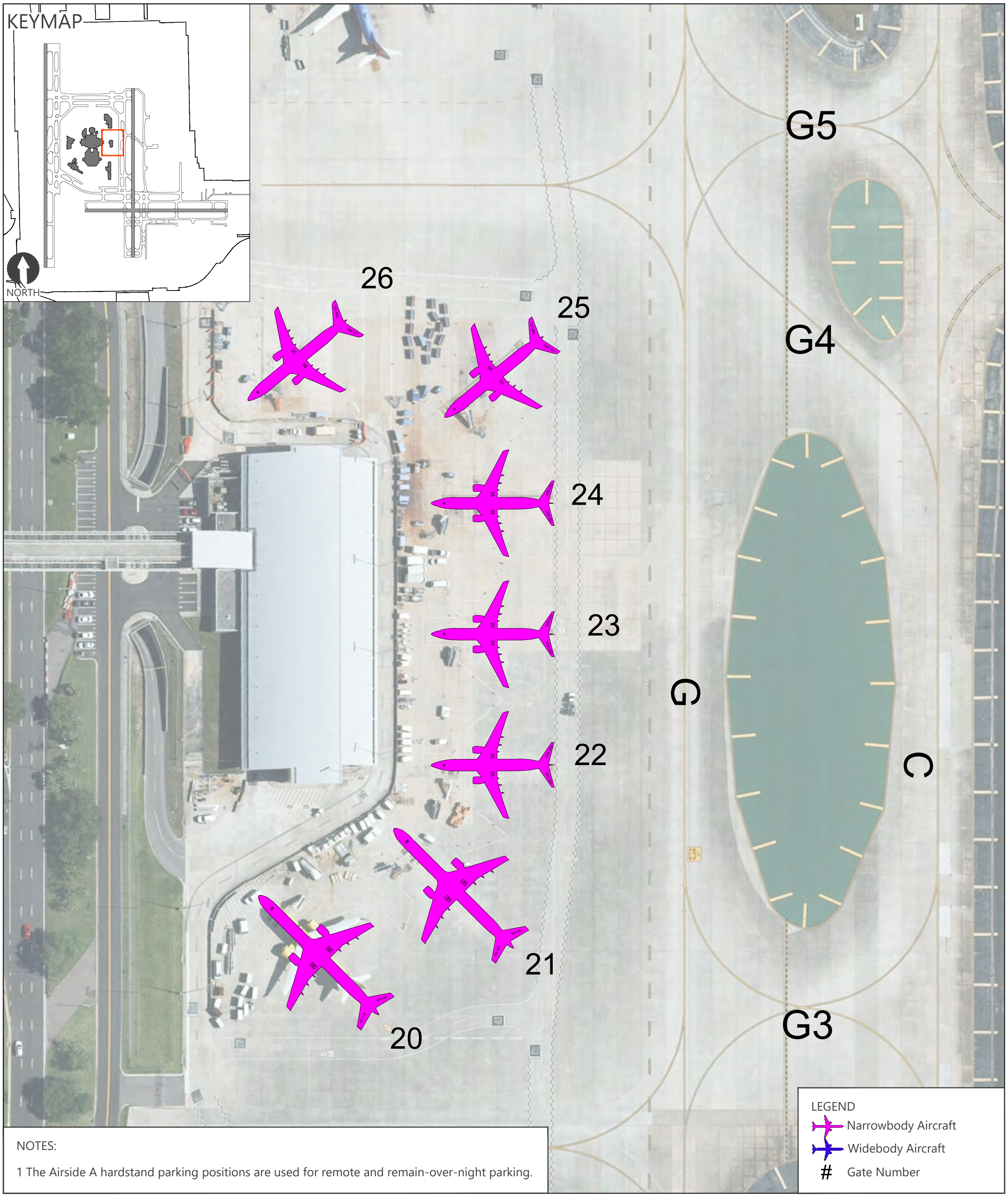
SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale);
Tampa International Airport, *Gate Map Tools 11-10-21v1*, November 2021; AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 200 ft

EXHIBIT 2.3-26

EXISTING AIRSIDE F
GATE CONFIGURATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibits 2.3-23-28 Gate.dwgLayout: AIRSIDE F Plotted: May 15, 2024, 12:03PM



NOTES:

1 The Airside A hardstand parking positions are used for remote and remain-over-night parking.

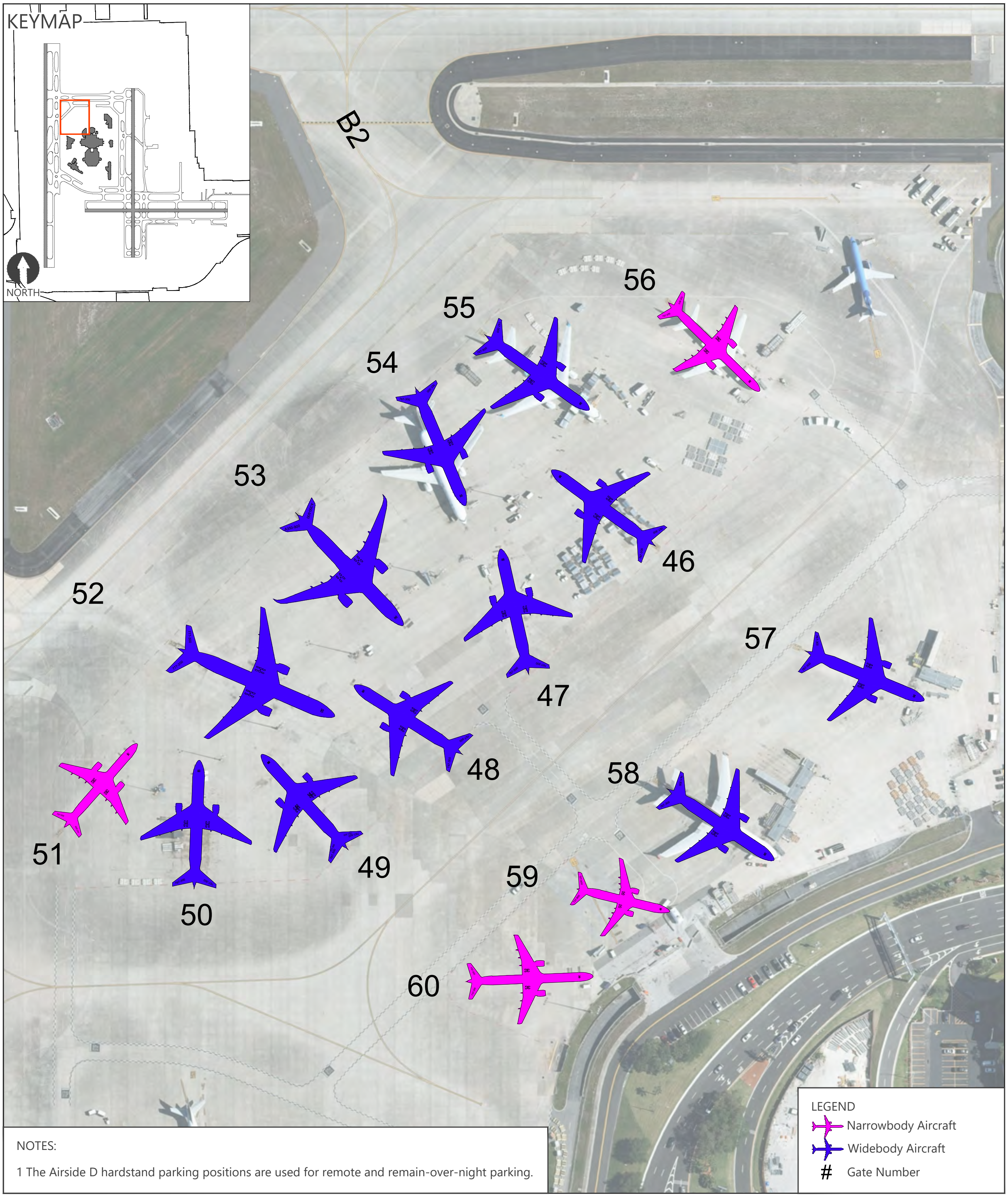
SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale);
Tampa International Airport, *Gate Map Tools 11-10-21v1*, November 2021; AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 150 ft

EXHIBIT 2.3-27

EXISTING AIRSIDE A HARDSTAND CONFIGURATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibits 2.3-23-28 Gate.dwgLayout: AIRSIDE A HS Plotted: May 15, 2024, 12:02PM



NOTES:

1 The Airside D hardstand parking positions are used for remote and remain-over-night parking.

SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale);
Tampa International Airport, *Gate Map Tools 11-10-21v1*, November 2021; AECOM,*Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 200 ft

EXHIBIT 2.3-28

EXISTING AIRSIDE D HARDSTAND CONFIGURATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibits 2.3-23-28 Gate.dwgLayout: AIRSIDE D HS Plotted: May 15, 2024, 12:02PM

TABLE 2.3-10: GATE INVENTORY SUMMARY

GATE DESCRIPTION	AIRSIDE A	AIRSIDE C	AIRSIDE E	AIRSIDE F	**TOTAL CONTACT GATES**	A HARDSTAND	D HARDSTAND
Widebody Configuration							
A380 / Jumbo Gates	1	-	2	4	7	-	2
Widebody Gates	2	2	2	-	6	-	9
Narrowbody Gates	12	12	7	6	37	7	4
Regional Jet Gates	-	-	-	-	-	-	-
Total Gates	**15**	**14**	**11**	**10**	**50**	**7**	**15**
Narrowbody Configuration							
A380 / Jumbo Gates	-	-	-	-	-	-	2
Widebody Gates	2	-	4	-	6	-	9
Narrowbody Gates	14	16	9	13	52	7	4
Regional Jet Gates	-	-	-	-	-	-	-
Total Gates	**16**	**16**	**13**	**13**	**58**	**7**	**15**
Common Use Gates	5	5	4	8	22	7	15
Leased Gates	11	11	9	5	36	-	-

SOURCE: Hillsborough County Aviation Authority, November 2021 (Gate Map Tool exhibits).

2.3.17 GATE AMENITIES

2.3.17.1 FUELING

All 58 contact gates are equipped with an active hydrant fueling system. The number of hydrant fuel pits serving each gate varies based on the gate usage and the served aircraft type (narrowbody, or widebody aircraft). In lieu of using the hydrant fueling system for aircraft fueling, fuel tanker trucks are used when fuel pits are not active or not located convenient to the aircraft parking position. **Exhibit 2.3-29** shows the hydrant fueling system for all the contact gates.

2.3.17.2 PASSENGER BOARDING BRIDGES

All contact gates except for Airside A’s gate A1 are equipped with PBBs. PBB manufacturer and model types vary, as well as the auxiliary equipment included for each PBB. At Airside A there are 15 PBBs, 16 on Airside C, 13 on Airside E and 13 on Airside F.

2.3.17.3 APRON MARKINGS

Apron markings are provided at each contact and remote aircraft parking positions as a safety measure. Apron markings vary by gate based on the assigned aircraft and it typically include striping for a lead-in line with nose gear stop marks, an aircraft safety envelop, and other miscellaneous apron markings as required.

SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); Tampa International Airport, *COMPOSITE-UTILITIES-TPA.DWG*, November 2021.

EXHIBIT 2.3-29

EXISTING HYDRANT FUELING SYSTEM

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.3-29 Hydrant Fuel System.dwgLayout: 8.5x11P Plotted: May 15, 2024, 12:05PM

2.4 LANDSIDE FACILITIES

The existing landside facilities at the Airport include on- and off-Airport roadways; terminal curb roadways; regional ground transportation systems; public and employee parking facilities; rental car facilities; vehicle staging areas for commercial vehicles such as taxicabs and transportation network companies (TNCs; e.g., Uber, Lyft, and Wingz); and the cell phone waiting area.

2.4.1 ACCESS AND ON-AIRPORT TERMINAL ROADWAYS

The on-Airport roadway system serves as the connection between national and regional roadway networks and the Terminal Complex. Additionally, the on-Airport roadway system provides access to public and employee parking areas, rental car facilities, and other support facilities. **Exhibit 2.4-1** depicts the primary on-Airport roadways.

2.4.1.1 GEORGE J. BEAN PARKWAY

George J. Bean Parkway is the primary artery to access the terminals. It is three lanes northbound and three lanes southbound, with posted speeds of 30 miles per hour entering the Terminal Complex. The width of the roadway varies from two lanes to five lanes around the Terminal Complex. It is utilized by all vehicles entering the Terminal Complex. A widening project was completed at the end of 2021 in both directions to accommodate increased traffic from the GDA, that also included a new connection from westbound Economy Parking Road to southbound George J. Bean Parkway.

2.4.1.2 BESSIE COLEMAN BOULEVARD

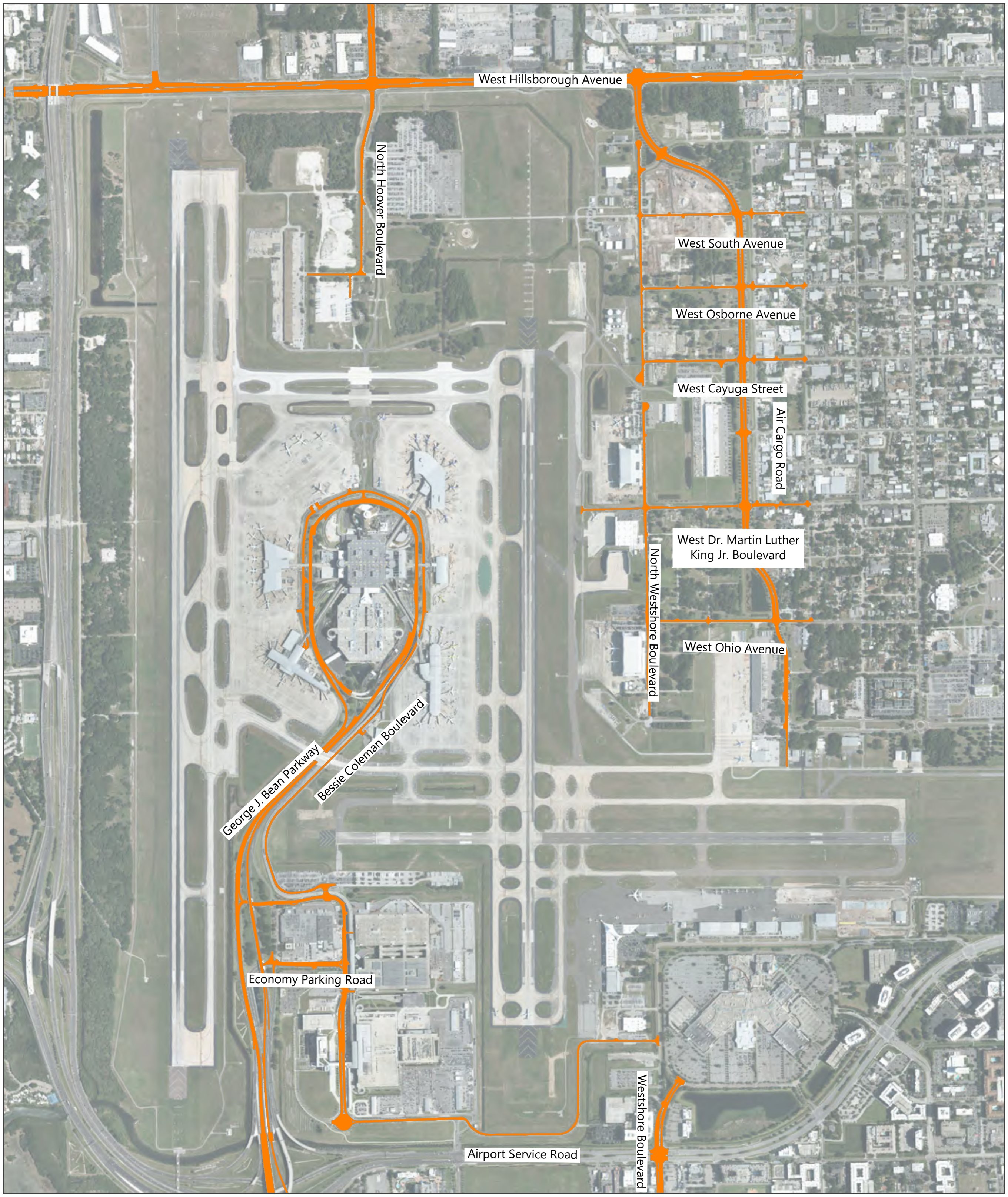
Bessie Coleman Boulevard provides access from George J. Bean Parkway to landside facilities in the GDA such as the Economy Parking Garage, the RCC, and the US Postal Service (USPS) building via Economy Parking Road and Airport Service Road (described below). To the north of the USPS building, it then becomes a service road that connects to the fire station and airside access points towards the Terminal Complex. The road was previously contiguous; however, with the construction of the SkyConnect APM system, sections of Bessie Coleman Boulevard became separated at Airport Service Road. The road is generally one lane in each direction, with a speed limit of 25 miles per hour.

2.4.1.3 ECONOMY PARKING ROAD

Economy Parking Road provides a critical link for vehicles entering the Airport via George J Bean Parkway to access the Economy Parking Garage and the RCC. It also provides access to the cell phone lot and the SkyCenter One development. The posted speed is 25 miles per hour, and it has three eastbound lanes and two westbound lanes. It is primarily utilized by rental car returns, Economy Parking Garage parkers, and cell phone lot users.

2.4.1.4 AIRPORT SERVICE ROAD

Airport Service Road provides a primarily south-north connection from West Spruce Street to George J Bean Parkway, providing access to the Employee Parking Garage, RCC, and other GDA facilities. It varies in width between one lane and three lanes in each direction. Airport Service Road also extends to the east to North Westshore Boulevard, to the south of Runway 1R. This section provides access to the Commercial Ground Transportation Facility (CGTF). The speed limit is 25 miles per hour. The western section of the road is primarily used by rental car customers and Economy Parking Garage parkers, whereas the eastern section of the road is primarily used by TNCs and taxis accessing the CGTF.



SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale).

EXHIBIT 2.4-1

KEY AIRPORT ROADWAYS

NORTH 0 1,750 ft

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-1 Key Airport Roadways.dwgLayout: Layout1 Plotted: May 15, 2024, 12:07PM

2.4.1.5 NORTH WESTSHORE BOULEVARD / JIM WALTER BOULEVARD

North Westshore Boulevard is a non-contiguous roadway on the east side of the Airport. The portion of North Westshore Boulevard that serves the Airport originates at the south end at the intersection with West Spruce Street until it becomes Jim Walter Boulevard. It provides access to the fixed base operators (FBOs) and the CGTF. The speed limit is 30 miles per hour, and the road is one lane in each direction.

North Westshore Boulevard restarts at the hangar of Pemco World Air Services and connects to Air Cargo Road in the northeast area of the Airport. The speed limit is 25 miles per hour, and the road is one lane in each direction. It is primarily used by aircraft maintenance and cargo providers.

2.4.1.6 AIR CARGO ROAD

Air Cargo Road is a road to the east of the Airport. Traveling south from West Hillsborough Avenue, it provides connections to various cargo and aviation support facilities on the east side of the Airport. It has a speed limit of 45 miles per hour and is two lanes in each direction.

2.4.1.7 NORTH HOOVER BOULEVARD

North Hoover Boulevard is on the north side of the Airport complex. It connects cargo facilities and the North Employee Lot (NEL) with West Hillsborough Avenue. The speed limit is 35 miles per hour, and the road is one lane in each direction. It is primarily used by employees and some freight providers.

2.4.1.8 WEST DR. MARTIN LUTHER KING JR. BOULEVARD

West Dr. Martin Luther King Jr. Boulevard runs from Air Cargo Road to North Westshore Boulevard. It primarily serves as a connector road with a speed limit of 25 miles per hour and is one lane in each direction. It is primarily used by aircraft maintenance and cargo providers.

2.4.1.9 WEST OHIO AVENUE

West Ohio Avenue runs from Air Cargo Road to North Westshore Boulevard. It primarily serves as a connector road and has a speed limit of 25 miles per hour and is one lane in each direction. It is primarily used by aircraft maintenance providers.

2.4.1.10 WEST CAYUGA STREET

West Cayuga Street runs from Air Cargo Road to North Westshore Boulevard. It primarily serves as a connector road with a speed limit of 25 miles per hour and is one lane in each direction. It is primarily used by aircraft maintenance and cargo providers.

2.4.1.11 WEST OSBORNE AVENUE

West Osborne Avenue runs from Air Cargo Road to North Westshore Boulevard. It primarily serves as a connector road with a speed limit of 25 miles per hour and is one lane in each direction. It is primarily used by aircraft maintenance providers.

2.4.1.12 WEST SOUTH AVENUE

West South Avenue runs from Air Cargo Road to North Westshore Boulevard. It primarily serves as a connector road with a speed limit of 25 miles per hour and is one lane in each direction. It is primarily used by aircraft maintenance providers.

2.4.2 TERMINAL CURBS

The Airport has several curbs that provide access for private vehicles, commercial vehicles, shuttle providers, and others to drop-off or pick-up airline passengers at the Terminal. The Main Terminal has Departures Level and Arrivals

Level curbs on both the north (Red) and south (Blue) sides of the building that are accessed from George J. Bean Parkway. In addition, a Quad Lot is located in each of the four corners of the Main Terminal on the Arrivals Level. The Quad Lots contain curbs for taxi and commercial shuttle pick-up operations. They can be accessed from service roads off of George J. Bean Parkway on the east and west sides of the Main Terminal.

In the GDA, the RCC curb provides space for off-airport shuttle and public transit operations, while the SkyCenter curb serves as an additional remote curbside for overflow use. **Exhibit 2.4-2** depicts the terminal curbs, and **Table 2.4-1** summarizes the curb lengths and primary users. **Table 2.4-2** lists the airlines that are allocated to the curbs on the red and blue sides on the Main Terminal. **Exhibit 2.4-3** provides an overview of the three Departures Level curbs: Blue Departures, Blue Express Departures, Red Departures, and Red Express Departures. **Exhibit 2.4-4** provides an overview of the Arrivals Level curbs: Blue Arrivals, Blue Express Arrivals, Red Arrivals, Red Express Arrivals, and the four Quad Lots. The Red Express curbs are anticipated to be open in 2025.

TABLE 2.4-1: SUMMARY OF CURBS AT THE AIRPORT

CURB	LENGTH (FT)	PRIMARY USERS
Main Terminal Red Departures	645	Private Vehicles, Transportation Network Companies, Taxis, Limos, Hotel Shuttles, Shared Rides, Employee Parking Shuttle
Main Terminal Blue Departures	660	Private Vehicles, Transportation Network Companies, Taxis, Limos, Hotel Shuttles, Shared Rides
Main Terminal Red Arrivals	660	Private Vehicles, Transportation Network Companies, Limos
Main Terminal Blue Arrivals	660	Private Vehicles, Transportation Network Companies, Limos
Main Terminal Blue Express Curb Departures	420	Private Vehicles, Transportation Network Companies, Taxis, Limos (for passengers with no checked baggage)
Main Terminal Blue Express Curb Arrivals	420	Private Vehicles, Transportation Network Companies, Taxis, Limos (for passengers with no checked baggage)
Main Terminal Red Express Curb Departures (anticipated in 2025)	395	Private Vehicles, Transportation Network Companies, Taxis, Limos (for passengers with no checked baggage)
Main Terminal Red Express Curb Arrivals (anticipated in 2025	395	Private Vehicles, Transportation Network Companies, Taxis, Limos (for passengers with no checked baggage)
Red 1 Quad Lot	180	Taxi, Hotel Shuttle, Shared Ride, and Charter Pick-ups
Red 2 Quad Lot	115	Taxi, Hotel Shuttle, Shared Ride, and Charter Pick-ups
Blue 1 Quad Lot	115	Taxi, Hotel Shuttle, Shared Ride, and Charter Pick-ups
Blue 2 Quad Lot	195	Taxi, Hotel Shuttle, Shared Ride, and Charter Pick-ups
Rental Car Center Curb	460	Off-Airport Parking Shuttle, Off-Airport Rental Car Shuttle, Public Transit Bus
SkyCenter Curb	600	Unassigned

SOURCES: Hillsborough County Aviation Authority, November 2021; Ricondo & Associates, Inc, January 2022.

TABLE 2.4-2: AIRLINE ALLOCATION BY TERMINAL CURB

TERMINAL SIDE	AIRLINES SERVED
Blue	American Airlines, Cayman Airways, Copa Airlines, Delta Air Lines, Frontier Airlines, JetBlue Airways, iAero Airways, United Airlines
Red	Alaska Airlines, Air Canada, Avelo Airlines, Breeze Airways, British Airways, Edelweiss Air, Lufthansa, Silver Airways, Southwest Airlines, Spirit Airlines, Sun Country Airlines, and WestJet

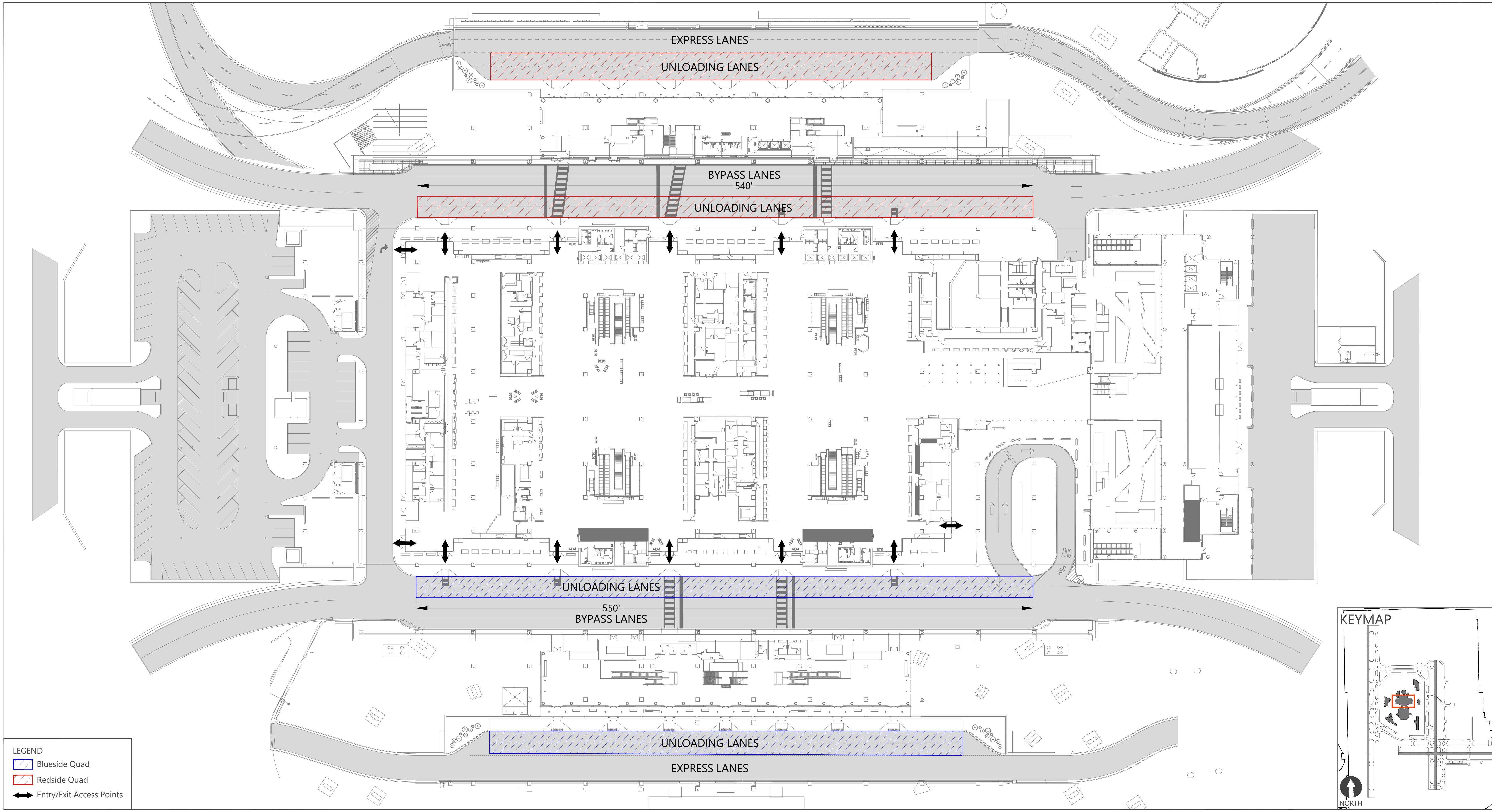
SOURCE: Hillsborough County Aviation Authority. https://www.tampaairport.com/airlines-tpa, (accessed February 8, 2022).

SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale).

EXHIBIT 2.4-2

CURB LOCATIONS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-2 Curb Locations.dwgLayout: Layout1 Plotted: May 15, 2024, 12:07PM



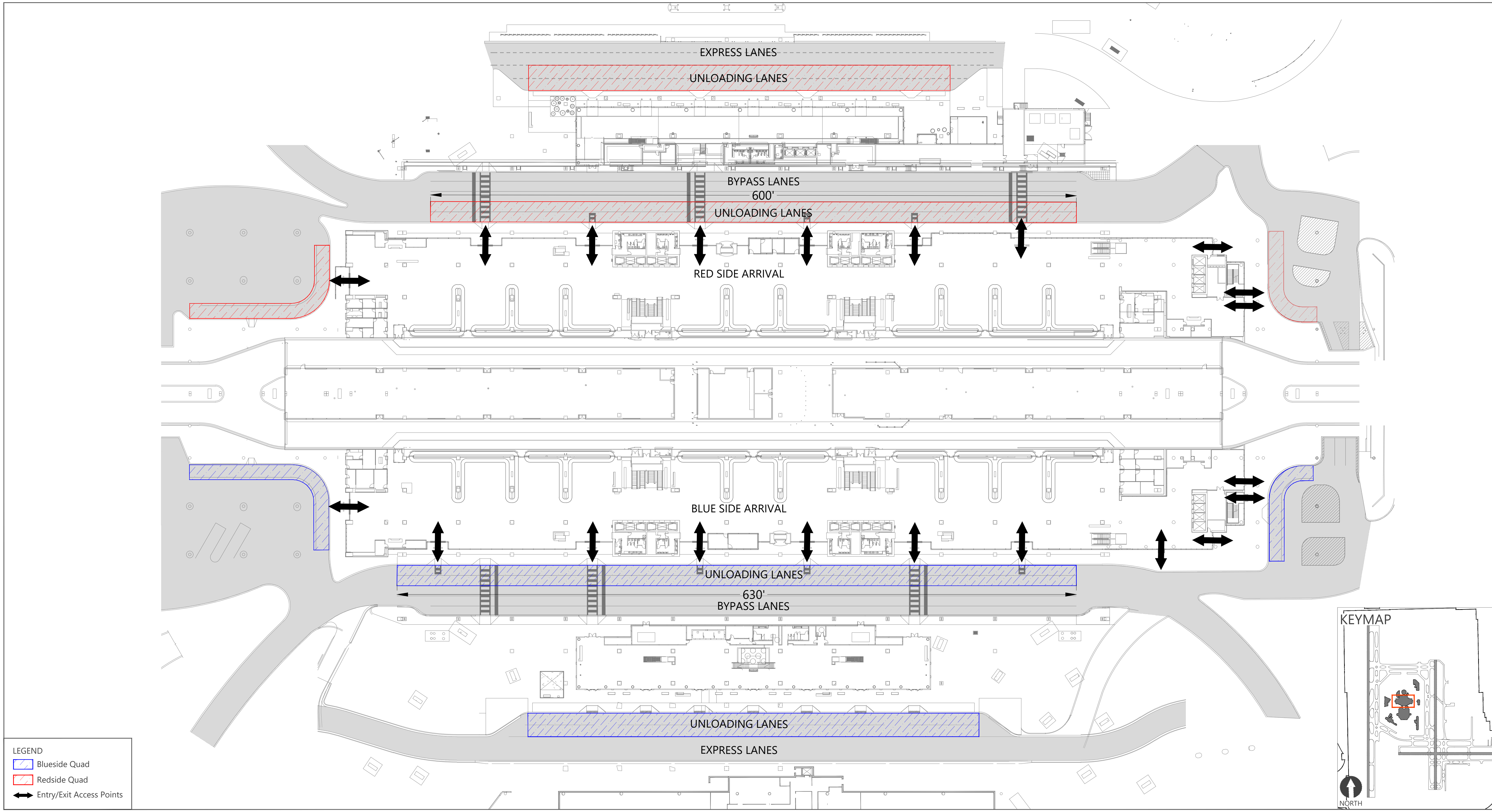
SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 80 ft

EXHIBIT 2.4-3

CURBSIDE DEPARTURE ALLOCATION OVERVIEW

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-3 (xxxxx) MAIN TERMINAL DEPARTURE QUAD.dwgLayout: 1.4-X Plotted: May 15, 2024, 12:09PM



SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 90 ft

EXHIBIT 2.4-4

CURBSIDE ARRIVAL ALLOCATION OVERVIEW

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-4,9,11,12 Quad Curb Allocations.dwgLayout: 2.4-4 Plotted: May 15, 2024, 12:11PM

2.4.2.1 MAIN TERMINAL BLUE DEPARTURES CURB

The Main Terminal Blue Departure Curb is the southern departures curb. It serves private vehicles, TNCs, limos, hotel shuttles, and shared rides. It is approximately 660 feet long and four lanes wide, consisting of one unloading lane and three bypass lanes, as shown on **Exhibit 2.4-5**. At peak times, unloading may occur in the bypass lane adjacent to the unloading lane.

2.4.2.2 MAIN TERMINAL BLUE ARRIVALS CURB

The Main Terminal Blue Arrivals Curb is the southern arrivals curb. It serves private vehicles, TNCs, and limos, and it is approximately 660 feet long and four lanes wide, consisting of one loading lanes and three bypass lanes, as shown on **Exhibit 2.4-6**. At peak times, loading may occur in the bypass lane adjacent to the loading lane.

2.4.2.3 BLUE EXPRESS CURBS

Opened in November 2021, these new curbs allow passengers without checked baggage to be dropped off and picked up separately from those checking bags. The express curbs have direct vertical circulation for passengers to travel to and from the Transfer Level, bypassing the ticketing and bag drop functions on the Departures Level and baggage claim functions on the Arrivals Level. The curbs are predominantly used by private vehicles, TNCs, limos, and taxis (Departures only) and they are approximately 420 feet long. They permit double loading with two bypass lanes, as shown on Exhibit 2.4-3 for the Departures Level and Exhibit 2.4-4 for the Arrivals Level.

2.4.2.4 MAIN TERMINAL RED DEPARTURES CURB

The Main Terminal Red Departures Curb is the northern departures curb. It serves private vehicles, TNCs, limos, hotel shuttles, shared rides, and the employee parking shuttle. It is approximately 645 feet long and four lanes wide, consisting of one unloading lane and three bypass lanes, as shown on **Exhibit 2.4-7**. At peak times, unloading may occur in the bypass lane adjacent to the unloading lane.

2.4.2.5 MAIN TERMINAL RED ARRIVALS CURB

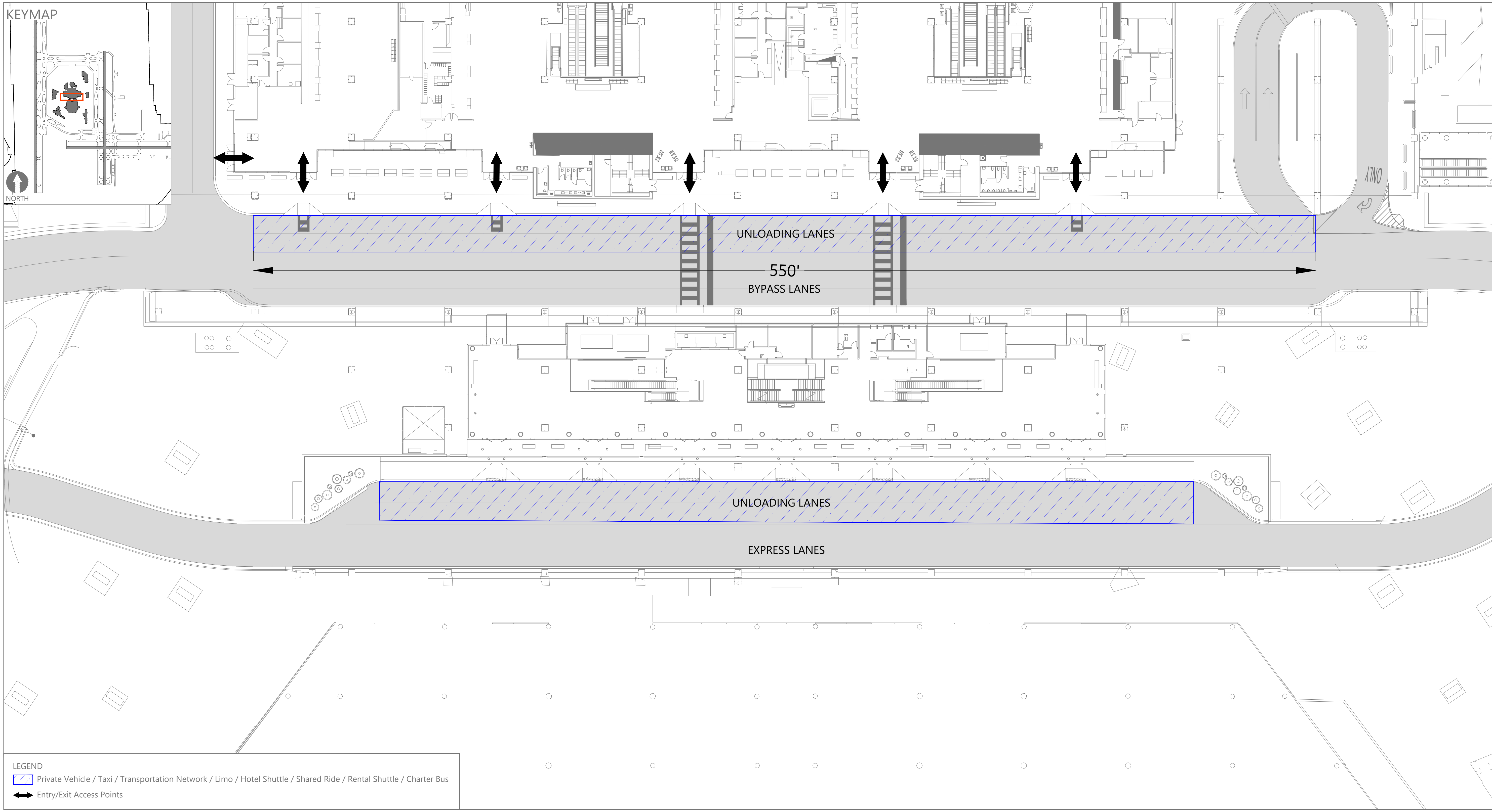
The Main Terminal Red Arrivals Curb is the northern arrivals curb. It serves private vehicles, TNCs, and limos, and it is approximately 660 feet long and four lanes wide, consisting of two loading lanes and three bypass lanes, as shown on **Exhibit 2.4-8**. At peak times, loading may occur in the bypass lane adjacent to the loading lane.

2.4.2.6 RED EXPRESS CURBS

The Red Express Curbs will be constructed adjacent to the Main Terminal Red Curbs and serve the same purpose and function as the Blue Express Curbs do. As of late 2021, the anticipated completion date is early 2025. Subsequent landside analyses to be completed as part of the MPU assume the completion of the Red Express Curbs. This project is integrated as part of the MPU baseline conditions.

2.4.2.7 BLUE QUAD LOTS

The Blue Quad Lots are located on the Arrivals Level on the Blue side of the Main Terminal. The Blue 1 Quad Lot is in the southeast corner of the Main Terminal while the Blue 2 Quad Lot is in the southwest corner. They allow for taxi, hotel shuttle, shared ride, and charter pick-ups. The Blue 1 Quad Lot has approximately 115 feet of curb frontage, as shown on **Exhibit 2.4-9**, while the Blue 2 Quad Lot has approximately 195 feet of curb frontage, as shown on **Exhibit 2.4-10**. They each have one bypass lane and one loading lane.



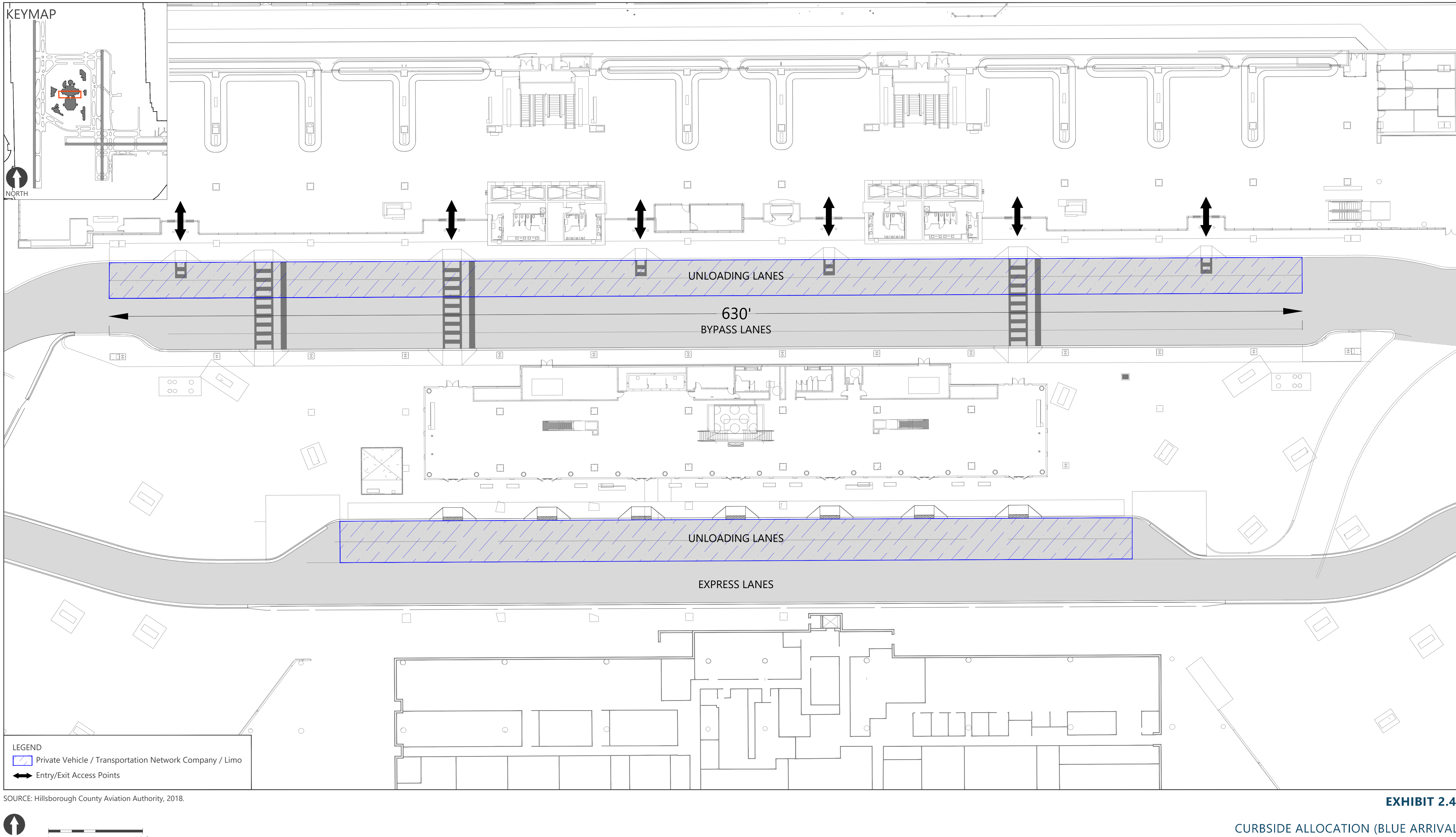
SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 50 ft

EXHIBIT 2.4-5

CURBSIDE ALLOCATION (BLUE DEPARTURES)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-5 Curbside Allocations (Blue Departures).dwgLayout: 1.4-5 Plotted: May 15, 2024, 12:14PM

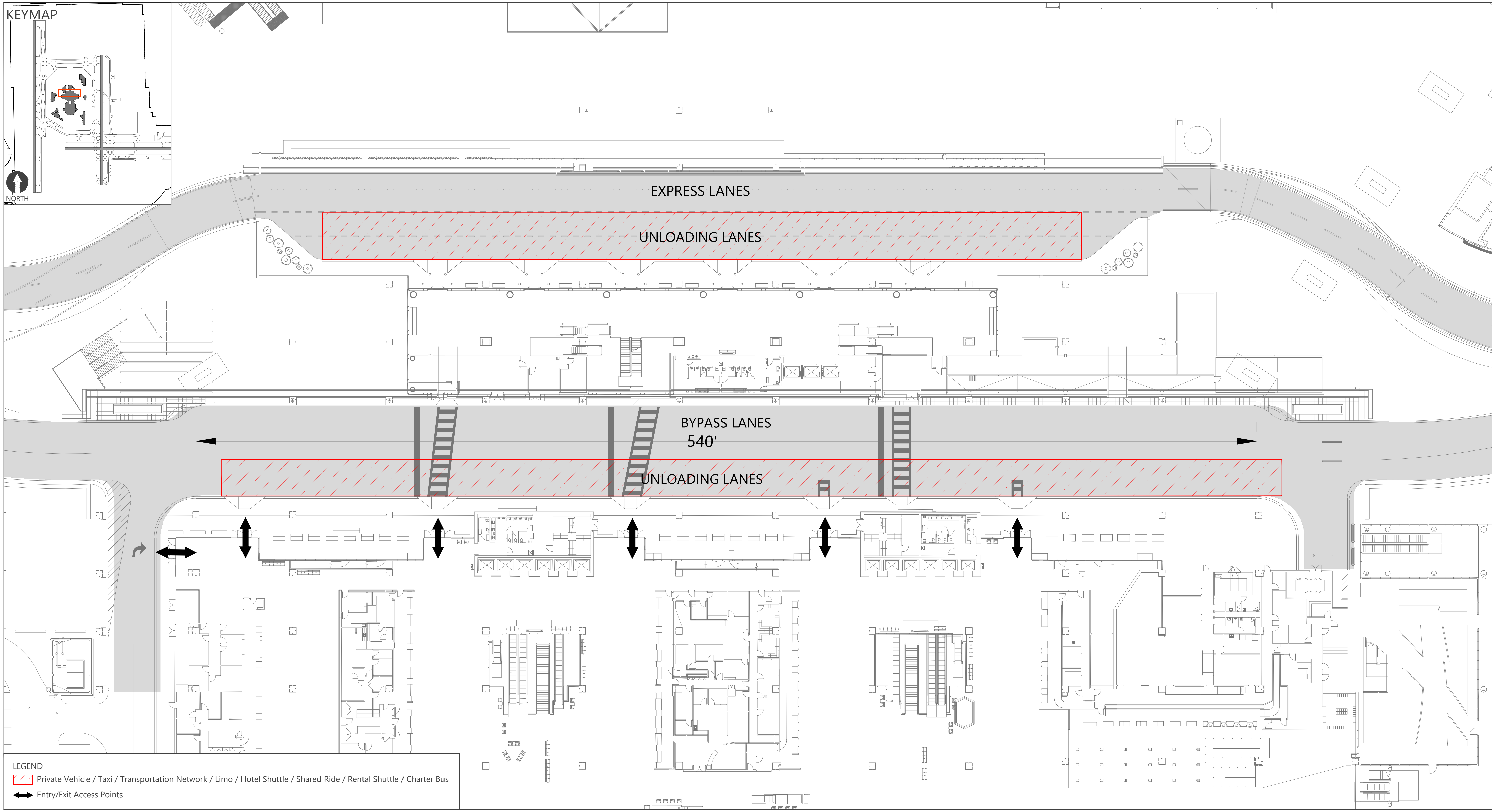


SOURCE: Hillsborough County Aviation Authority, 2018.

EXHIBIT 2.4-6

CURBSIDE ALLOCATION (BLUE ARRIVALS)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-6 Curbside Allocations (Blue Arrivals).dwgLayout: 1.4-6 Plotted: May 15, 2024, 12:14PM



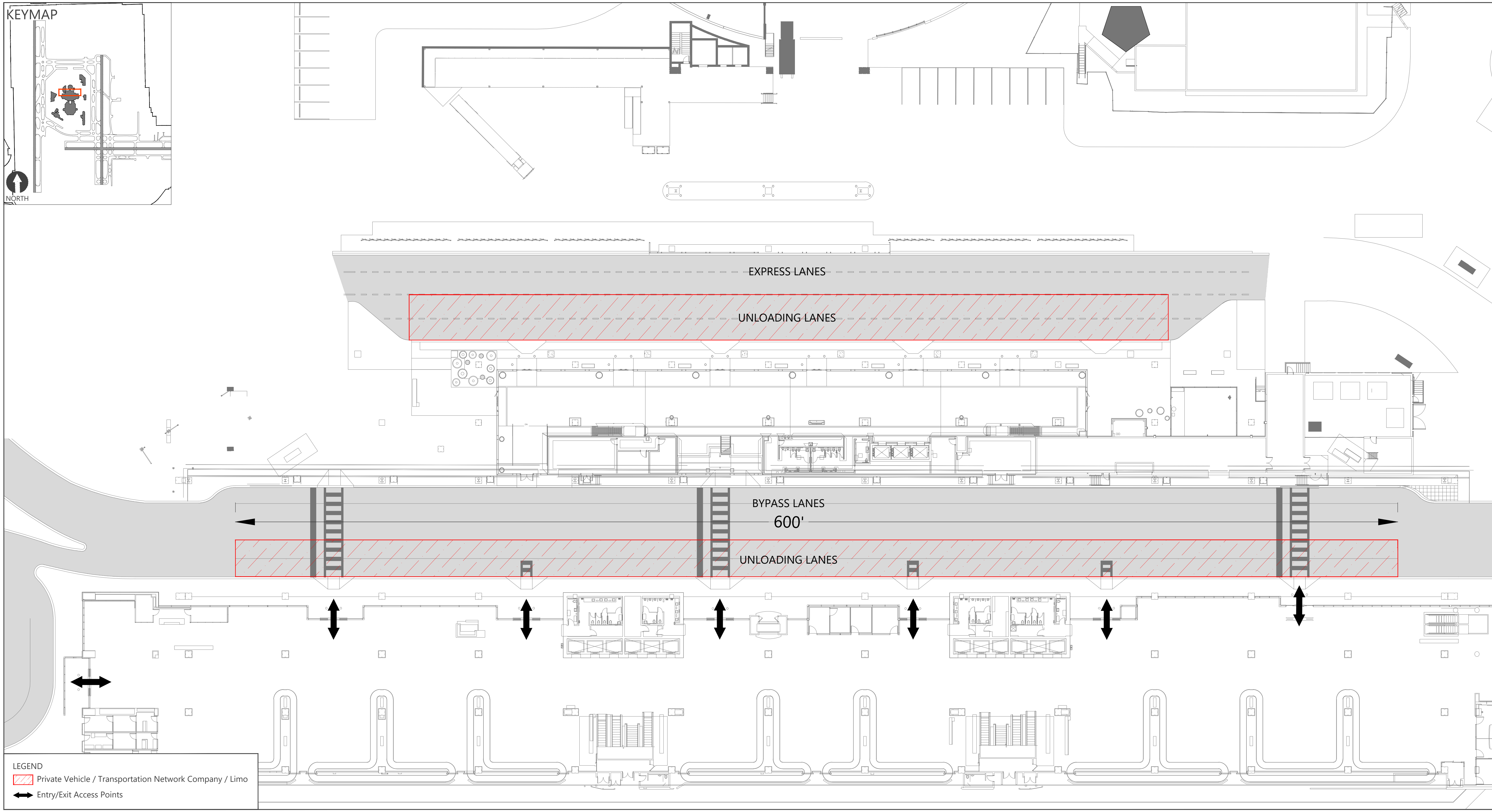
SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 50 ft

EXHIBIT 2.4-7

CURBSIDE ALLOCATION (RED DEPARTURES)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-7 Curbside Allocations (Red Departures).dwgLayout: 2.4-7 Plotted: May 15, 2024, 12:16PM

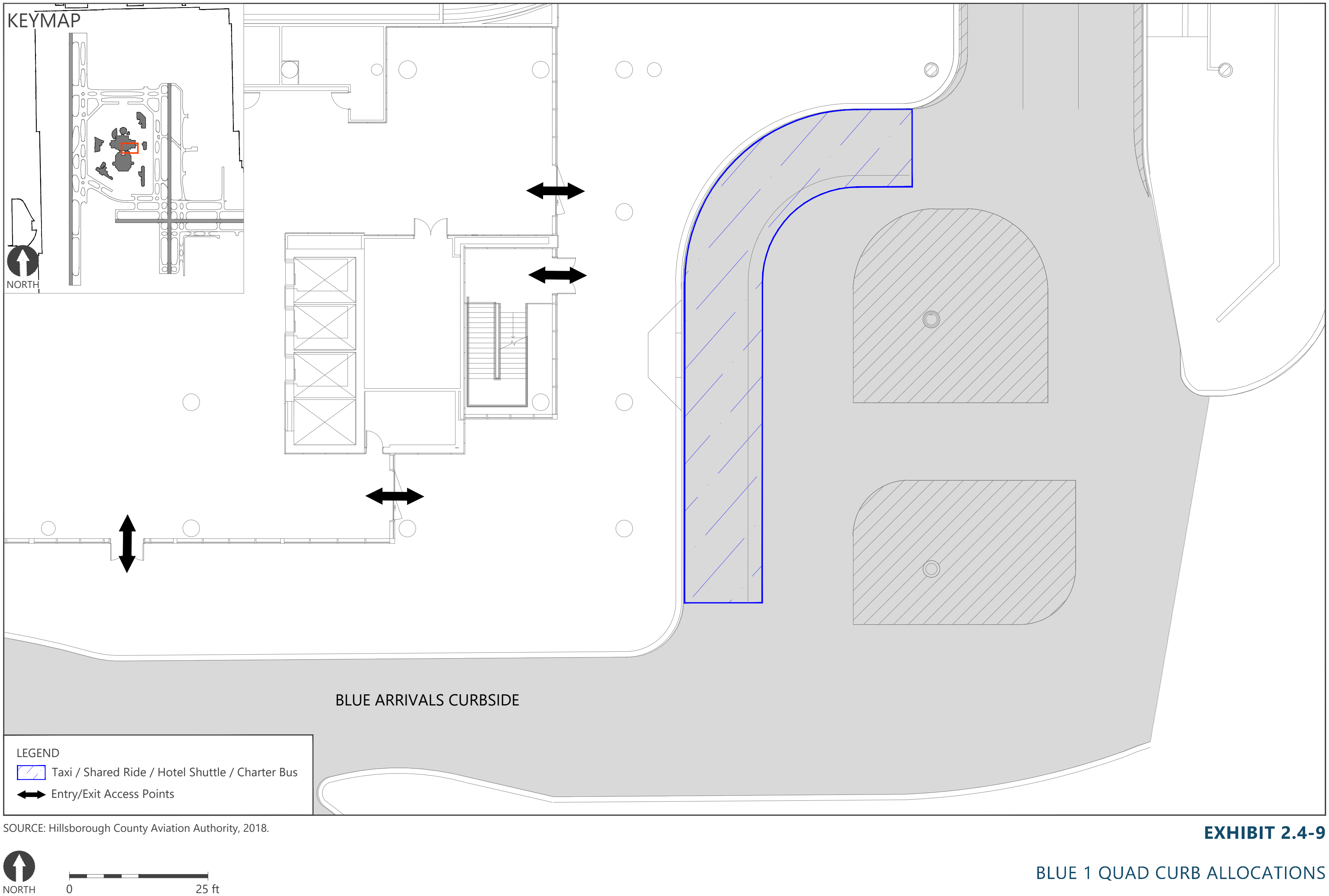


SOURCE: Hillsborough County Aviation Authority, 2018.

EXHIBIT 2.4-8

CURBSIDE ALLOCATION (RED ARRIVALS)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-8 Curbside Allocations (Red Arrivals).dwgLayout: 2.4-8 Plotted: May 15, 2024, 12:17PM

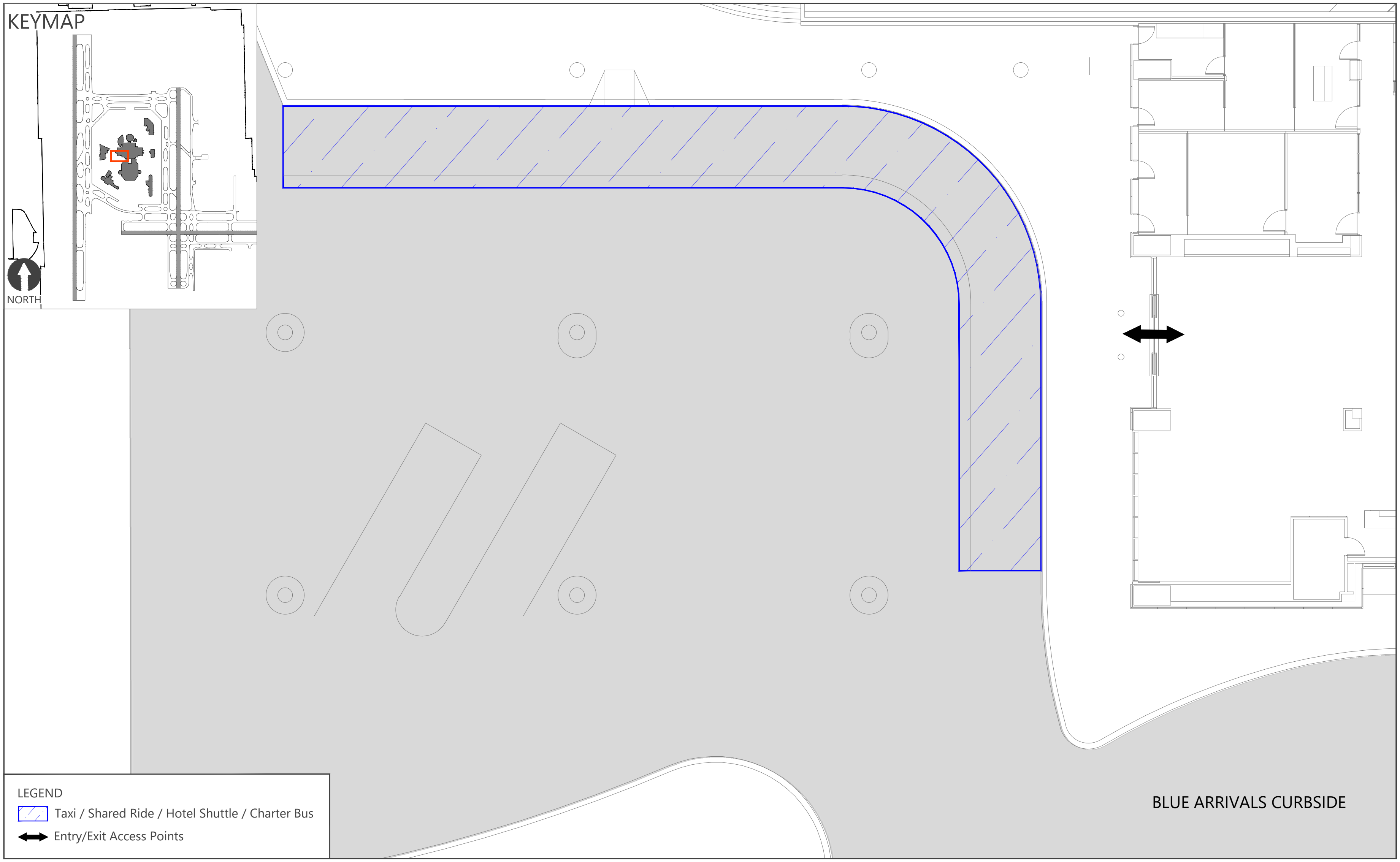


SOURCE: Hillsborough County Aviation Authority, 2018.

EXHIBIT 2.4-9

BLUE 1 QUAD CURB ALLOCATIONS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-4,9,11,12 Quad Curb Allocations.dwgLayout: 2.4-9 Plotted: May 15, 2024, 12:11PM



SOURCE: Hillsborough County Aviation Authority, 2018.

EXHIBIT 2.4-10

BLUE 2 QUAD CURBSIDE ALLOCATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-4,9,11,12 Quad Curb Allocations.dwgLayout: 2.4-10 Plotted: May 15, 2024, 12:12PM

2.4.2.8 RED QUAD LOTS

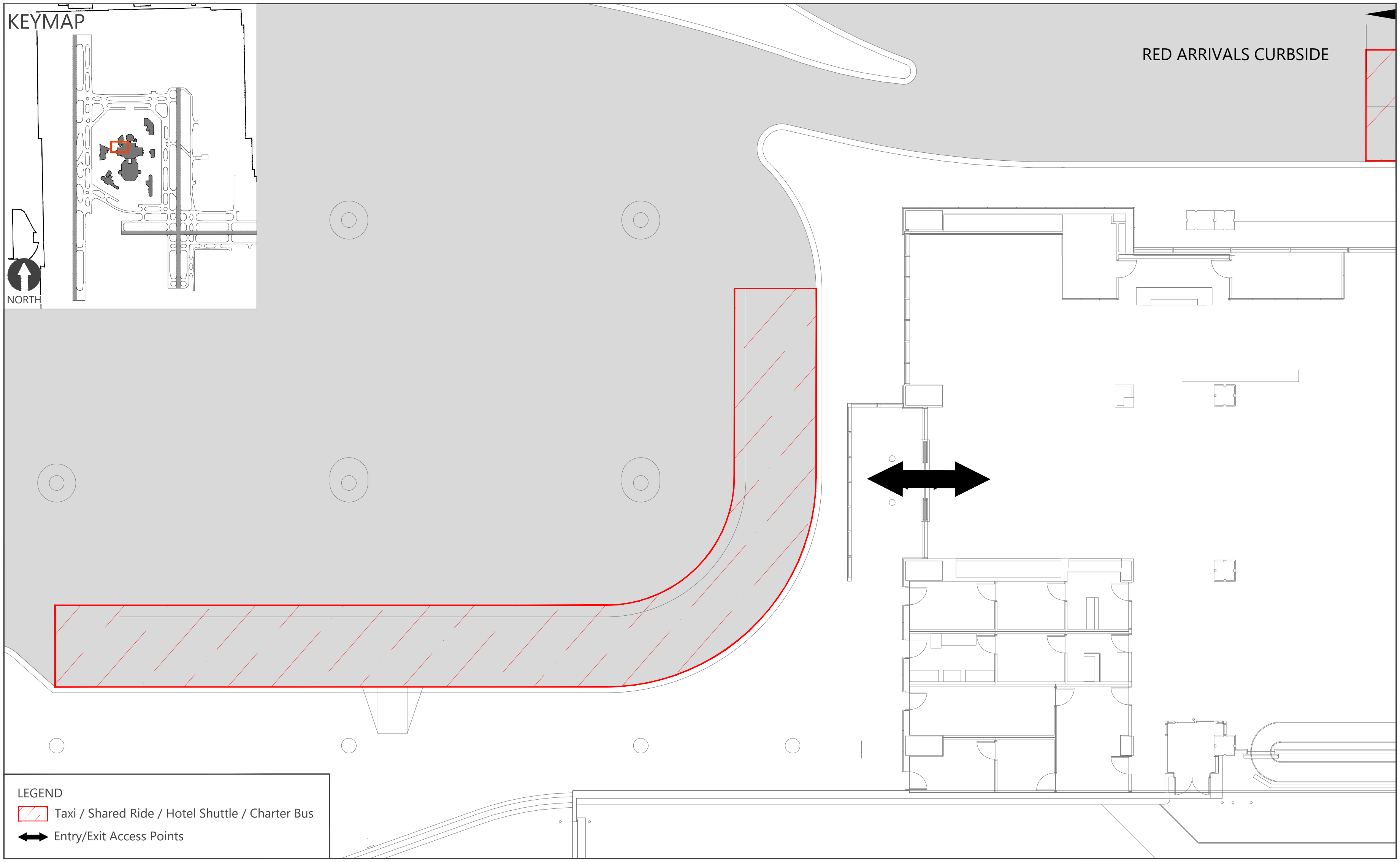
The Red Quad Lots are located on the Arrivals Level on the Red side of the Main Terminal. The Red 1 Quad Lot is in the northwest corner of the Main Terminal while the Red 2 Quad Lot is in the northeast corner. They allow for taxi, hotel shuttle, shared ride, and charter pick-ups. The Red 1 Quad Lot has approximately 180 feet of curb frontage, as shown on **Exhibit 2.4-11**, while the Red 2 Quad Lot has approximately 115 feet of curb frontage, as shown on **Exhibit 2.4-12**. They each have one bypass lane and one loading lane.

2.4.2.9 RENTAL CAR CENTER CURB

The Rental Car Center Curb is where the off-Airport parking operators, off-Airport rental car companies, and public transit stops are allocated to drop off and pick up passengers. Passengers then board the SkyConnect system to reach the Main Terminal. There is approximately 460 feet of curb frontage, as shown on **Exhibit 2.4-13**.

2.4.2.10 SKYCENTER CURB

The SkyCenter Curb opened in 2020 and is situated at the SkyCenter One office building on the west side of Airport Service Road. It currently does not have any assigned allocation but can be used for overflow purposes for passengers who wish to access the Main Terminal via the SkyConnect system if there is traffic congestion at the Main Terminal. It has approximately 600 feet of curb frontage, as shown on Exhibit 2.4-13.

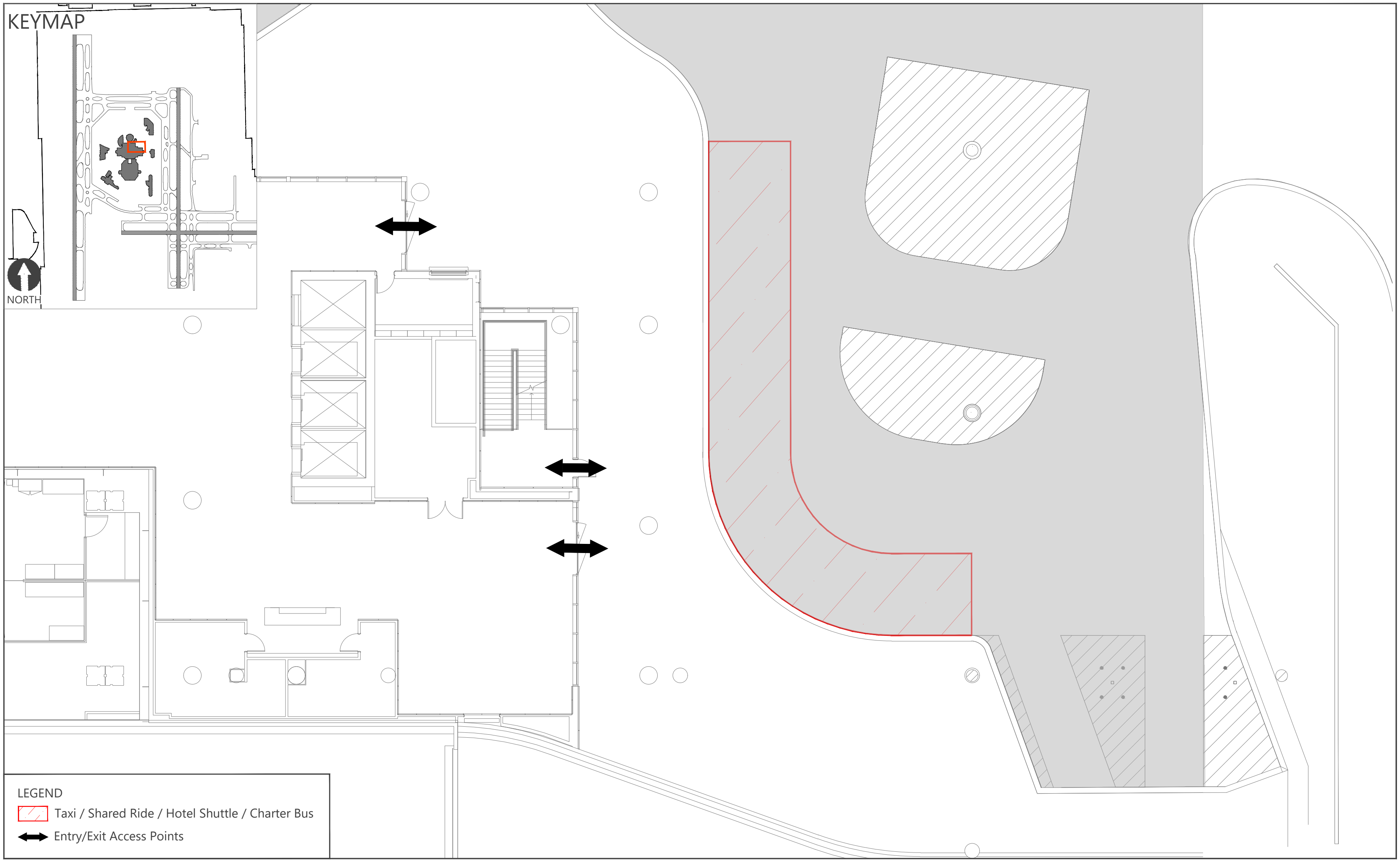


SOURCE: Hillsborough County Aviation Authority, 2018.

EXHIBIT 2.4-11

RED 1 QUAD CURB ALLOCATIONS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-4,9,11,12 Quad Curb Allocations.dwgLayout: 2.4-11 Plotted: May 15, 2024, 12:12PM



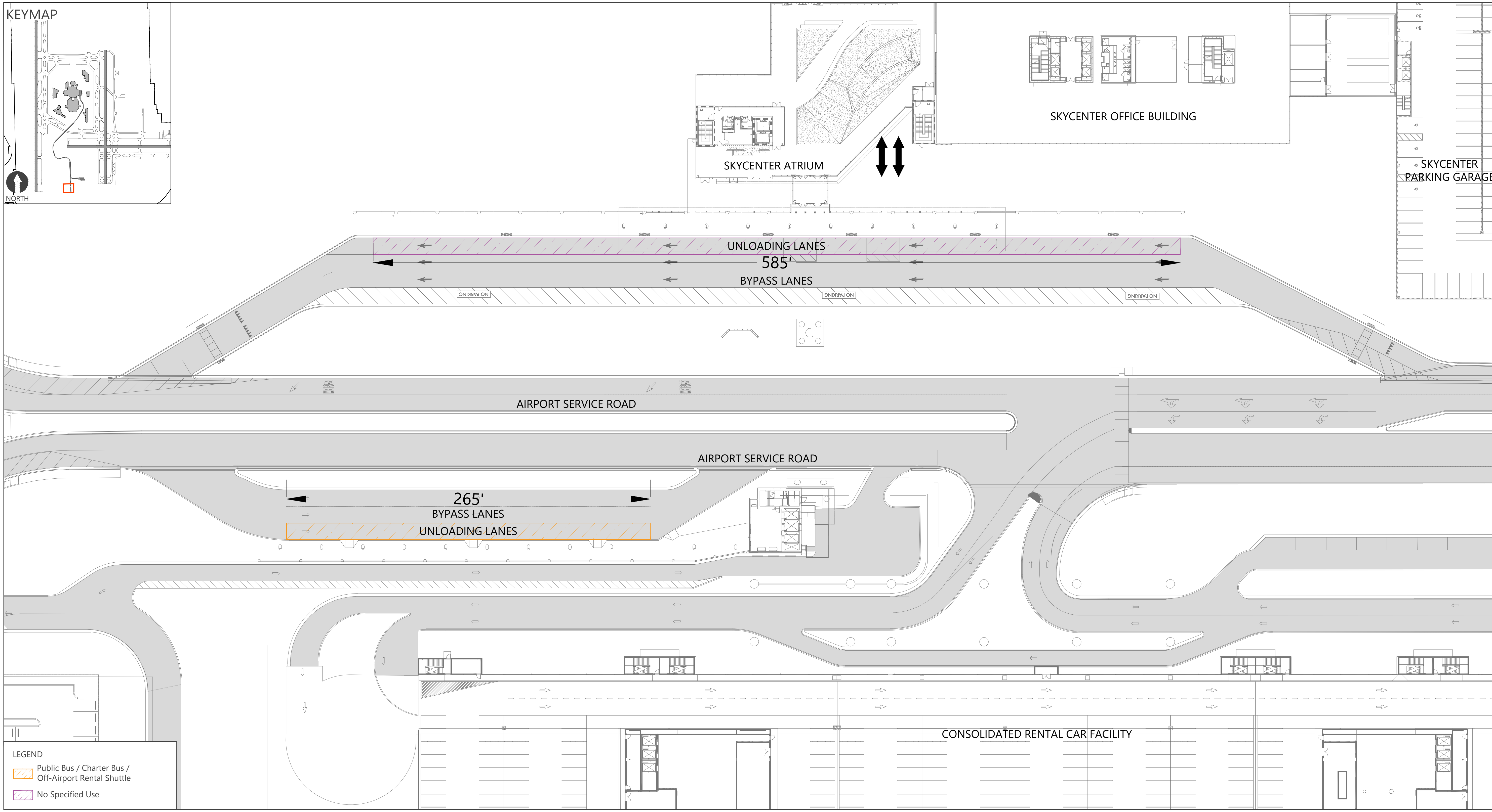
SOURCE: Hillsborough County Aviation Authority, 2018.

EXHIBIT 2.4-12

RED 2 QUAD CURB ALLOCATIONS

NORTH 0 25 ft

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-4,9,11,12 Quad Curb Allocations.dwgLayout: 2.4-12 Plotted: May 15, 2024, 12:12PM



SOURCES: *SkyCenter Site Plan*, Hellmuth, Obata & Kassabaum, Inc. *(HOK, Inc.), May 2019;* Hillsborough County Aviation Authority, 2018.

EXHIBIT 2.4-13

REMOTE AND SKYCENTER CURB ALLOCATIONS

NORTH 0 70 ft

Drawing: \\EgnyteDrive\Projects_projects\hcaa (tpa)\19041140 - 2019 gc\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-13 Remote and SkyCenter Curb Allocations.dwgLayout: 2.4-11 Plotted: May 20, 2024, 12:45PM

2.4.3 REGIONAL (OFF-AIRPORT) TRANSPORTATION SYSTEMS

The regional transportation system surrounding the Airport consists of Interstate highways, US highways, state highways and local roads that provide vehicle access to the Airport for passengers, employees, and visitors. The Florida Department of Transportation's (FDOT) future plans for major roadway reconstruction in the vicinity of the Airport are summarized below. In addition, local and regional public transportation services providing access to the Airport are presented below.

2.4.3.1 REGIONAL ROADWAYS

The regional roadway system surrounding the Airport and providing access to the Airport is shown on **Exhibit 2.4-14.** Interstate 275 (I-275) runs in an east to west direction south of the Airport. It connects the Airport to St. Petersburg and other destinations to the south and west, as well as downtown Tampa and other destinations to the north and east, extending beyond the Tampa Bay region.

Florida state route (SR) 60 is a major arterial that provides local street access from downtown Tampa, connects in an interchange with I-275 and becomes a separated highway, providing access to the Airport vis George J. Bean Parkway. SR 60 then travels west of the Airport and crosses Tampa Bay over West Courtney Campbell Causeway to Clearwater. West Spruce Street provides connectivity to the SR 60 / George J Bean Parkway from the east and provides a secondary surface street access point to the GDA.

Veterans Expressway, SR 589 provides access to the Airport from the north and west. It joins SR 60 just to the east of West Courtney Campbell Causeway to enter the Airport access interchange with George J. Bean Parkway. SR 589 intersects with West Hillsborough Avenue, SR 580, at the northwest corner of Airport property. West Hillsborough Avenue provides access to facilities on the northern portion of Airport property, such as the NEL off North Hoover Boulevard.

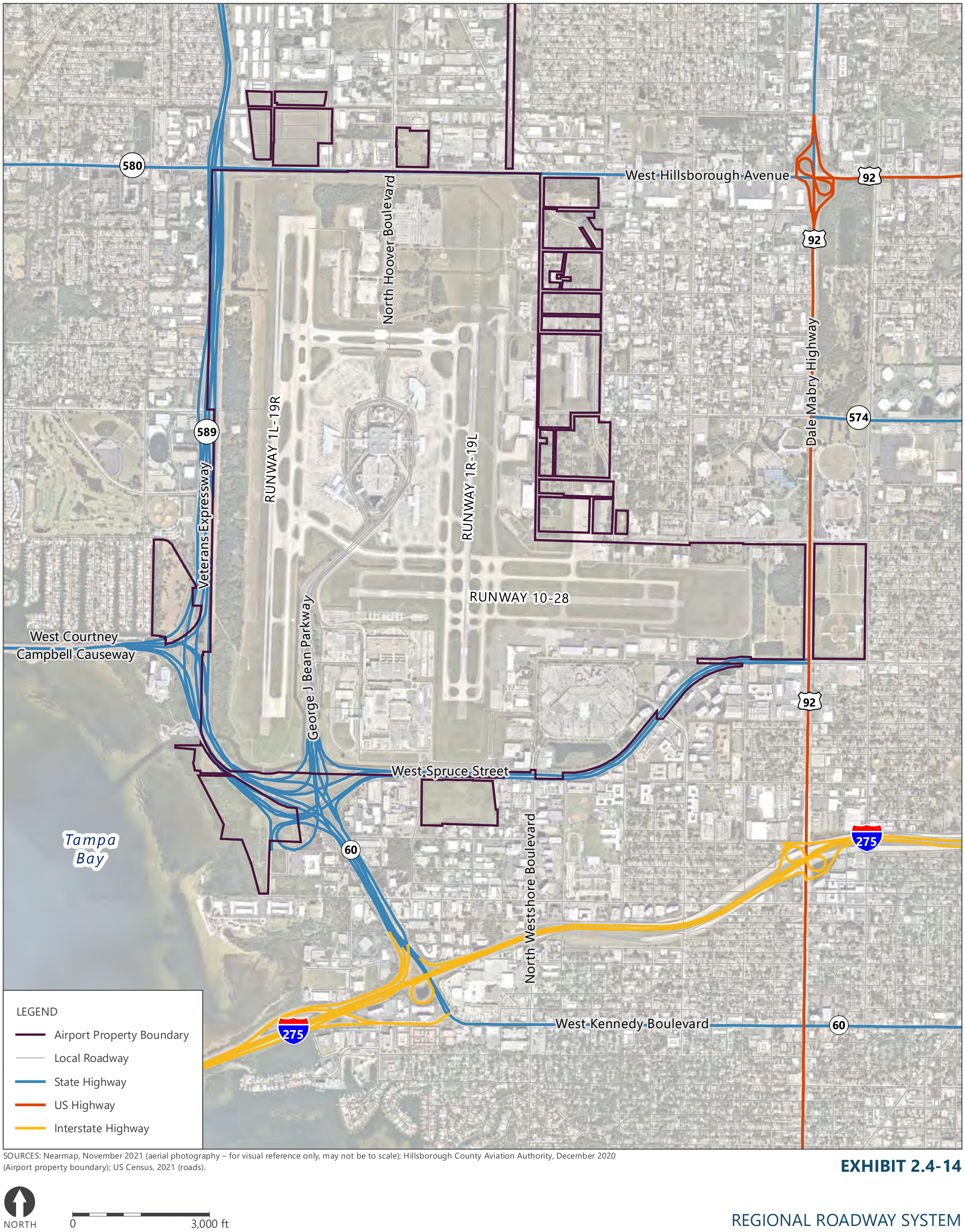
Dale Mabry Highway, US Highway 92, is a north-south highway to the east of the Airport, connecting to West Hillsborough Avenue in an interchange to the northeast of the Airport, and to I-275 in an interchange to the southeast of the Airport. US 92 also provides access to local streets on the east side of the Airport to access facilities such as cargo and FBO.

Tampa Bay Next is a series of major capital projects by FDOT for improving roadway and multimodal connectivity in the Tampa Bay area. One of those projects, the Westshore Area Interchange, directly connects to George J Bean Parkway and the Airport. As of September 2021, it is estimated to cost $405 million and is funded for construction beginning in FY2024. The project includes new express lanes accessing the Airport, and interchange reconfigurations at the I-275 / SR 60 interchange and the West Spruce Street / George J Bean Parkway / SR 60 interchange. A conceptual plan for the Westshore Area Interchange is shown on **Exhibit 2.4-15.**

2.4.3.2 PUBLIC TRANSIT BUSES

The Hillsborough Area Regional Transit Authority (HART) runs bus routes that serve the Airport: bus routes 10, 30, and 32. The number 10 bus connects the Airport with Westshore Plaza Transfer Center. The number 30 bus connects the Airport with Northwest Transfer Center and Marion Transit Center. The number 32 bus connects the Airport with Netpark Transfer Center. **Exhibit 2.4-16** depicts the regional bus routes. One-way fares are $2 for the local bus and $3 for the express bus; however, daily passes and monthly passes are also available.

Pinellas Suncoast Transit Authority (PSTA) also serves the Airport. It runs the 300X bus, with 4-times-a-day service in each direction to Tampa and to St. Petersburg. **Exhibit 2.4-17** depicts these bus routes. Fares are listed at $2.25. In the future, the PSTA would like to have three routes serving the Airport, with headway every 30 minutes. Both the HART and PSTA bus stops at the Airport are located at the RCC curb.

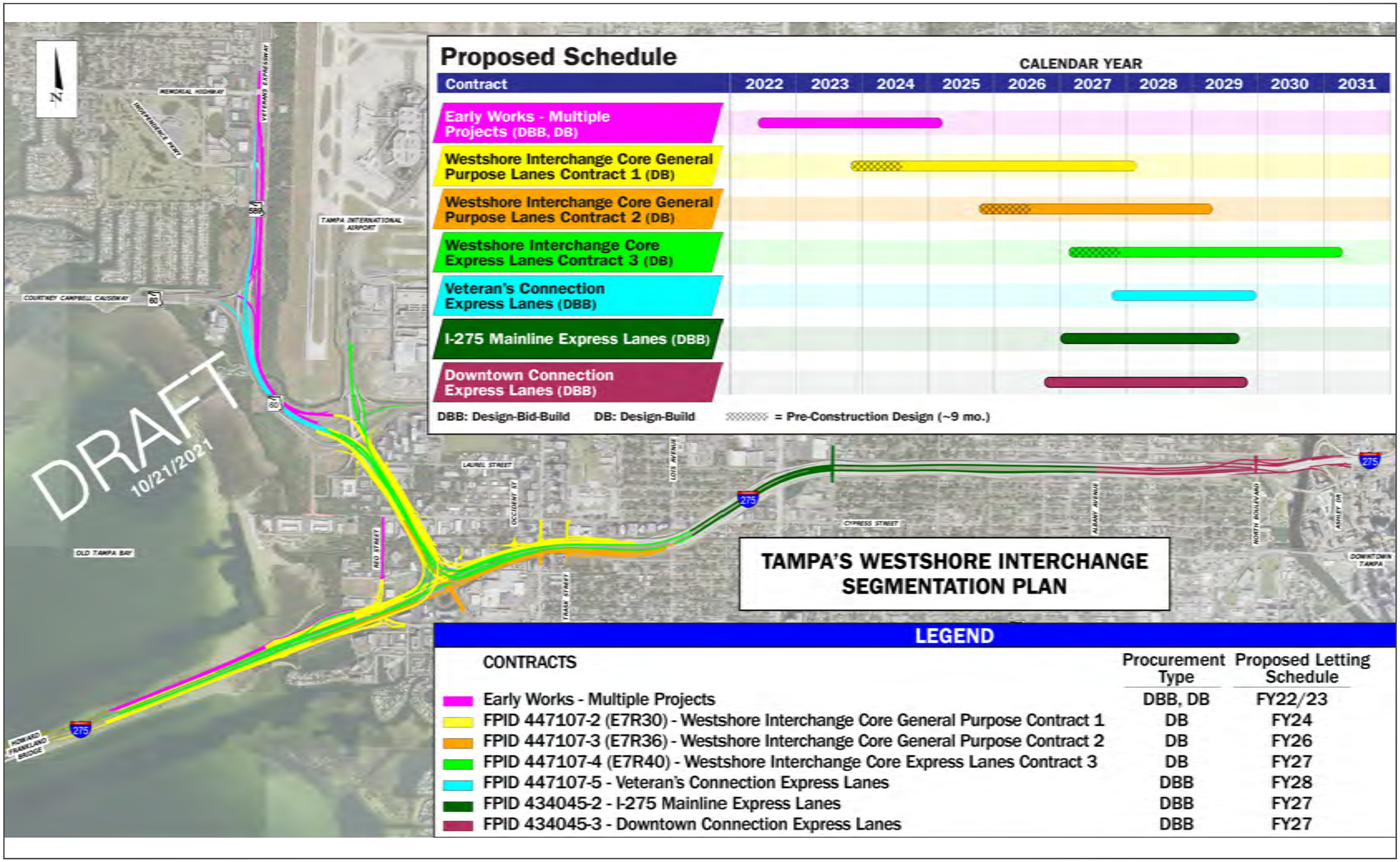


SOURCES: Nearmap, November 2021 (aerial photography – for visual reference only, may not be to scale); Hillsborough County Aviation Authority, December 2020 (Airport property boundary); US Census, 2021 (roads).

EXHIBIT 2.4-14

REGIONAL ROADWAY SYSTEM

P:\GIS\Projects\TPA\MXD\TPA_MPU_Exh1_4-14_RegionalRoadwaySystem_20220209.mxd



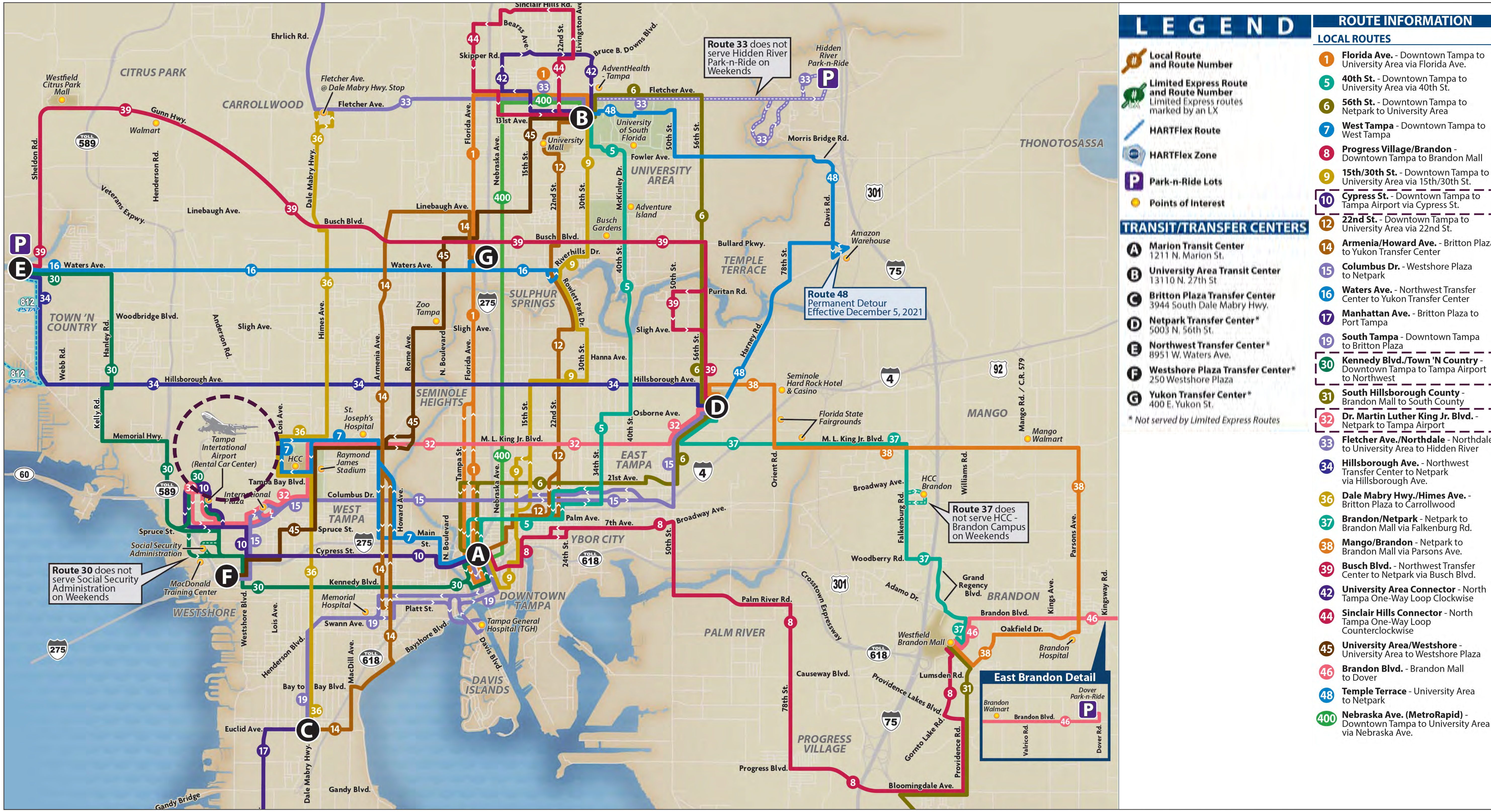
SOURCE: Tampa Bay Next Segmentation Plan, *2021.10.21-Phased-TWI-Segmentation-3-1.pdf*, October 2021.

EXHIBIT 2.4-15

CONCEPTUAL PLAN FOR WESTSHORE AREA INTERCHANGE

NORTH 0 Not To Scale

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-15 Conceptual Plan Westshore.dwgLayout: 8.5x11L Plotted: May 15, 2024, 12:25PM



SOURCE: Hillsborough Area Regional Transit Authority, December 2021.

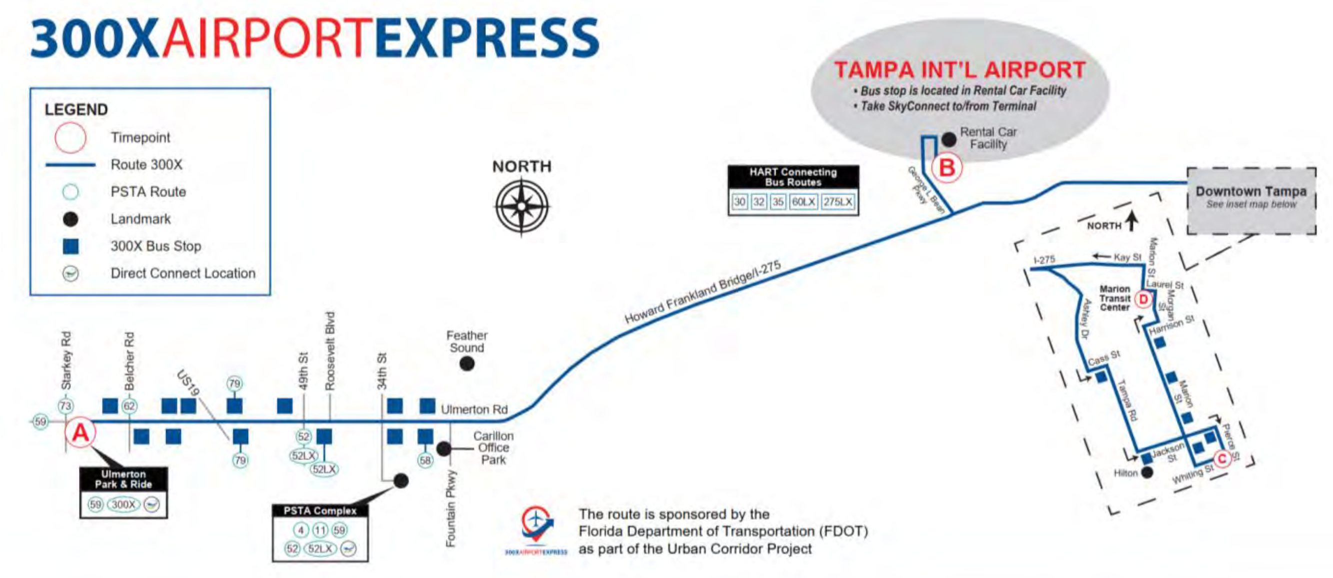
NORTH 0 Not To Scale

EXHIBIT 2.4-16

HILLSBOROUGH AREA REGIONAL TRANSIT AUTHORITY PUBLIC BUS ROUTES

Drawing: \\EgnyteDrive\Projects_projects\hcaa (tpa)\19041140 - 2019 gc\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.4-16 HART System BUSv2.dwgLayout: Layout1 Plotted: May 15, 2024, 12:28PM

EXHIBIT 2.4-17: PINELLAS SUNCOAST TRANSIT AUTHORITY REGIONAL PUBLIC BUS ROUTES



ULMERTON PARK & RIDE TO TAMPA INTERNATIONAL AIRPORT AND DOWNTOWN TAMPA
MONDAY - FRIDAY
NO SATURDAY, SUNDAY & HOLIDAY SERVICE

(A) Ulmerton Park & Ride	(B) Tampa International Airport	(C) Pierce St	(D) Marion Transit Center
6:10 AM	6:55	7:09	7:14
7:07	7:55	8:09	8:14
3:17 PM	3:55	4:13	–
4:17	4:55	5:13	–

TAMPA INTERNATIONAL AIRPORT AND DOWNTOWN TAMPA TO ULMERTON PARK & RIDE
MONDAY - FRIDAY
NO SATURDAY, SUNDAY & HOLIDAY SERVICE

(C) Pierce St	(D) Marion Transit Center	(B) Tampa International Airport	(A) Ulmerton Park & Ride
–	7:42 AM	8:00	8:45
–	8:42	9:00	9:45
4:22 PM	4:42	5:00	5:45
5:22	5:42	6:00	6:45

- Wheelchair Service Provided On All Trips
Effective 10-17-21
TIMES SHOWN ARE SCHEDULED BUT MAY VARY DUE TO TRAFFIC CONDITIONS, WEATHER OR UNFORESEEN EVENTS.

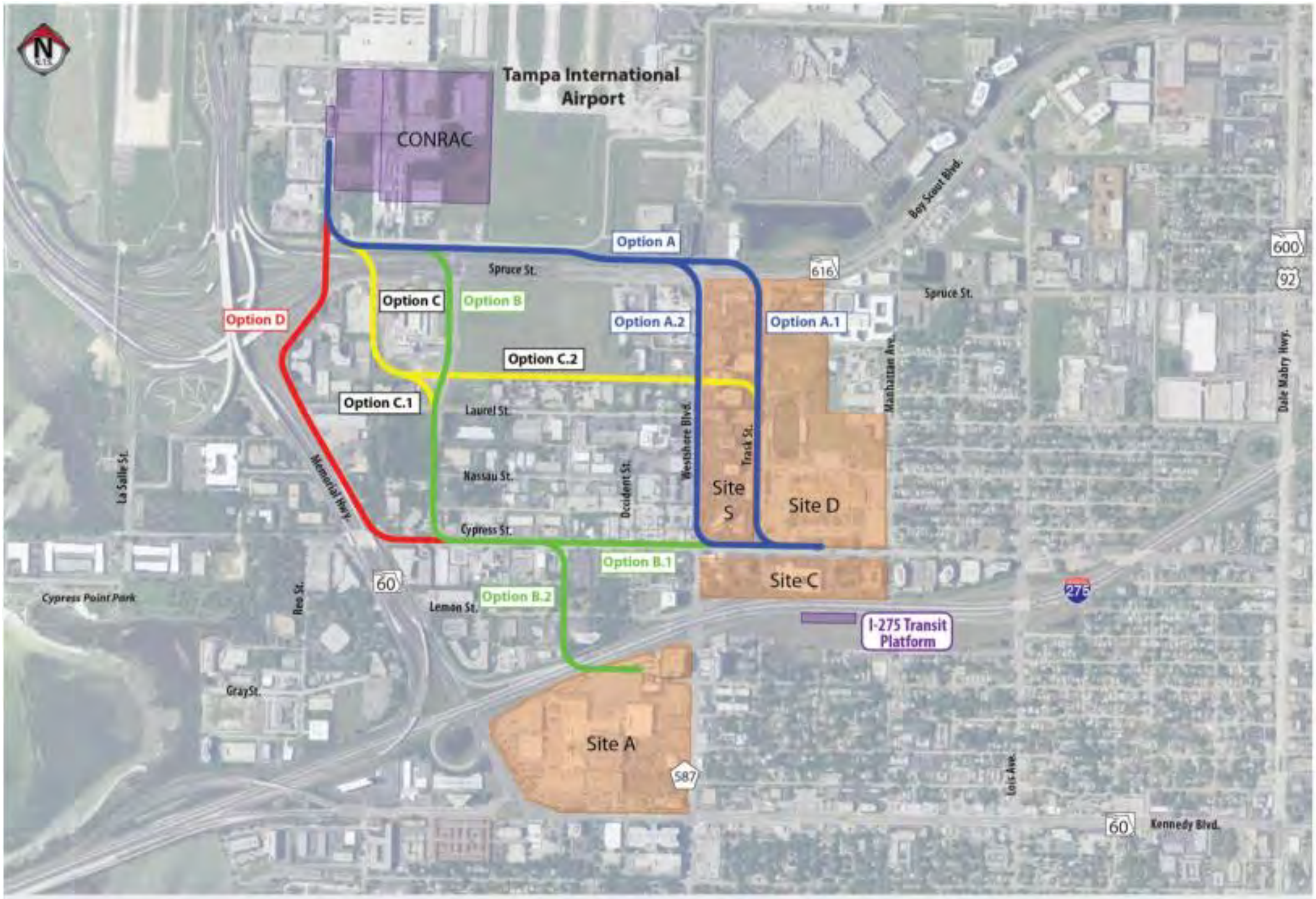
SOURCE: Pinellas Suncoast Transit Authority, 2021.

2.4.3.3 FUTURE AUTOMATED PEOPLE MOVER

In 2014, a technical feasibility study[9] was conducted by FDOT to assess a potential APM service between a Westshore Multimodal Center (serving both HART and PSTA) with the RCC at the Airport, with the goal of providing increased transit connectivity between the Airport, the Westshore Business District, and the surrounding region. It identified potential corridors for an elevated APM system to connect to the RCC at the Airport, as shown in **Exhibit 2.4-18**. Option D was the highest-scoring alternative of the conceptual alignments and continued coordination with the Westshore Interchange project described in Section 2.4.3.1 is necessary.

[9] Florida Department of Transportation, *Tampa International Airport/Westshore Multimodal Center Technical Feasibility Study Report,* May 2014, https://www.fdotd7studies.com/projects/westshore-multimodal/wp-content/uploads/sites/107/pdf/TIA_Westshore-Multimodal-Center-Technical-Feasibility-Study-Report_May-2014.pdf

EXHIBIT 2.4-18: TAMPA AIRPORT CONNECTOR AUTOMATED PEOPLE MOVER CONCEPTUAL ALIGNMENT ALTERNATIVES



SOURCE: Florida Department of Transportation, Tampa International Airport/Westshore Multimodal Center Technical Feasibility Study Report, May 2014, https://www.fdotd7studies.com/projects/westshore-multimodal/wp-content/uploads/sites/107/pdf/TIA_Westshore-Multimodal-Center-Technical-Feasibility-Study-Report_May-2014.pdf.

2.4.4 PUBLIC AND EMPLOYEE PARKING

There are various options for parking for passengers, employees, and visitors at or around the Airport. The Airport provides three public parking garages and various employee parking facilities. There are also numerous private operators of off-Airport parking that provide shuttle service to the Airport.

2.4.4.1 PUBLIC PARKING

As presented in **Table 2.4-3** and on **Exhibit 2.4-19**, three public parking facilities are available at the Airport.

SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale).

EXHIBIT 2.4-19

NORTH 0 1,000 ft

ON-AIRPORT PARKING FACILITIES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-19 On-Airport Parking Facilities.dwgLayout: Layout1 Plotted: May 27, 2024, 01:44PM

TABLE 2.4-3: ON-AIRPORT PUBLIC PARKING SUMMARY

PARKING PRODUCT	SPACES	MAXIMUM DAILY RATE	TRANSIT TO THE MAIN TERMINAL
Short-Term Parking Garage	3,582	$24	Walk
Long-Term Parking Garage	8,478	$20	Walk
Economy Parking Garage	11,085 (+205 in surface lot)	*$14*	SkyConnect
Valet Parking[1]	250 (included in Short-Term Parking Garage)	$32	Walk

NOTE:

1. *The valet parking product is no longer available in the Short-Term Parking Garage.*

SOURCE: Hillsborough County Aviation Authority, November 2021.

Short-Term Parking Garage

The Short-Term Parking Garage is a 3,582-space garage (upon completion of ongoing construction activities at the time of this MPU, it will have 3,722 spaces) located above the Main Terminal. It has six levels with a 6-foot, 8-inch clearance, and it can be accessed off George J. Bean Parkway via an entry plaza. It has a daily maximum rate of $24. Elevators provide passenger access to the Terminal. The former Valet parking, which comprises approximately 250 spaces, was also located in the Short-Term Parking Garage and is included in the space count. There was a monorail from the Short-Term Parking Garage to the Long-Term Parking Garage, but as of January 2022, service is no longer available. The monorail will be replaced with moving walkways. The removal of the monorail will add approximately 62 available spaces. **Exhibit 2.4-20** depicts a typical floorplate without the monorail.

Long-Term Parking Garage

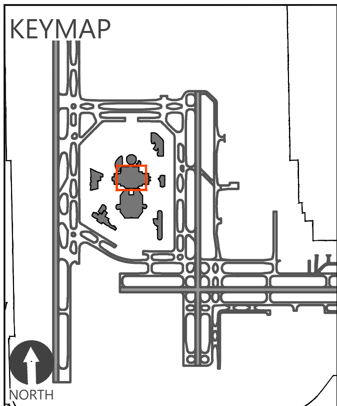
The Long-Term Parking Garage is an 8,478-space garage (upon completion of ongoing construction activities at the time of this MPU, it will have 8,862 spaces) located to the south of the Main Terminal. It has eight levels with a 7-foot, 10-inch clearance, and it can be accessed off George J. Bean Parkway via two entry plazas. It has a daily maximum rate of $20. To access the Terminal, passengers can take the pedestrian bridge to the Main Terminal. The removal of the monorail will add approximately 391 net spaces. **Exhibit 2.4-21** depicts a typical floorplate without the monorail. *Level 1 of the Long-Term Parking Garage includes parking for Airport Police and Maintenance*.

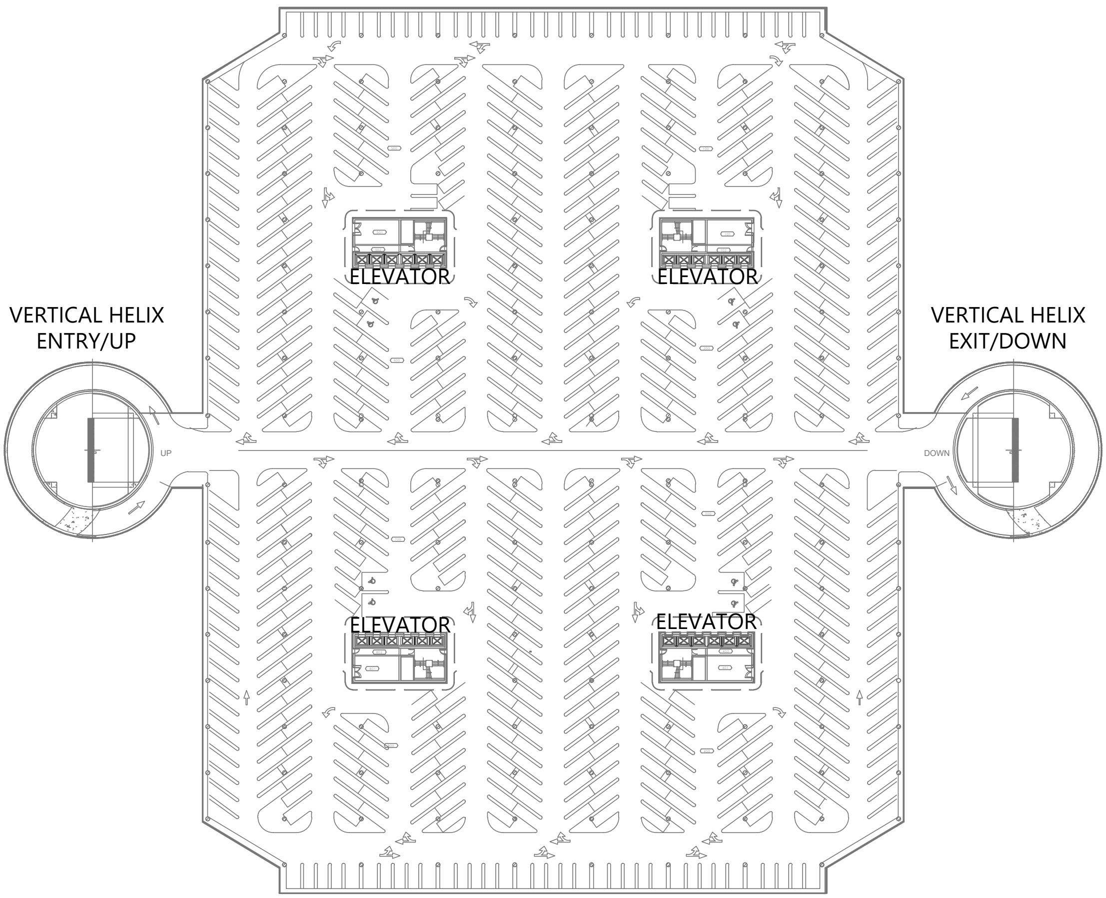
Economy Parking Garage

The Economy Parking Garage is a six-level parking facility located off Airport Service Road. The garage accommodates 11,085 spaces and has a clearance of 8 feet. To the east is a surface lot with 205 spaces for over height vehicles with a clearance of 13 feet to access it. It has a daily maximum rate of *$14*. To access the terminal, passengers take the SkyConnect system to the Main Terminal, with an approximately 7- to 10-minute headway. **Exhibit 2.4-22** depicts a typical floorplate.

Valet Parking

The former Valet parking location was located on Level 5 of the Short-Term Parking Garage. It comprised 250 spaces, which are included in the 3,582 spaces for the garage structure as stated above. The daily maximum rate was $32, and Valet parking was typically operational 24 hours per day for drop-off and operational during regular daytime hours for pick-up. Valet parking has been closed since the start of the COVID-19 pandemic, *and as of May 2024 is not anticipated to reopen*.





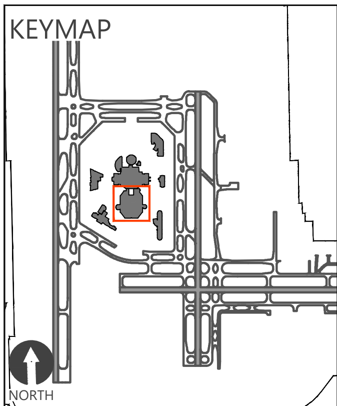
SOURCE: Hillsborough County Aviation Authority, 2018.

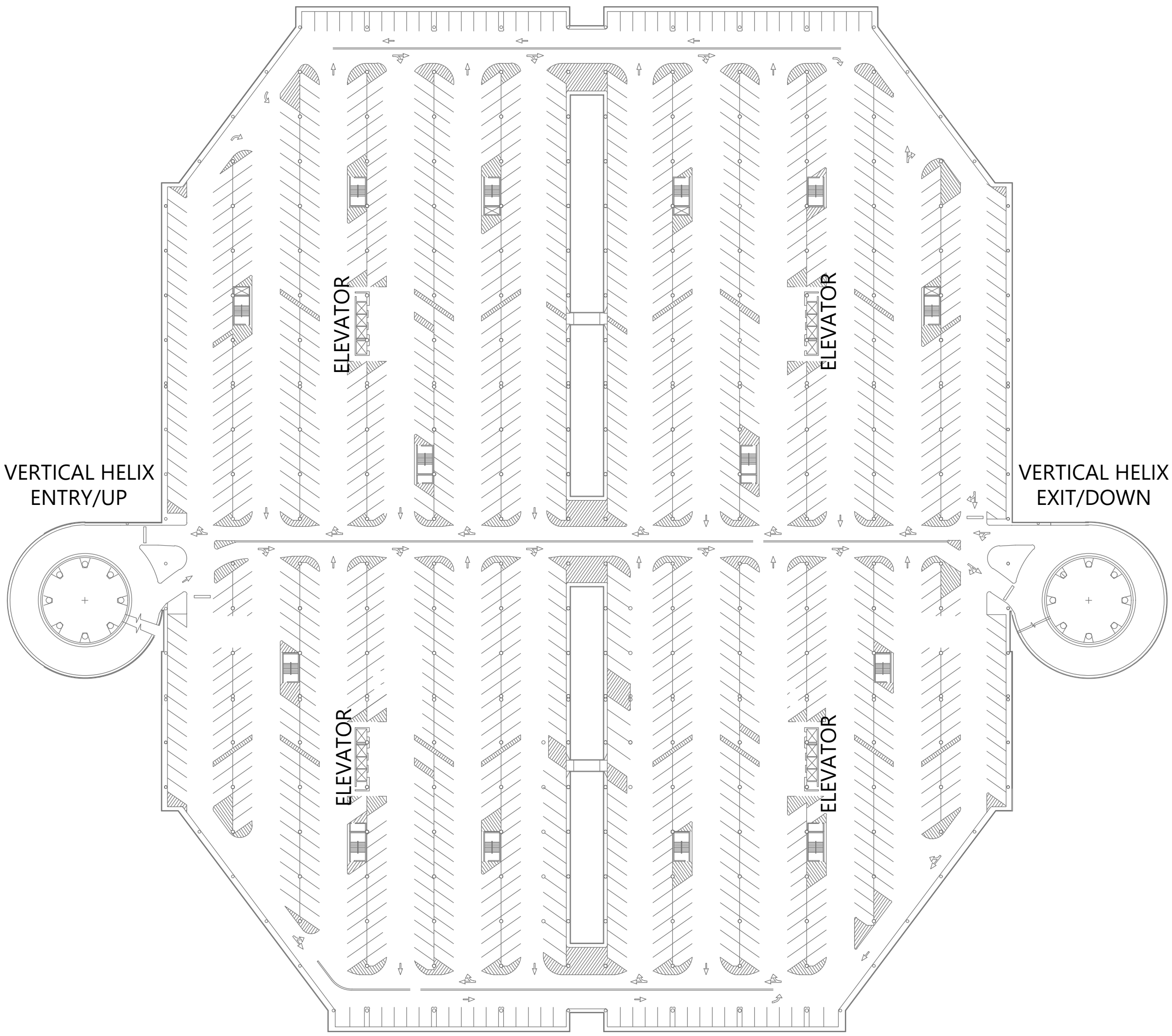
EXHIBIT 2.4-20

NORTH 0 125 ft

SHORT-TERM PARKING GARAGE FLOORPLATE

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-20 Short-Term Parking Garage Floorplate.dwgLayout: 8.5x11P Plotted: May 27, 2024, 03:32PM





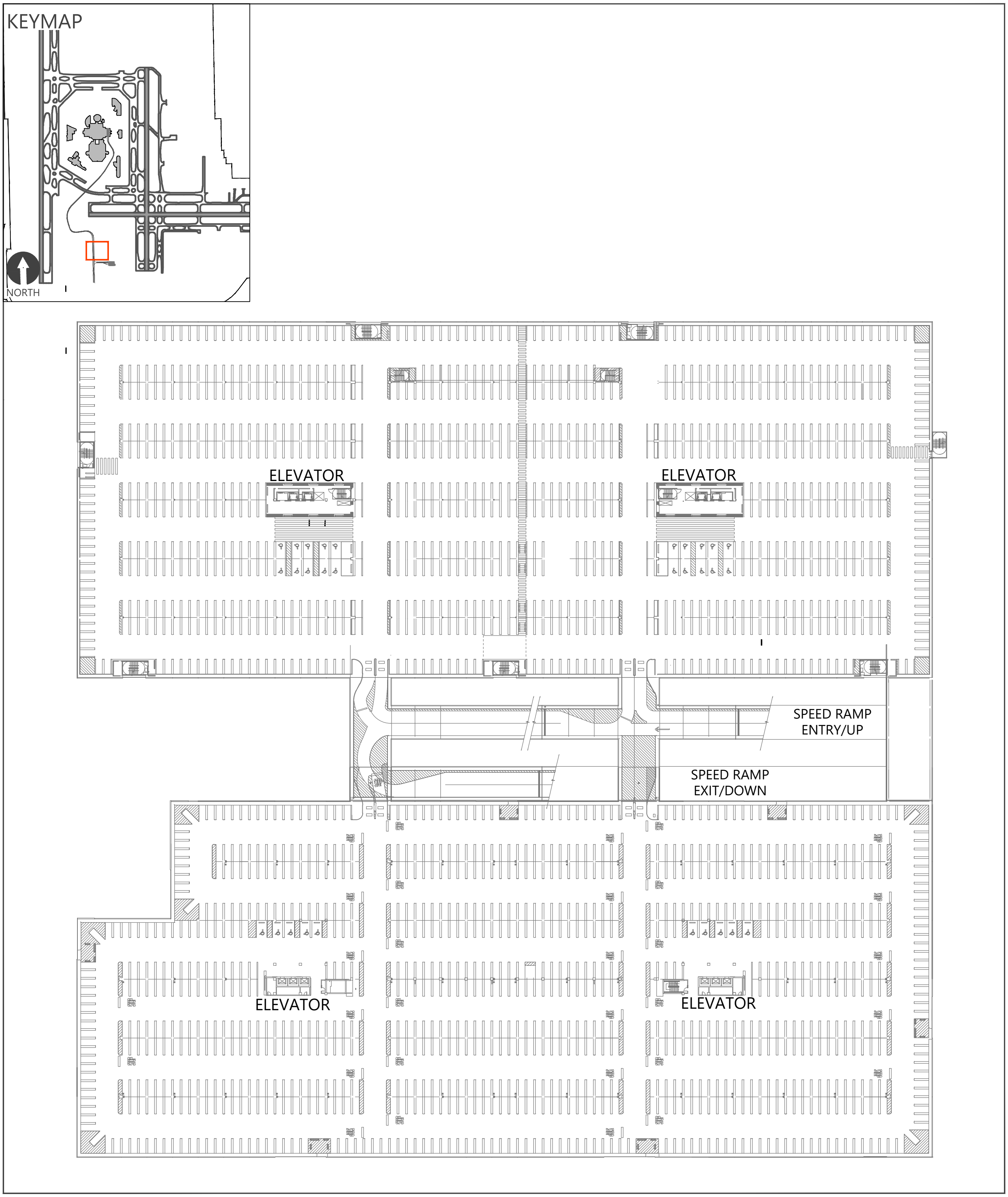
SOURCE: Hillsborough County Aviation Authority, 2018.

NORTH 0 150 ft

EXHIBIT 2.4-21

LONG-TERM PARKING GARAGE FLOORPLATE

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-21 Long-Term Parking Garage Floorplate.dwgLayout: 8.5x11P Plotted: May 27, 2024, 03:48PM



SOURCE: Hillsborough County Aviation Authority, November 2021.

EXHIBIT 2.4-22

ECONOMY PARKING GARAGE FLOORPLATE

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-22 Economy Parking Garage Floorplate.dwgLayout: 8.5x11P Plotted: May 27, 2024, 04:03PM

2.4.4.2 OFF-AIRPORT PARKING

There are several locations for the public to park off-Airport. As of December 2021, five off-Airport parking operators served the Airport, as depicted on **Exhibit 2.4-23** and summarized in **Table 2.4-4**.

TABLE 2.4-4: OFF-AIRPORT PUBLIC PARKING SUMMARY

PRODUCT	MAXIMUM DAILY RATES STARTING AT	DISTANCE (MILES)
Memorial Airport Parking	$6.75	3.2
Premium Parking	$5.00	3.1
Safeway Parking	$4.00	3.2
A-1 Express Airport Parking	$7.00	0.7
Westshore Grand Hotel	$5.95	3.0

SOURCE: Safeway Parking Enterprises, https://www.safewayparking.com/airport-parking/ (accessed January 28, 2022); Memorial Airport Parking, https://www.memorialairportparking.com/ (accessed January 28, 2022); A-1 Express Airport Parking, https://www.a1expressairportparking.com/ (accessed January 28, 2022); Premium Parking, https://www.premiumparking.com/P2902, (accessed January 28, 2022); Westshore Grand TPA Airport Parking, https://www.way.com/parkingdetails/6385165/Westshore-Grand-TPA-Airport-Parking (accessed February 18, 2022).

Memorial Airport Parking

Memorial Airport Parking is an off-Airport parking provider located 3.2 miles away at 6010 West Chelsea Street, off of SR 589. The operator has a loyalty program and charges $6.75 per day for surface parking.

Premium Parking

Premium Parking is located about 3.1 miles away from the Airport at 6020 Jarvis Street, off SR 589. The operator charges $5.00 per day.

Safeway Parking

Safeway Parking is located at 4999 West Gray Street, south of I-275. The operator offers a daily rate of $4.00 and provides online reservations.

A-1 Express Airport Parking

A-1 Express Airport Parking is located at 5317 Avion Park Drive in the Westshore District. It offers the option for a car wash and parking in a garage. Daily rates are advertised to start at $7.00.

Westshore Grand Hotel

The Westshore Grand Hotel, located at 4860 West Kennedy Boulevard, offers airport parking to the public. Rates start at $5.95 per day and the airport shuttle runs on a 30-minute headway.

2.4.4.3 EMPLOYEE PARKING

Employee parking is primarily accommodated in the NEL, north of the Airport, with the entrance off North Hoover Boulevard. This lot has 2,615 spaces and has a clearance of 14 feet, 4 inches. There is a shuttle bus service that transports employees from the lot to the Main Terminal Red Departures Curb. The NEL is shown on **Exhibit 2.4-24**.

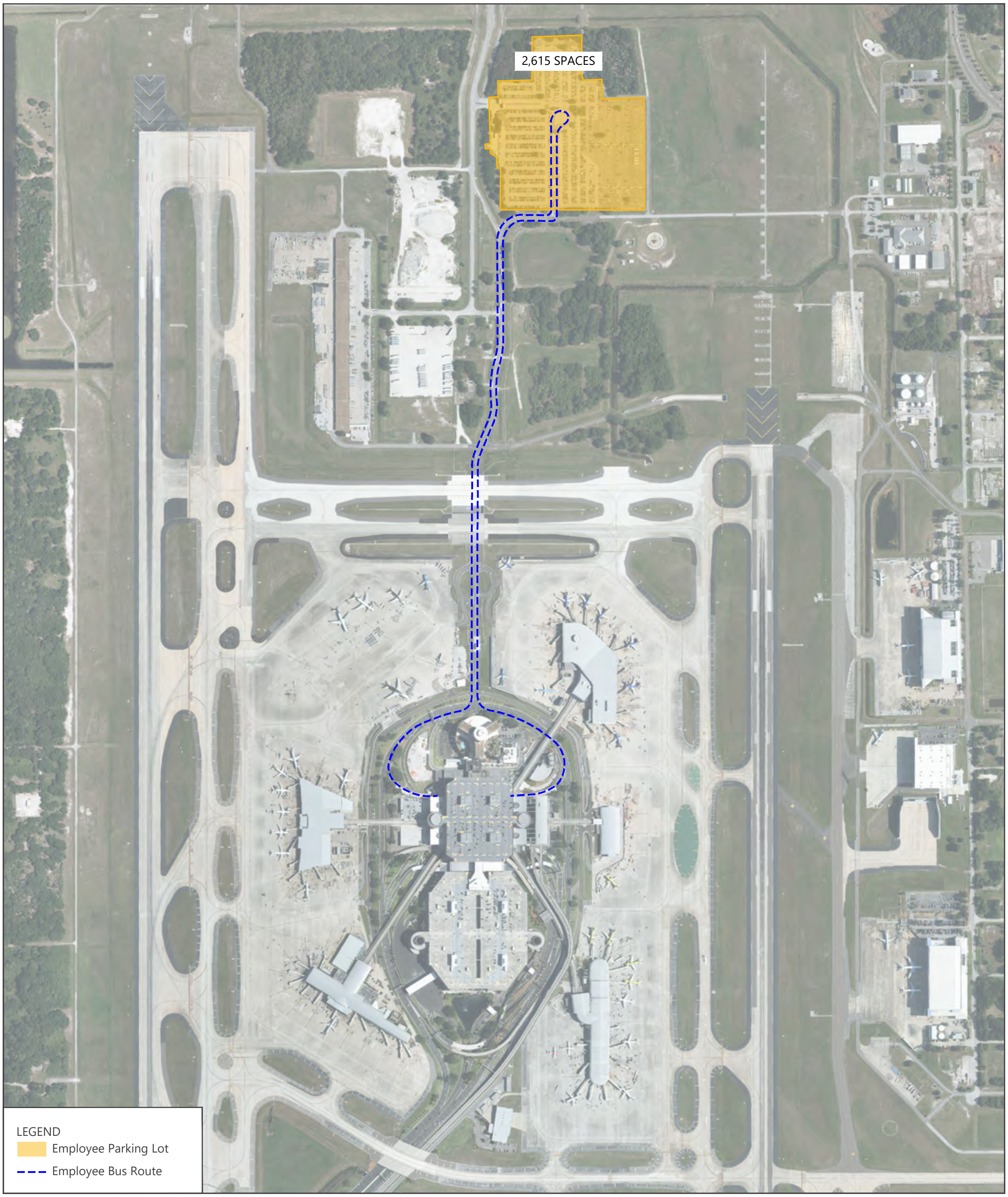
SOURCES: Google Earth Pro 7.3.4.8, Tampa International Airport (Imagery Date 12/2019); Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale)..

NORTH 0 2,000 ft

EXHIBIT 2.4-23

OFF-AIRPORT PARKING

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-23 Off Airport Parking.dwgLayout: Layout1 Plotted: May 27, 2024, 04:12PM



SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale).

EXHIBIT 2.4-24

EMPLOYEE PARKING

NORTH 0 1,000 ft

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-24 Employee Parking.dwgLayout: Layout1 Plotted: May 27, 2024, 04:17PM

2.4.5 RENTAL CAR FACILITIES

The RCC opened in February 2018 to the south of the Main Terminal at the southern end of the Airport. It is connected to the terminal via the SkyConnect system that runs approximately every 7 to 10 minutes. The RCC is located in the GDA, on the east side or Airport Service Road, to the south of the Economy Parking Garage, as shown on **Exhibit 2.4-25**.

The RCC is a four-level facility. There are three levels of ready/return (Levels 1 through 3), with a quick turnaround (QTA) area at the back of each of those floors for the respective companies on that floor. **Table 2.4-5** identifies the companies on their respective levels. The RCC contains three large holding companies, each with multiple brands: Enterprise Holdings, Inc., Hertz Corporation, and Avis Budget Group. There are six additional companies present in the RCC, collectively referred to as the Independent Operators: Roam, Executive Car Rental, Fox Rent A Car, NextCar, and Sixt.

The customer service area is located on the top floor (Level 4), which is also the level to access the SkyConnect system. Vehicle storage areas for all companies are also located on Level 4. **Exhibit 2.4-26** shows Level 1 of the RCC, with ready/return and QTA space for Enterprise Holdings, Inc. **Exhibit 2.4-27** shows Level 2 of the RCC for the Hertz Corporation ready/return and QTA space. The ready/return and QTA space for the Avis Budget Group and the independent operators is shown on **Exhibit 2.4-28**. The customer service areas and vehicle storage areas for all companies are shown on **Exhibit 2.4-29**.

TABLE 2.4-5: RENTAL CAR CENTER LEVEL ALLOCATIONS

LEVEL	CAR RENTAL COMPANIES
Level 1	Enterprise Holdings, Inc.: Enterprise, Alamo, National
Level 2	Hertz Corporation: Hertz, Dollar Rent a Car, Thrifty Car Rental
Level 3	Avis Budget Group: Avis, Budget, Payless Independent Operators: Roam, Executive Car Rental, Fox Rent A Car, NextCar, Sixt
Level 4	Customer Service Area and Vehicle Storage Area for all companies

SOURCE: Hillsborough County Aviation Authority, February 2022.

SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale).

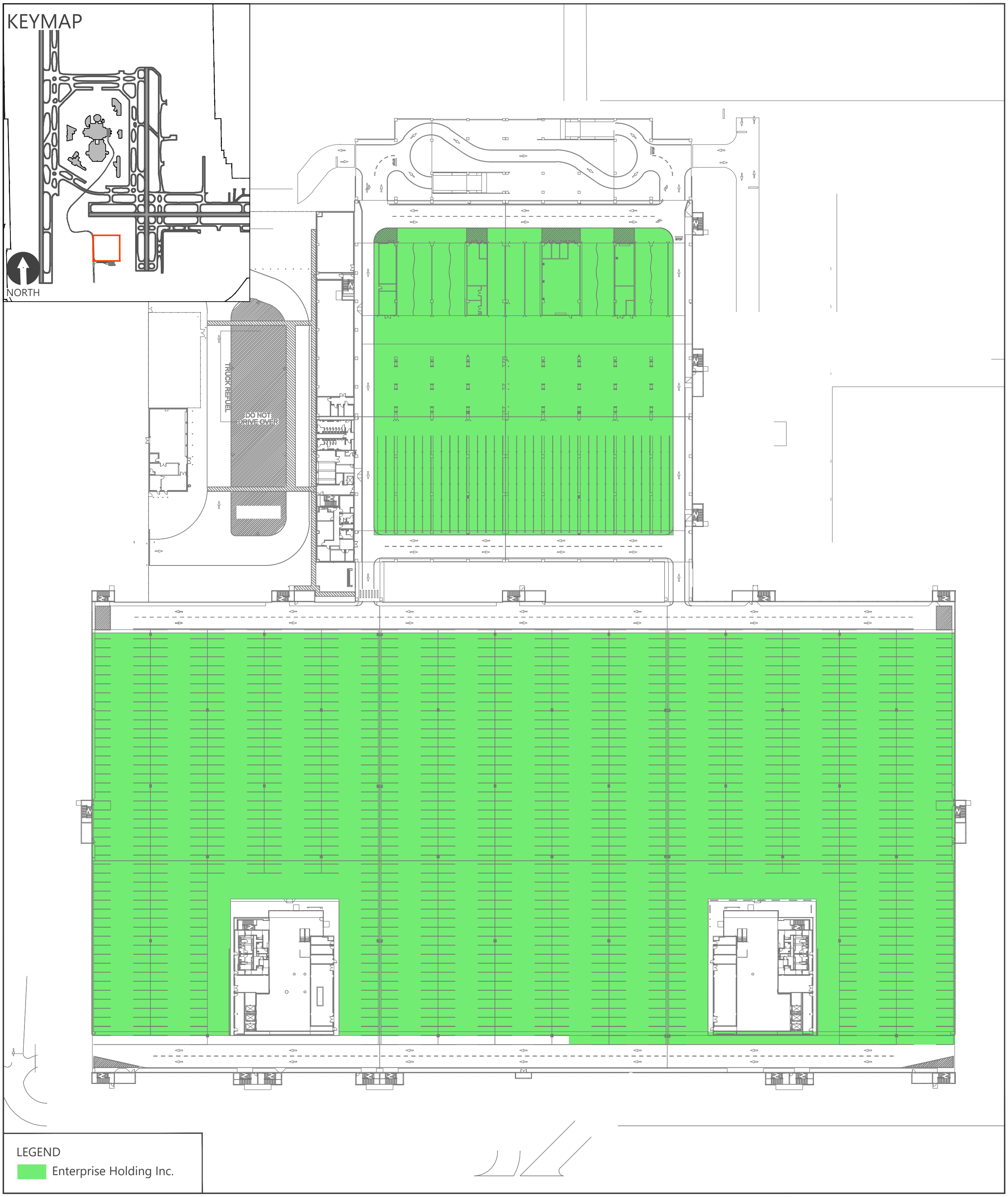
EXHIBIT 2.4-25

RENTAL CAR CENTER

NORTH

0 1,000 ft

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-25 Rental Car Center.dwgLayout: Layout1 Plotted: May 27, 2024, 04:22PM



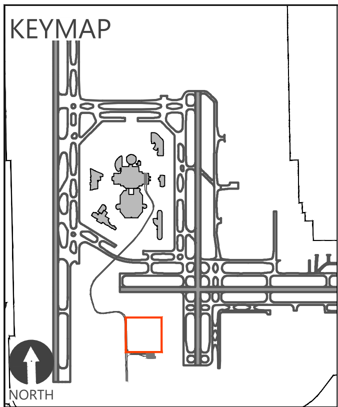
SOURCE: Hillsborough County Aviation Authority, April 2021.

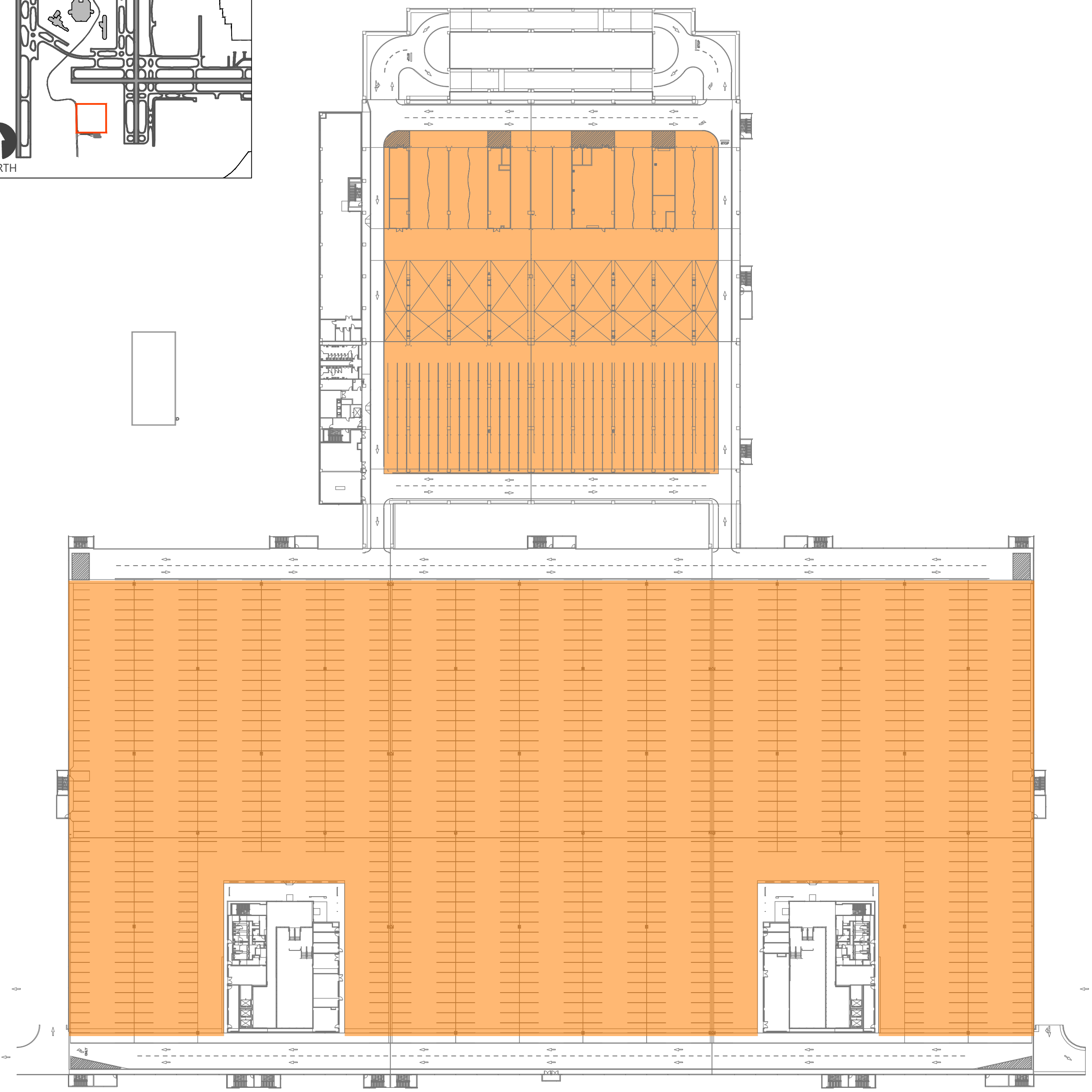
NORTH 0 150 ft

EXHIBIT 2.4-26

RENTAL CAR CENTER FLOORPLATE
LEVEL 1

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-26 CONRAC LV 1.dwgLayout: 2.4-26 Plotted: May 27, 2024, 04:31PM





LEGEND
Hertz Corporation

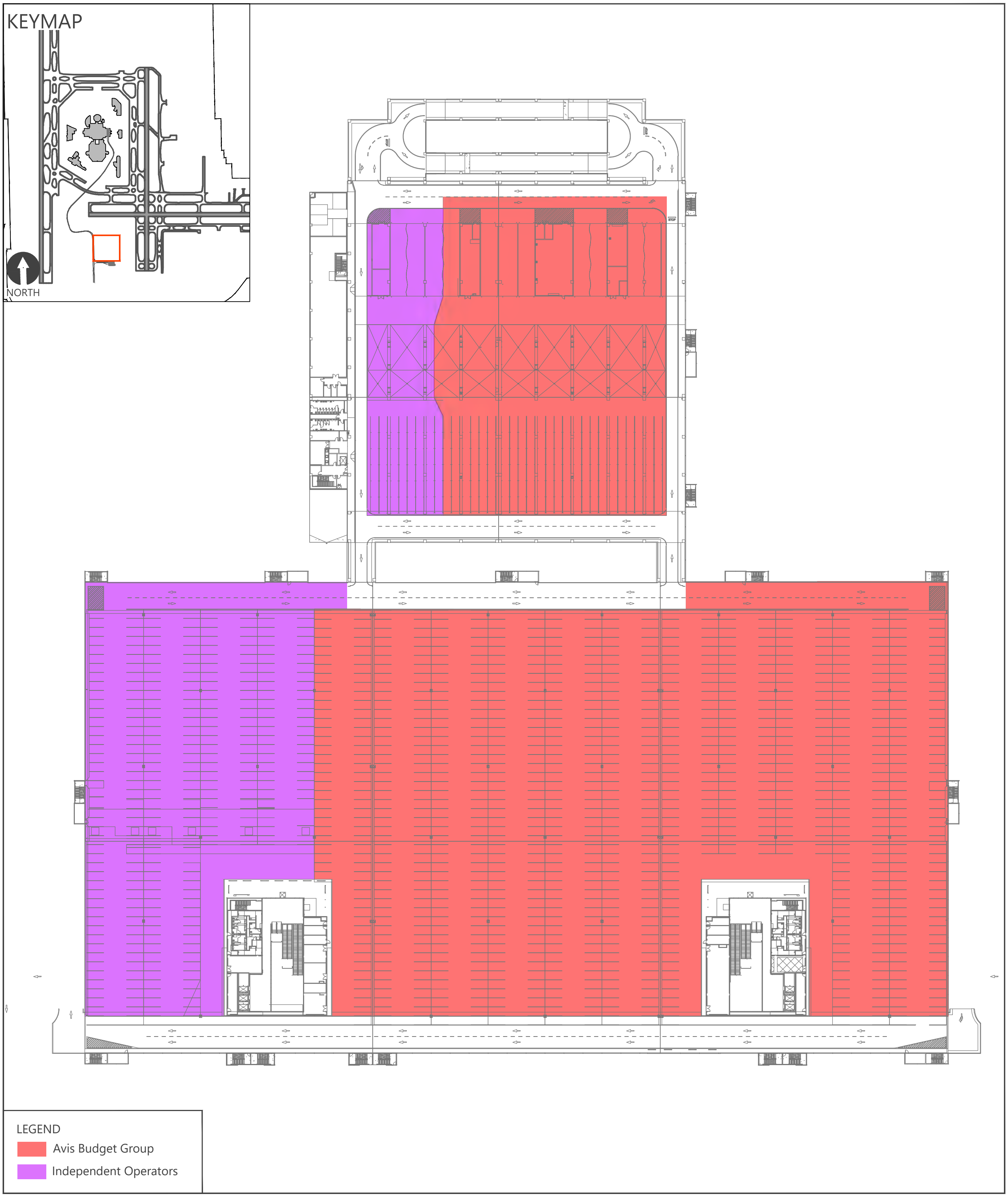
SOURCE: Hillsborough County Aviation Authority, April 2021.

NORTH 0 150 ft

EXHIBIT 2.4-27

RENTAL CAR CENTER FLOORPLATE
LEVEL 2

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-27 CONRAC LV 2.dwgLayout: 8.5x11P Plotted: May 27, 2024, 05:06PM



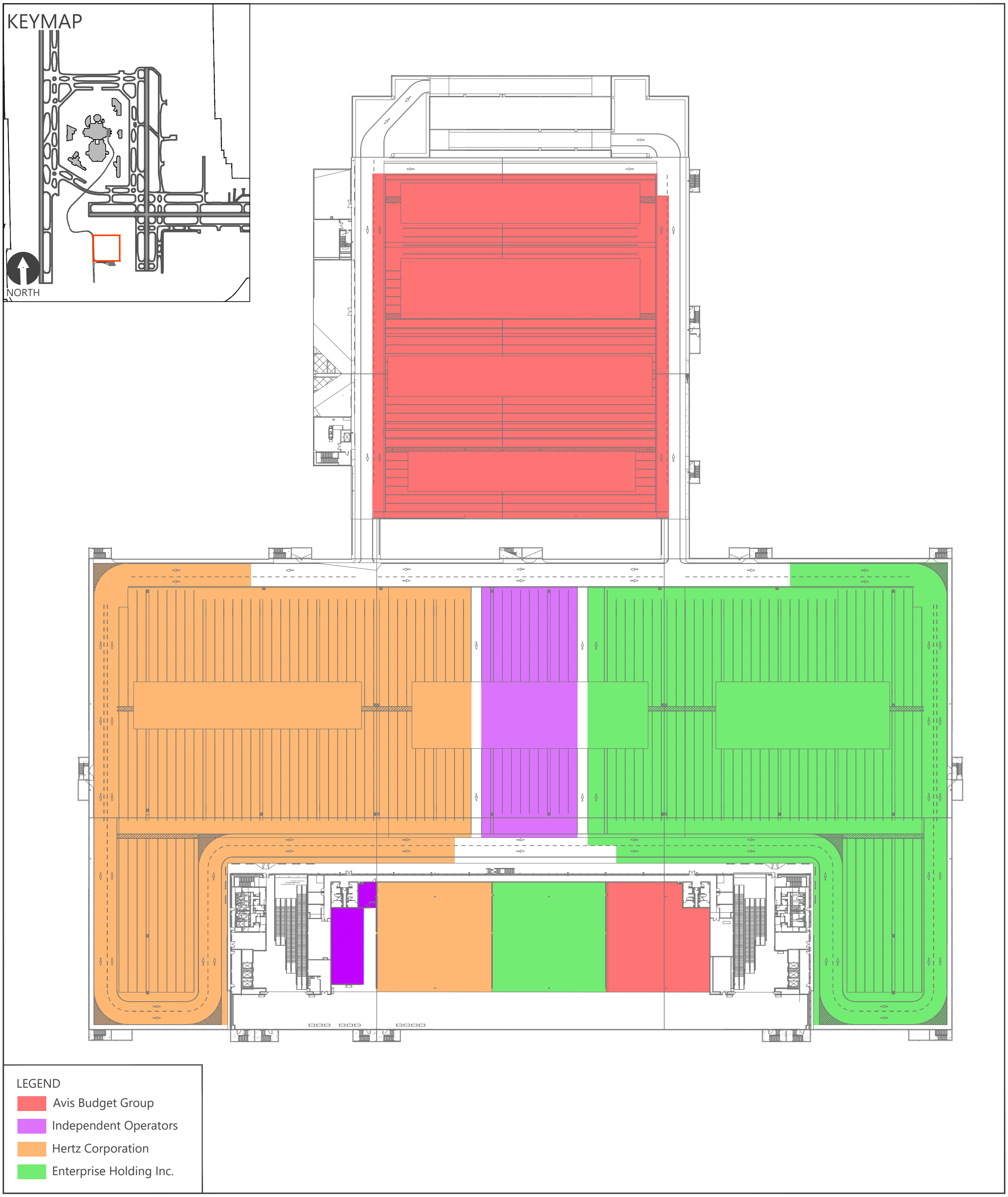
SOURCE: Hillsborough County Aviation Authority, April 2021.

NORTH 0 150 ft

EXHIBIT 2.4-28

RENTAL CAR CENTER FLOORPLATE
LEVEL 3

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-28 CONRAC LV 3.dwgLayout: 2.4-28 Plotted: May 27, 2024, 05:52PM



SOURCE: Hillsborough County Aviation Authority, April 2021.

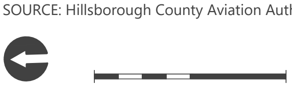


EXHIBIT 2.4-29

RENTAL CAR CENTER FLOORPLATE
LEVEL 4

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-29 CONRAC LV 4.dwgLayout: 2.4-29 Plotted: May 27, 2024, 06:00PM

2.4.5.1 QUICK TURNAROUND AREAS

The QTAs contain the car wash and refueling infrastructure for the rental car companies. In addition, each company has vehicle stacking space to store vehicles before going through the wash and refueling processes. The QTA is a separate structure from the rest of the RCC and is connected with vehicle ramps on each level. This configuration allows for each company to cycle vehicles from the ready/return areas to the QTA without vertical circulation. **Table 2.4-6** shows the QTA allocations by company.

TABLE 2.4-6: RENTAL CAR CENTER QUICK TURNAROUND AREAS

COMPANY	LEVEL	OPERATIONAL SPACE (SQ. FT.)[1]	CAR WASH BAYS[2]	FUELING POSITIONS	VEHICLE STACKING SPACES[3]	ADMIN / OTHER SPACE (SQ. FT.)[4]
Enterprise Holdings, Inc.	1	102,101	10	48	224	7,302
Hertz Corporation	2	102,101	10	48	224	7,458
Avis Budget Group	3	79,196	7	36	168	3.240
Roam	3	1,080	3	1	N/A	207
Executive Car Rental	3	1,080	3	1	N/A	303
Fox Rent A Car	3	3,240	3	4	N/A	207
NextCar	3	1,080	3	3	N/A	560
Sixt	3	2,160	6	3	N/A	862

NOTES:

- Operational space includes car wash bays, fueling positions, and vehicle stacking spaces.
- The three car wash bays for the Independent Operators are shared; there are not three for each company individually.
- The number of vehicle stacking spaces are not reported for the Independent Operators but the space for that function is included in the operational space.
- The 560 square feet reported for Sixt and NextCar is the total shared by those two companies; the division of space for each is not reported.

SOURCE: Hillsborough County Aviation Authority, February 2022.

2.4.5.2 READY/RETURN AREAS

The ready/return areas contain vehicle stacking rows, where customers return rented vehicles; and vehicle parking spaces, where the companies park vehicles that are ready to be picked up by customers. Each company may structure their space differently, depending on their product offerings and return processes. **Table 2.4-7** shows the ready/return space allocations by company.

TABLE 2.4-7: RENTAL CAR CENTER READY/RETURN SPACE

COMPANY	LEVEL	OPERATIONAL SPACE (SQ. FT.)	ADMIN / OTHER SPACE (SQ. FT.)
Enterprise Holdings, Inc.	1	358,971	346
Hertz Corporation	2	357,425	768
Avis Budget Group	3	273,458	288
Roam	3	11,844	-
Executive Car Rental	3	11,373	-
Fox Rent A Car	3	14,817	-
NextCar	3	14,817	-
Sixt	3	28,061	-

SOURCE: Hillsborough County Aviation Authority, February 2022.

2.4.5.3 VEHICLE STORAGE AREAS

Vehicle storage areas for each company are located on Level 4. Vehicles are typically stored in a stacked configuration to maximize the utilization of limited space. **Table 2.4-8** shows the vehicle storage area by company.

TABLE 2.4-8: RENTAL CAR CENTER VEHICLE STORAGE AREAS

COMPANY	LEVEL	STORAGE SPACE (SQ. FT.)	NUMBER OF PARKING ROWS
Enterprise Holdings, Inc.	4	139,995	35
Hertz Corporation	4	144,481	37
Avis Budget Group	4	112,197	38
Roam	4	2,634	1
Executive Car Rental	4	2,634	1
Fox Rent A Car	4	7,904	3
NextCar	4	5,269	2
Sixt	4	7,903	3

SOURCE: Hillsborough County Aviation Authority, February 2022.

2.4.5.4 CUSTOMER SERVICE AREAS

Each company operates a customer service area on Level 4 that contains check-in desks to process customer rentals, as well as other company office functions. **Table 2.4-9** shows the customer service area allocation by company.

TABLE 2.4-9: RENTAL CAR CENTER CUSTOMER SERVICE AREAS

COMPANY	LEVEL	STORAGE SPACE (SQ. FT.)
Enterprise Holdings, Inc.	4	13,476
Hertz Corporation	4	13,476
Avis Budget Group	4	11,495
Roam	4	378
Executive Car Rental	4	430
Fox Rent A Car	4	430
NextCar	4	424.5
Sixt	4	802.5

SOURCE: Hillsborough County Aviation Authority, February 2022.

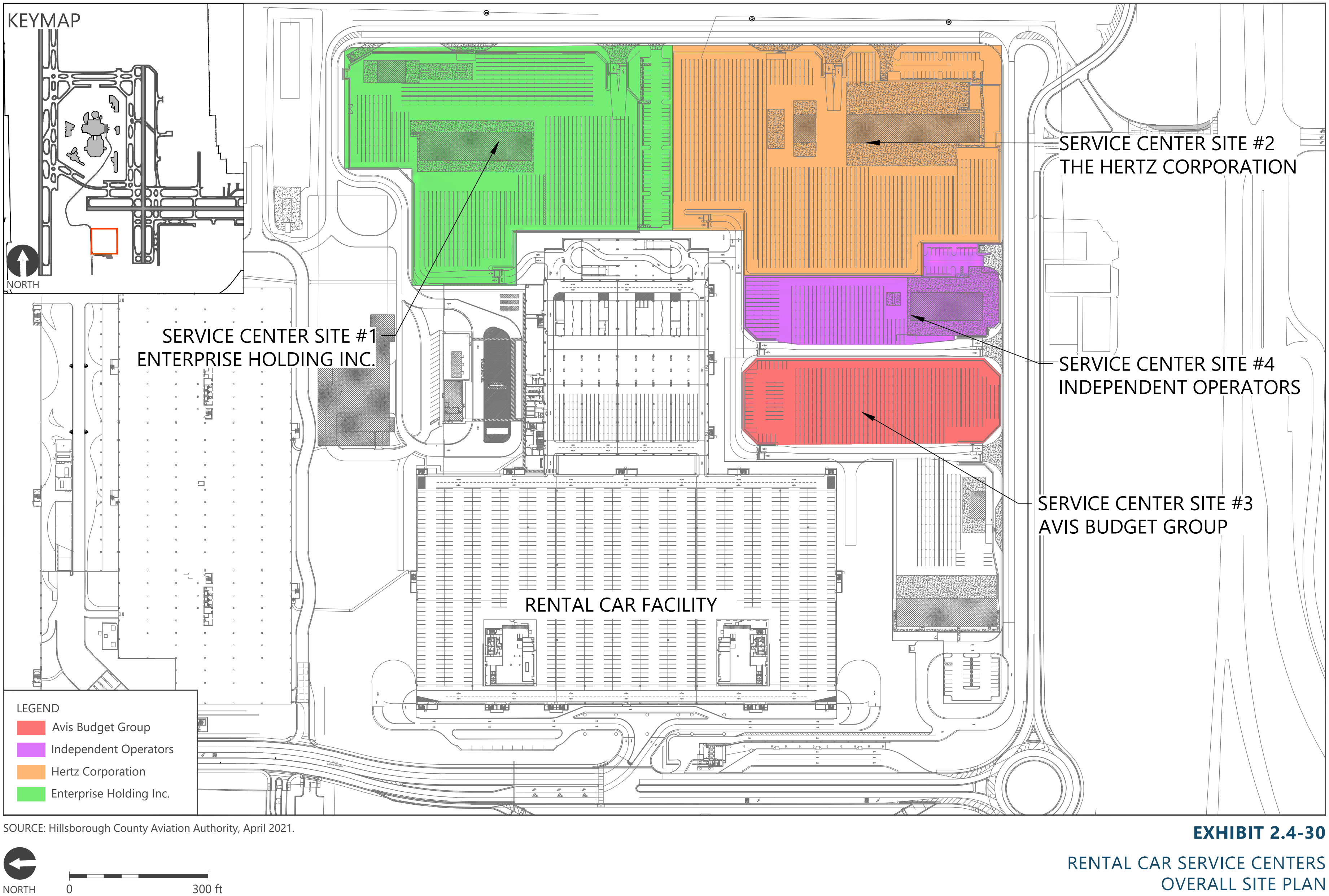
2.4.5.5 RENTAL CAR CENTER VEHICLE SERVICE CENTERS

Surrounding the RCC on the south and east sides are the vehicle service centers for all companies, as shown on **Exhibit 2.4-30**. The amount of space allocated to each company is shown in **Table 2.4-10**.

TABLE 2.4-10: RENTAL CAR CENTER VEHICLE SERVICE CENTERS

COMPANY	OPERATIONAL SPACE (SQ. FT.)
Enterprise Holdings, Inc.	283,972
Hertz Corporation	318,787
Avis Budget Group	233,136
Roam	5,579
Executive Car Rental	6,439
Fox Rent A Car	40,804
NextCar	24,259
Sixt	32,423

SOURCE: Hillsborough County Aviation Authority, February 2022.



SOURCE: Hillsborough County Aviation Authority, April 2021.

EXHIBIT 2.4-30

RENTAL CAR SERVICE CENTERS
OVERALL SITE PLAN

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-30 CONRAC SERVICE CENTER.dwgLayout: 2.4-30 Plotted: May 27, 2024, 06:05PM

2.4.6 VEHICLE STAGING AND WAITING AREAS

Four vehicle waiting areas are provided at TPA. The CGTF is used for staging by various commercial modes prior to being called to the Main Terminal Arrivals curbs or Quad Lots to pick up passengers. The West Quad Decks is used by taxis to pre-stage prior to being dispatched to a Quad Lot. The cell phone lot is available for free public use while waiting for their party to be ready for pick up at the Terminal curb. **Exhibit 2.4-31** depicts the location of these lots.

2.4.6.1 COMMERCIAL GROUND TRANSPORTATION FACILITY

Taxis, TNCs, shared ride vans, limos, and charter buses are all provided space to stage in the CGTF, located on North Westshore Boulevard. This space is provided to allow for the orderly summoning of commercial vehicles to the Terminal curb (either by dispatch system, virtual queue, or passenger call, depending on the mode). The number of spaces available for each mode is shown in **Table 2.4-11** and the allocation of spaces is shown on **Exhibit 2.4-32**.

TABLE 2.4-11: COMMERCIAL GROUND TRANSPORTATION FACILITY SPACES

MODE	APPROXIMATE NUMBER OF SPACES
Taxis[1]	72
Transportation Network Companies	127
Shared Ride and Limos	34
Buses	6

NOTE:

1. As of April 2024, taxis operate exclusively from the West Quad Deck.

SOURCE: Hillsborough County Aviation Authority, November 2021.

2.4.6.2 QUAD DECKS

The East and West Quad Decks are located above the Quad Lots, discussed in Section 2.4-2. They are used as an intermediate step between the CGTF and the Quad Lots for taxi pick-up operations. Taxis queue on the Quad Decks prior being dispatched to a Quad Lot below to pick up a passenger. Taxis from the West Quad Deck dispatch to the Red 1 Quad Lot and Blue 2 Quad Lot, while taxis from the East Quad Deck dispatch to the Blue 1 and Red 2 Quad Lots. As noted in **Table 2.4-12,** the East Quad Deck is smaller than the West Quad Deck due to the SkyConnect APM station. The East Quad Deck has 18,034 square feet of space for vehicle staging while the West Quad Deck has 48,040 square feet. *According to HCAA staff, as of April 2024, taxis operate exclusively from the West Quad Deck.*

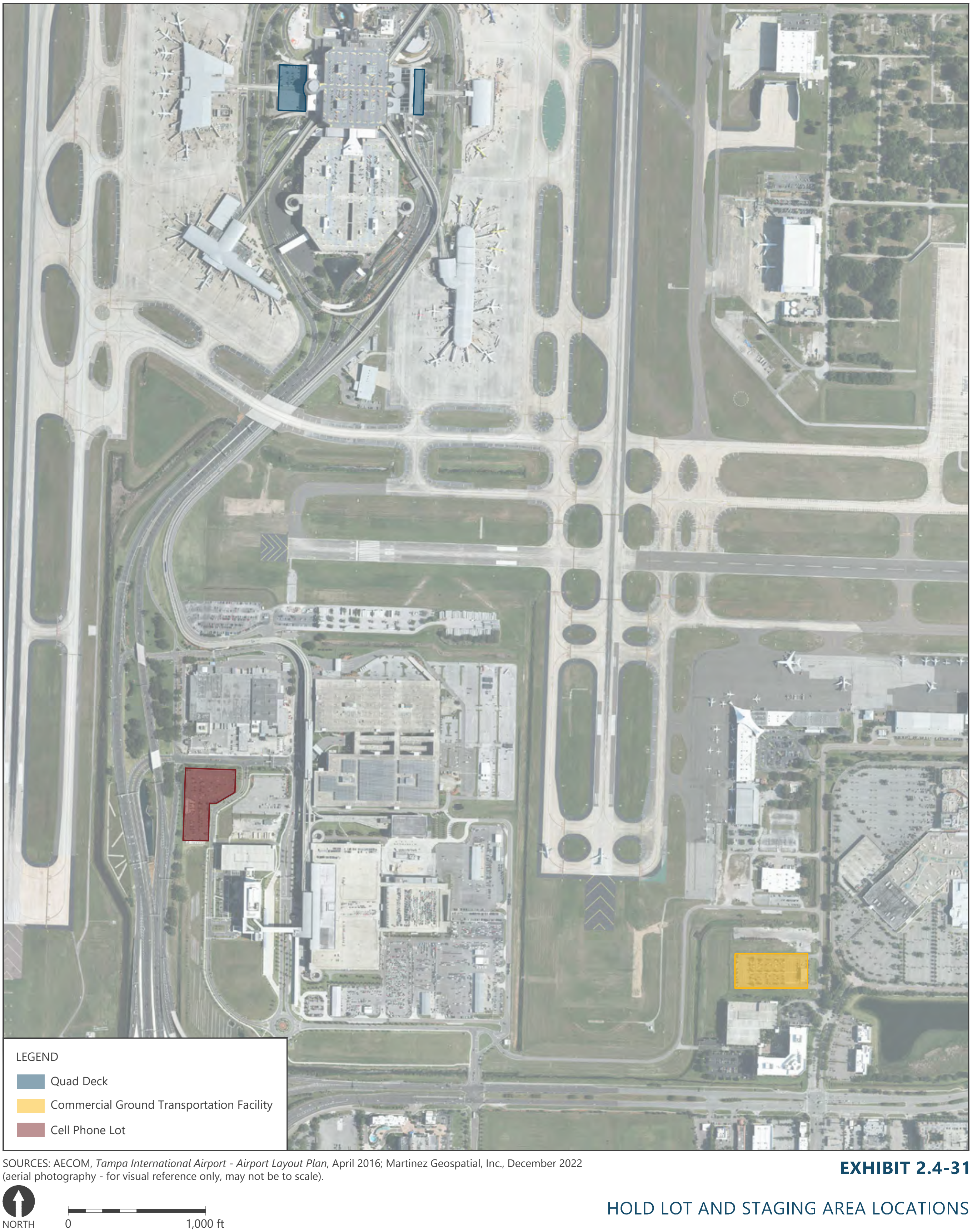
TABLE 2.4-12: QUAD DECK CAPACITY

QUAD DECK	CAPACITY (SQ FT)
East Quad	18,034
West Quad	48,040

SOURCE: Hillsborough County Aviation Authority, November 2021.

2.4.6.3 CELL PHONE LOT

The 375-space cell phone lot is a free lot to park in while one waits for their party to arrive. It is located south of the USPS building across from the Economy Parking Garage and SkyCenter. Cell phone lots can help mitigate curb congestion by reducing the number of vehicles circulating the arrivals curbs in advance of their party exiting the Terminal building and reaching the curb. Restrooms are available, and flight information display boards are located in the lot to inform drivers when their party's flight has arrived.

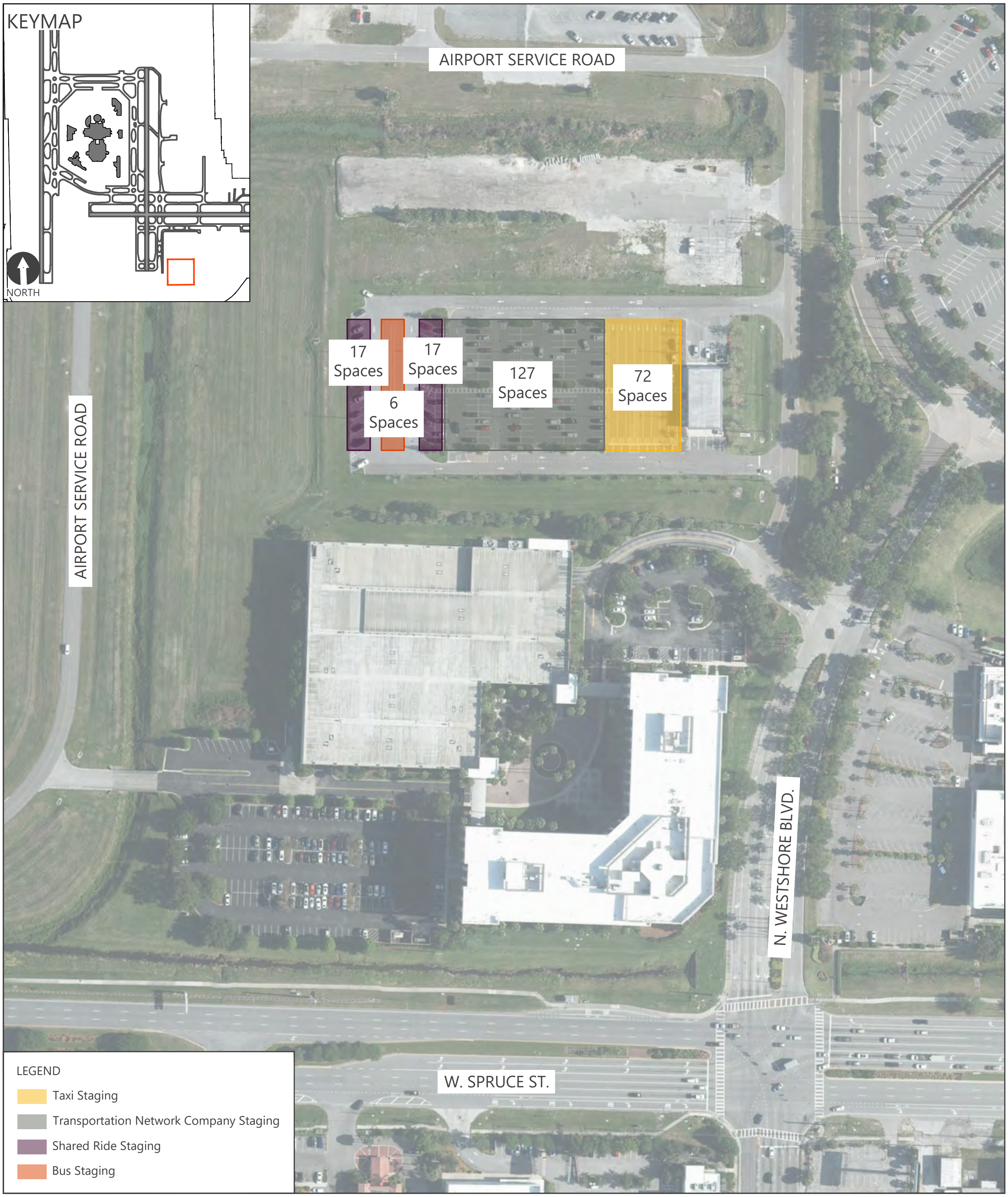


SOURCES: AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale).

EXHIBIT 2.4-31

HOLD LOT AND STAGING AREA LOCATIONS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-31,32 Commercial Hold Lots.dwgLayout: 2.4-31 Plotted: May 27, 2024, 06:12PM



SOURCES: Tampa International Airport, *CGTF Parking Plan by Mode.pdf*, October 2019; AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale).

EXHIBIT 2.4-32

NORTH 0 200 ft

COMMERCIAL GROUND TRANSPORTATION FACILITY

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Landside\CAD\EX 2.4-31,32 Commercial Hold Lots.dwgLayout: 2.4-32 Plotted: May 27, 2024, 06:13PM

2.5 AIR CARGO FACILITIES

There are three existing air cargo facilities at TPA, two of which are situated in the Eastside Aviation Development Area and the other facility is located north of the terminal and east of Taxiway V. These consist of the East Air Cargo Building, the FedEx Cargo Building (which currently accounts for most of the dedicated air cargo at the Airport), and the North Air Cargo Building. Construction of a United Parcel Service (UPS) air cargo facility west of the FedEx Cargo Facility is also anticipated in 2022. **Exhibit 2.5-1** illustrates the location of the existing and proposed air cargo facilities.

There are presently three all-cargo operators at TPA: FedEx Corporation, UPS, and Amazon. The existing air cargo facilities are summarized in the following subsections.

2.5.1 EAST AIR CARGO BUILDING

The East Air Cargo Building (also referred to as the Belly Cargo Building) is located in the Eastside Aviation Development Area fronting on Air Cargo Road and to the south of West Cayuga Street (Exhibit 2.5-1). The East Air Cargo Building opened for operation in 2010 and is used primarily for belly cargo. The building was constructed as a replacement for the Air Cargo Building located to the north of the terminal complex. Access to the East Air Cargo Building from the terminal is provided via a secure 25-foot-wide bi-directional roadway that extends northward from the terminal beneath crossfield Taxiway B, which then turns to the east and proceeds through a tunnel beneath the runway safety area on the north end of Runway 1R-19L. While the primary use of the facility is for belly haul cargo operations, a portion of the building is also currently used by Global Aviation for aircraft parts storage, supplementing the space it has in the primary facility located at the southern end of the Eastside Aviation Development Area. The East Air Cargo Building is approximately 86 feet deep by 875 feet in length and is orientated in a north/south direction. **Table 2.5-1** lists the East Air Cargo Building tenant space allocations.

Except for the freight forwarder unit and US Customs and Border Protection (CBP) unit, each tenant unit in the East Air Cargo Building has both warehouse space and associated administrative/office space. The freight forwarder's unit and CBP unit solely comprise administrative office space. These two units are located on the southern end of the building with access to the landside via a single or a double entrance/exit door. Every cargo tenant has a combination of airside and landside truck docks and/or truck ramps that range in size with 7-foot-wide, 10-foot-wide, and 15-foot-wide roll-up doors.

Southwest Airlines houses its aircraft provisioning operation in the northernmost unit (Unit 1900). The operation is facilitated by a covered elevated loading dock structure on the north end of the building oriented perpendicular to the building. This loading dock is situated at the cargo building floor elevation and approximately 3 feet above the adjacent ground/truck staging level. The elevated dock allows for direct access from the building and loading platform into the backs of aircraft provisioning trucks. Ten truck loading positions are provided at this loading area.

On the west, the secure side of the East Air Cargo Building, a paved ramp serves as a vehicle operational area. This area provides maneuvering and equipment storage space behind the entire length of both the East Air Cargo Building and the separate ground service equipment (GSE) building that is located to the immediate north of the East Air Cargo Building. This paved area is approximately 175,000 square feet and links to the secure service roadway accessing the terminal area at its northwestern corner. According to the October 2017 report *Airport System Inspection – FY 16*, the building is in good condition. **Exhibit 2.5-2** depicts the space allocation and provides an aerial image of the East Air Cargo Building.

SOURCES: HNTB Corporation, *Tampa International Airport Master Plan Update*, October 2013; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 1,800 ft

EXHIBIT 2.5-1

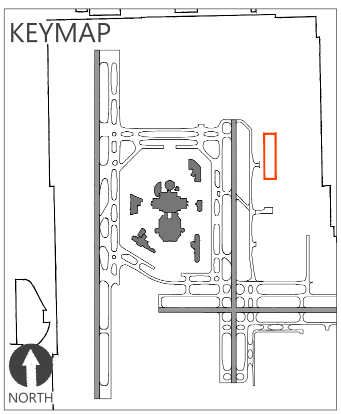
AIR CARGO FACILITIES

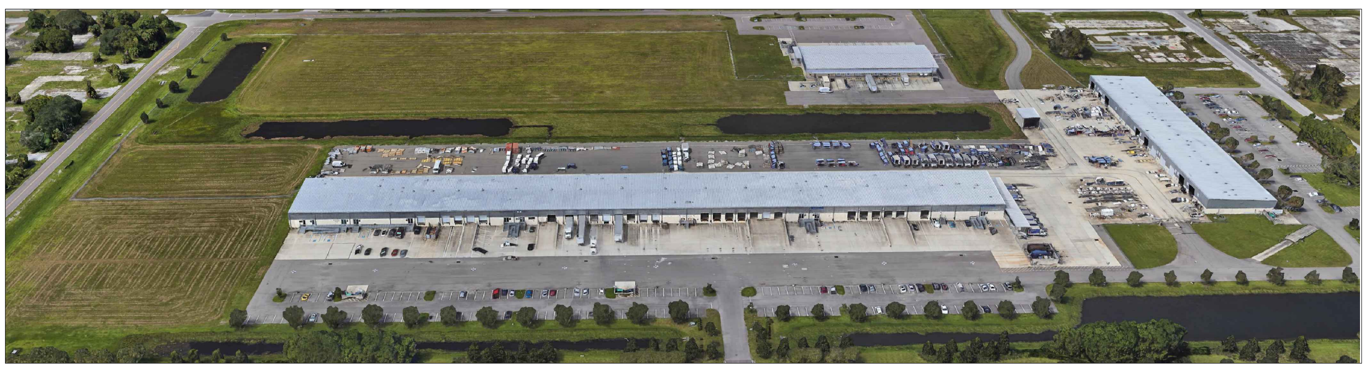
Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.5-1 Air Cargo.dwgLayout: E1 Plotted: May 15, 2024, 12:44PM

TABLE 2.5-1 EAST AIR CARGO BUILDING TENANT SPACE ALLOCATION

LOCATION/SUITE	TENANT	LEASE SPACE (SQ FT)	PERCENTAGE OF SPACE
FACP	N/A	449	1%
Fire Pump	N/A	232	<1%
Hallway	N/A	482	1%
Suite 1100	US Fish and Wildlife	209	<1%
Suite 1101	HCAA	217	<1%
Suite 1102	HCAA	239	<1%
Suite 1103	HCAA	219	<1%
Suite 1104	HCAA	135	<1%
Suite 1105	HCAA	192	<1%
Suite 1106	HCAA	99	<1%
Suite 1107	HCAA	85	<1%
Suite 1108	HCAA	83	<1%
Suite 1109	HCAA	76	<1%
Suite 1110	Vacant	436	1%
Suite 1112	Vacant	62	<1%
Suite 1200	US CBP	3,842	5%
Suite 1300	Ground Services International, Inc.	3,840	5%
Suite 1400	Breeze Aviation Group	5,120	7%
Suite 1500	Atlas Air, Inc.	7,680	10%
Suite 1600	Air General, Inc.	17,442	23%
Suite 1700	Vacant	12,546	17%
Suite 1800	Southwest Airlines	8,960	12%
Suite 1900	Southwest Airlines	11,577	16%

NOTES:
CBP – Customs and Border Protection
FACP –Fire Control Alarm Panel
HCAA – Hillsborough County Aviation Authority
N/A – Common Space Not Available for Lease
SOURCE: Hillsborough County Aviation Authority, *Lease Plan East Air Cargo Building*, October 5, 2021.





SOURCES: Google Earth Pro, September 20, 2020 (cargo facilities, Tampa International Airport); Hillsborough County Aviation Authority, 2018.

NORTH 0 Not To Scale

EXHIBIT 2.5-2

EAST AIR CARGO BUILDING
SPACE ALLOCATION AND AERIAL IMAGE

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\XREFs\CARGO - EAST AIR.dwgLayout: Layout1 Plotted: May 15, 2024, 12:46PM

2.5.2 FEDEX CARGO FACILITY

The FedEx Cargo Building is located to the west/northwest of the intersection of Tampa Bay Boulevard and North Lauber Way / Air Cargo Road, south of West Ohio Avenue and approximately 2,750 feet east of the midpoint of Runway 1R-19L (Exhibit 2.5-1). The FedEx facility was constructed in 2005 by the HCAA to FedEx specifications and is currently leased and operated by FedEx Corporation.

The FedEx leasehold encompasses approximately 10.1 acres. This area includes the FedEx Cargo Building and the truck dock area, auto parking areas, transport trailer parking/storage, and aircraft support equipment storage to the north, east, and south of the building. Warehouse, processing, and administrative functions are housed in a single 108,000-square-foot building. The footprint of the facility is approximately 115 feet deep by 750 feet long and is oriented in a north/south direction. The southern end of the building houses the administrative space, which occupies a two-level space totaling approximately 34,000 square feet. Most of the northern end of the building is a single-level warehouse/processing floor space. Inbound cargo is offloaded and processed through the warehouse/processing area before being reloaded onto trucks and distributed to regional service centers for delivery to customers. According to the October 2017 report *Airport System Inspection – FY 16*, the building is in good condition.

On the west side of the facility is a common-use aircraft parking apron with space immediately behind the FedEx building to accommodate up to seven ADG IV–sized aircraft (wingspans up to 171 feet). The apron, including the access taxilane, is approximately 660,000 square feet (73,000 square yards) and is constructed of concrete.

The FedEx facility accesses the airfield via a 75-foot-wide taxilane that intersects the eastern terminus of Taxiway J and Taxiway N, both of which parallel the north side of Runway 10-28. **Exhibit 2.5-3** provides an aerial image of the FedEx facility.

EXHIBIT 2.5-3 FEDEX FACILITY

SOURCE: Google Earth Pro, September 20, 2020 (FedEx Ship Center, Tampa International Airport).

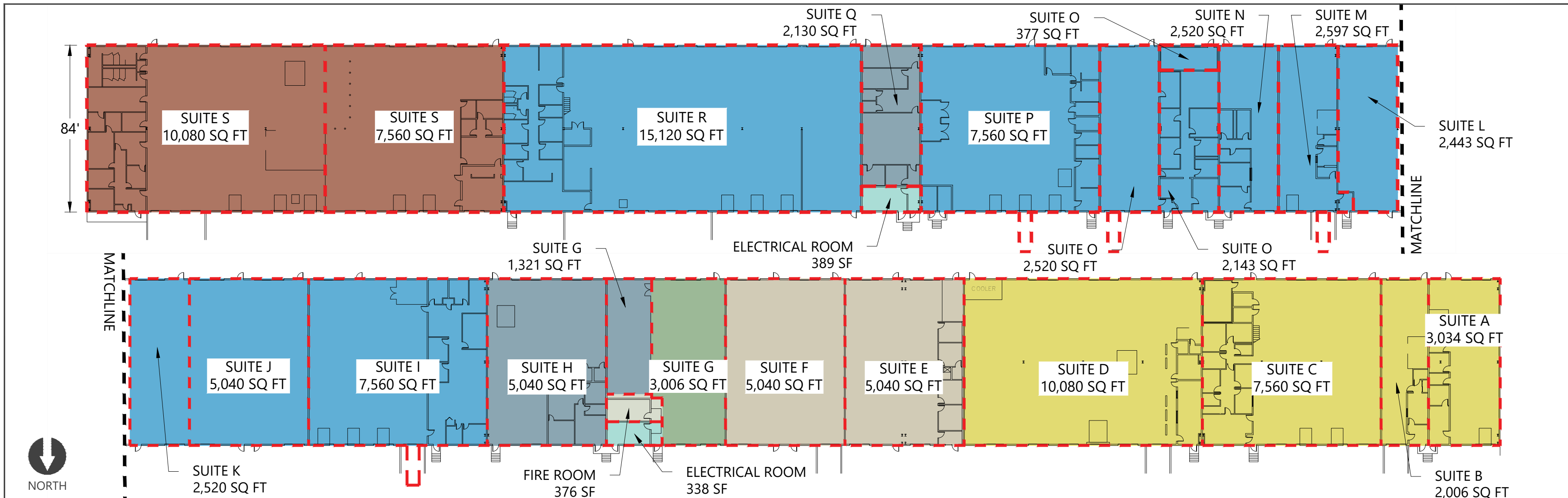
2.5.3 NORTH AIR CARGO BUILDING

The North Air Cargo Building was constructed in 1982 and is located north of the Main Terminal along the east side of Runway 1L-19R (Exhibit 2.5-1). The building has a footprint of approximately 84 feet deep by 1,350 feet long and is approximately 113,400 square feet. It is currently occupied by UPS, LGSTX Services, Inc., Cargo Force, Quantem, and American Airlines. According to the October 2017 report *Airport System Inspection – FY 16*, the building is in poor condition. **Table 2.5-2** lists the North Air Cargo Building tenant space allocations. Two suites are currently unoccupied, allowing for additional utilization of the building in the future. **Exhibit 2.5-4** provides the floor plan and tenant space allocation and an aerial image of the North Air Cargo Building.

TABLE 2.5-2 NORTH AIR CARGO BUILDING TENANT SPACE ALLOCATION

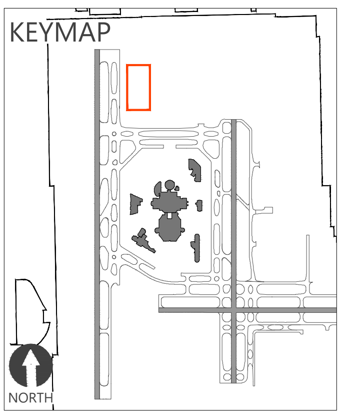
LOCATION/SUITE	TENANT	LEASE SPACE (SQ FT)	PERCENTAGE OF SPACE
Fire Room	N/A	376	<1%
Electrical Room	N/A	338	<1%
Electrical Room	N/A	389	<1%
Suite A	Cargo Force	3,034	3%
Suite B	Cargo Force	2,006	2%
Suite C	Cargo Force	7,560	7%
Suite D	Quantem	10,080	9%
Suite E	Quantem	5,040	4%
Suite F	HCAA/Vacant	5,040	4%
Suite G	AA	1,321	1%
Suite G	HCAA/Vacant	3,006	3%
Suite H	LGSTX	5,040	4%
Suite I	LGSTX	7,560	7%
Suite J	LGSTX	5,040	4%
Suite K	LGSTX	2,520	2%
Suite L	LGSTX	2,443	2%
Suite M	LGSTX	2,597	2%
Suite N	LGSTX	2,520	2%
Suite O	LGSTX	2,520	2%
Suite O	LGSTX	377	<1%
Suite O	LGSTX	2,143	2%
Suite P	LGSTX	7,560	7%
Suite Q	HCAA	2,130	2%
Suite R	LGSTX	15,120	13%
Suite S	UPS	10,080	9%
Suite S	UPS	7,560	7%

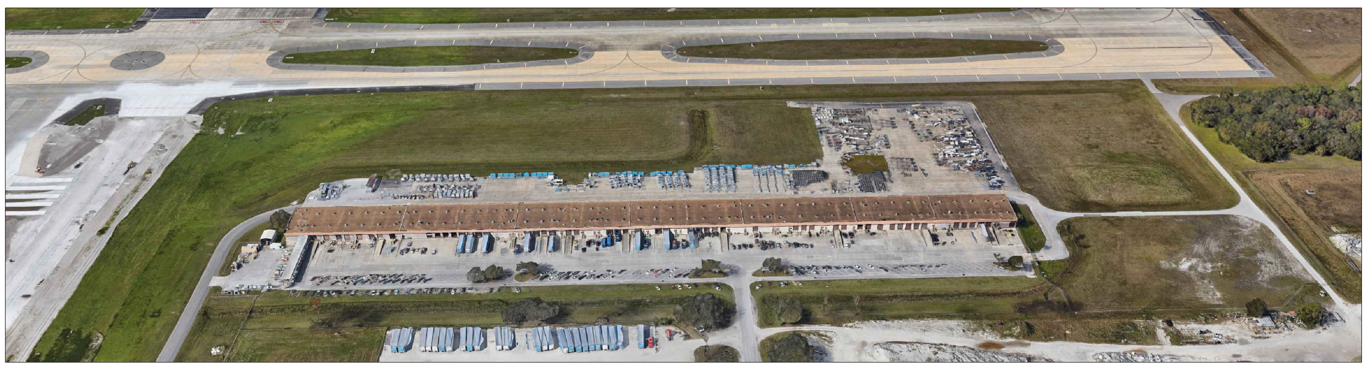
NOTES:
AA – American Airlines
HCAA – Hillsborough County Aviation Authority
N/A – Common Space Not Available for Lease
UPS – United Parcel Service
SOURCE: Hillsborough County Aviation Authority, *Lease Plan North Air Cargo Building*, October 5, 2021.



LEGEND

- American Airlines
- CARGO FORCE
- Electrical Room
- Fire Room
- LGSTX
- QUANTEM
- UPS
- Hillsborough County Aviation Authority





SOURCES: Google Earth Pro, September 20, 2020 (north cargo facilities, Tampa International Airport); Hillsborough County Aviation Authority, 2018.

NORTH 0 Not To Scale

EXHIBIT 2.5-4

NORTH AIR CARGO BUILDING
SPACE ALLOCATION AND AERIAL IMAGE

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\XREFs\CARGO - NORTH AIR.dwgLayout: Layout1 Plotted: May 15, 2024, 12:51PM

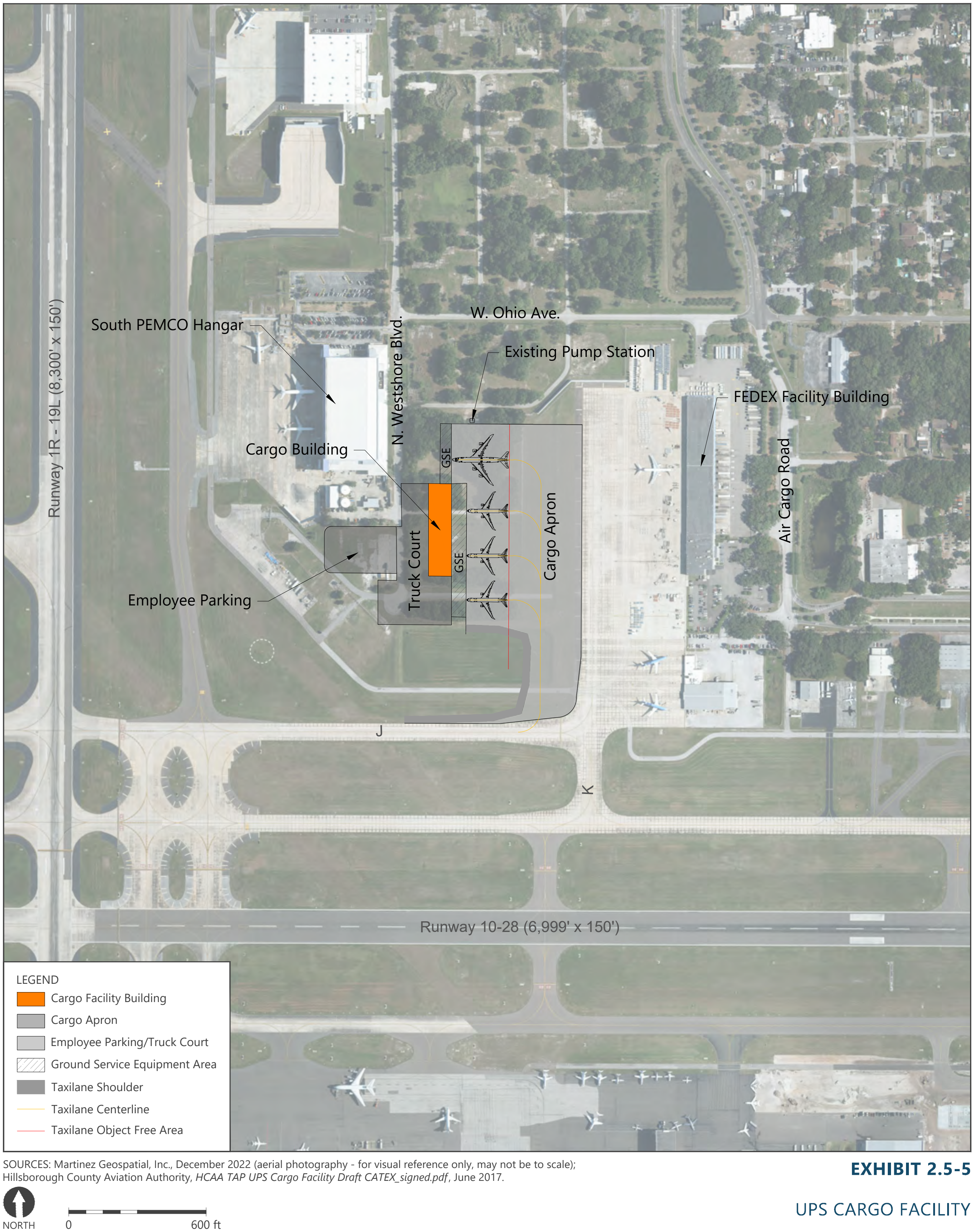
2.5.4 UPS CARGO FACILITY

UPS currently leases space in the North Air Cargo Building for temporary cargo storage and sorting of packages. Cargo is trucked to the Airside D hardstand (remote) apron for loading and unloading onto aircraft. UPS has proposed relocating and expanding their current operation at the Airport to a new location.

The proposed 18-acre site is located east of North Westshore Boulevard and south of West Ohio Avenue, across from the FedEx Cargo Facility. The new 40,000 square foot cargo building will be accessible to the airfield via a shared use taxilane with FedEx. The facility will accommodate sorting activities, up 7,500 packages per hour, in support of next day air deliveries for the Tampa Bay Region. To improve landside access to the new complex, North Westshore Boulevard and West Ohio Avenue will be resurfaced. The project was approved by the HCAA Board of Directors in 2019 and is anticipated to be completed in the middle of 2024. The proposed facility includes the following:

- 40,000 SF dedicated cargo facility
- apron accommodating four aircraft
- GSE parking and storage area
- truck court, loading docks, and trailer storage
- employee parking for up to 126 vehicles

Exhibit 2.5-5 illustrates the proposed facilities.



SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); Hillsborough County Aviation Authority, *HCAA TAP UPS Cargo Facility Draft CATEX_signed.pdf*, June 2017.

EXHIBIT 2.5-5

UPS CARGO FACILITY

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.5-5 UPS Cargo.dwgLayout: 8.5x11P Plotted: May 15, 2024, 12:52PM

2.6 AIRPORT SUPPORT FACILITIES

This section presents an inventory of the existing airline and Airport support facilities at TPA. Airport support facilities include Airport maintenance facilities, fuel farms, aircraft rescue and firefighting (ARFF) facilities, training facilities, and airline maintenance hangars. The airline and Airport support facilities discussed in the following subsections include the following:

- aircraft maintenance / MRO facilities
- GSE storage and maintenance facilities
- Airport maintenance, equipment storage, and maintenance warehouse
- ARFF facilities
- Airport fuel farm
- concessions receiving and distribution center
- Airport surveillance radar (ASR)
- compressed natural gas (CNG) fuel facility
- Airport security and police (K9 training facility and shooting range)
- ground run-up enclosure
- corporate tenants

Information on existing conditions was generated from various sources, including the 2005 and 2012 MPUs, a review of as-built and other facility drawings, interviews with Airport staff and Airport tenants, and a site visit conducted in January 2022. Most of the Airport support facilities at TPA, except for the ARFF facility and training area are located on the east side of the Airport in the area generally referred to as the Eastside Aviation Development Area. **Exhibit 2.6-1** illustrates the location of the Airport support facilities.

2.6.1 AIRCRAFT MAINTENANCE / MAINTENANCE, REPAIR, AND OVERHAUL FACILITIES

There are three MRO facilities at TPA; two are leased to PEMCO World Air Services (PEMCO) and one is leased to United Airlines. The facilities are described in the following subsections.

2.6.1.1 PEMCO WORLD AIR SERVICES

PEMCO is an MRO service provider for widebody and narrowbody aircraft and regional jets. Capabilities and services provided across its facilities include the development and manufacturing of aircraft cargo systems, cargo modifications, aircraft parts and support, scheduled and unscheduled maintenance, engineering services, repairs, precision components, avionics, and aircraft interior modifications. At the two TPA facilities, PEMCO primarily provides aircraft interior servicing and heavy airframe repair (no composites). Services do not include heavy engine maintenance activities. Similar services are provided in both the North Hangar and South Hangar.

SOURCES: HNTB Corporation, *Tampa International Airport Master Plan Update*, October 2013; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

EXHIBIT 2.6-1

AIRPORT SUPPORT FACILITIES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibits 2.6-1,6 Support.dwgLayout: 2.6-1 Plotted: May 15, 2024, 12:57PM

North Hangar

The North Hangar is used for providing the full range of MRO services, namely aircraft interior servicing and heavy airframe repair. The hangar is located on the east side of the airfield, approximately 1,100 feet east of Runway 19L (Exhibit 2.6-1). The North Hangar, constructed in 1983, is steel framed with both precast concrete and metal panel enclosure and steel joist and decking. The overall structure of the building is in fair to good condition.[10] HCAA owns the building, and the initial lease expiration year with PEMCO is 2023. *According to HCAA staff, the tenant exercised a five-year option to extend in 2023*.

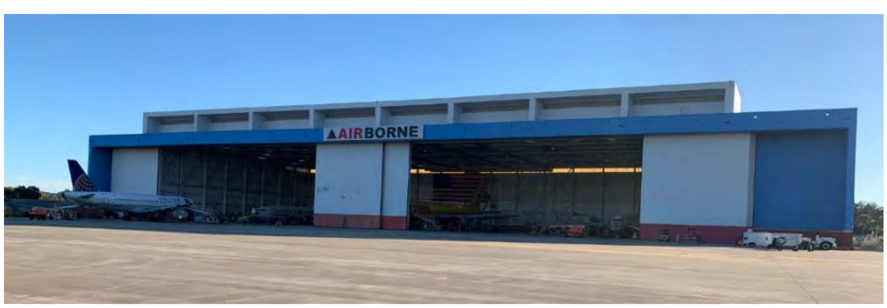
The North Hangar is approximately 125,000 square feet and includes supporting office, shop, storage, and warehouse space. The hangar floor area is approximately 105,770 square feet. Space at the rear and east side of the North Hangar is two levels.

The facility is sited in a north/south orientation with the hangar door opening on the west side. The six-panel clear span door width and hangar space is approximately 400 feet wide. It accommodates up to two widebody aircraft or a combination of widebody and narrowbody aircraft and/or regional jets (potentially up to three), while still having adequate space for scaffolding and the other interior structures required as part of typical aircraft maintenance operations. The apron adjacent to the hangar is approximately 1,050 feet wide by 300 feet deep and totals approximately 380,000 square feet. The apron features blast fencing on the northern and southern edges with airside/landside apron access points along both ends of the building. The apron is connected to the airfield via a stub taxilane that intersects with Taxiway E.

On the northern side of the hangar is an employee parking lot with approximately 220 spaces. Between the parking lot and apron are a large storage shed that is approximately 4,400 square feet (40 feet wide by 110 feet long) and two large cylindrical aqueous film forming foam (AFFF) holding tanks. The AFFF holding tanks are approximately 60 feet in diameter and 25 feet above ground, and they are estimated to have a capacity of 40,000 gallons each. Typical for maintenance hangars, these tanks hold the "high-expansion" foam type that is capable of an expansion ratio over 200, which is suitable for large, enclosed spaces where quick filling of space is needed to address fire suppression requirements.

Exhibit 2.6-2 provides a photo of the North Hangar.

EXHIBIT 2.6-2 NORTH HANGAR



SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

[10] RS&H, Inc., *Airport System Inspection – FY 16*, October 2017.

South Hangar

The South Hangar is also occupied by PEMCO and, like the North Hangar, it is primarily used for providing light MRO services, namely aircraft interior servicing and heavy airframe repair. The hangar is located on the east side of the airfield approximately 1,100 feet east of the midpoint of Runway 1R-19L (Exhibit 2.6-1). The facility, including the aircraft maintenance area, shops, storage, warehouse, and administrative office functions, are housed in an approximate 148,000-square-foot hangar. An estimated 89,850 square feet serves as aircraft hangar, while the remainder is used for activities supporting the primary use, including the accommodation of PEMCO's headquarter offices.

The facility is sited in a north/south orientation with the hangar door opening on the west side of the facility. The eight-panel clear-span track door opening and hangar space is approximately 430 feet wide by 200 feet deep and will accommodate up to a combination of three widebody and narrowbody aircraft and/or regional jets, while still having adequate space for scaffolding and the necessary structures around the aircraft to support maintenance and service. The South Hangar, constructed in 1997, is steel-framed with both tilt-up concrete and metal panel enclosures and a steel joist and decking roof. The overall structure of the building is in fair to good condition.[11] HCAA owns the building, and the initial lease is set to expire in 2023.

The apron adjacent to the hangar is an irregular shaped trapezoid, the rectangular portion of which is approximately 720 feet wide by 440 feet deep. Including apron on the sides of the facility brings the total apron footprint to approximately 350,000 square feet. The apron features blast fencing on the northern edge and southeastern corner. The apron is connected to the airfield via a stub taxilane that intersects with Taxiway E. An airside/landside apron access point is on the south side of the hangar adjacent to a small 2,200-square-foot storage building, the AFFF tanks, and a medium-sized 5,200-square-foot (55 feet wide by 95 feet long) warehouse. The AFFF holding tanks are approximately 40 feet in diameter and 30 feet above ground and are estimated to have a capacity of 20,000 gallons each. On the southern edge of the hangar, north of the AFFF tanks and warehouse, are six roll-up doors and four standard doors for shipping and receiving, with a narrow vehicle maneuvering area in front of the doors. Additionally, there is a covered shipping/receiving dock on the southeast corner of the building, likely for handling large, heavy pallet shipments. It should be noted that the single facility entrance on the south end of the building that provides airside access appears to be constrained in size with little maneuvering and vehicle storage space. Parking for employees is provided on the northern side of the hangar with approximately 230 spaces in two similarly sized lots.

Exhibit 2.6-3 provides a photo of the South Hangar. **Table 2.6-1** summarizes PEMCO's building sizes, apron areas, and parking spaces.

[11] RS&H, Inc., *Airport System Inspection – FY 16*, October 2017.

TABLE 2.6-1: PEMCO WORLD AIR SERVICES MAINTENANCE, REPAIR, AND OVERHAUL FACILITY SUMMARY

FACILITY	TOTAL BUILDING FOOTPRINT (SQ FT)	HANGAR SPACE (SQ FT)	WAREHOUSE, SHOP, AND ADMINISTRATIVE SPACE (SQ FT)	APRON AREA (SQ FT)	VEHICLE PARKING SPACES
North Hangar (T-2)	125,000	105,770	N/A	380,000	220
South Hangar (T-1)	148,000	89,850	58,150	350,000	230

NOTES:
N/A – Not Applicable
SOURCE: HNTB Corporation, *Tampa International Airport Master Plan Update*, October 2013; Newhouse & Associates, LLC, January 2022

EXHIBIT 2.6-3 SOUTH HANGAR

SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

2.6.1.2 UNITED AIRLINES MAINTENANCE, REPAIR, AND OVERHAUL HANGAR

The United Airlines MRO parcel is approximately 10 acres. The United Airlines MRO hangar is located between the PEMCO MRO hangars (North Hangar and South Hangar) on the east side of the airfield, approximately 1,100 feet east of Runway 1R-19L (Exhibit 2.6-1). The hangar is approximately 69,380 square feet, and the overall structure of the building is in good condition[12]. The building was completed in 2020. The initial lease expiration date is 2039. **Exhibit 2.6-4** provides a photo of the United Airlines MRO hangar.

[12] RS&H, Inc., *Airport System Inspection – FY 16*, October 2017.

EXHIBIT 2.6-4 UNITED AIRLINES MAINTENANCE, REPAIR, AND OVERHAUL HANGAR

SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

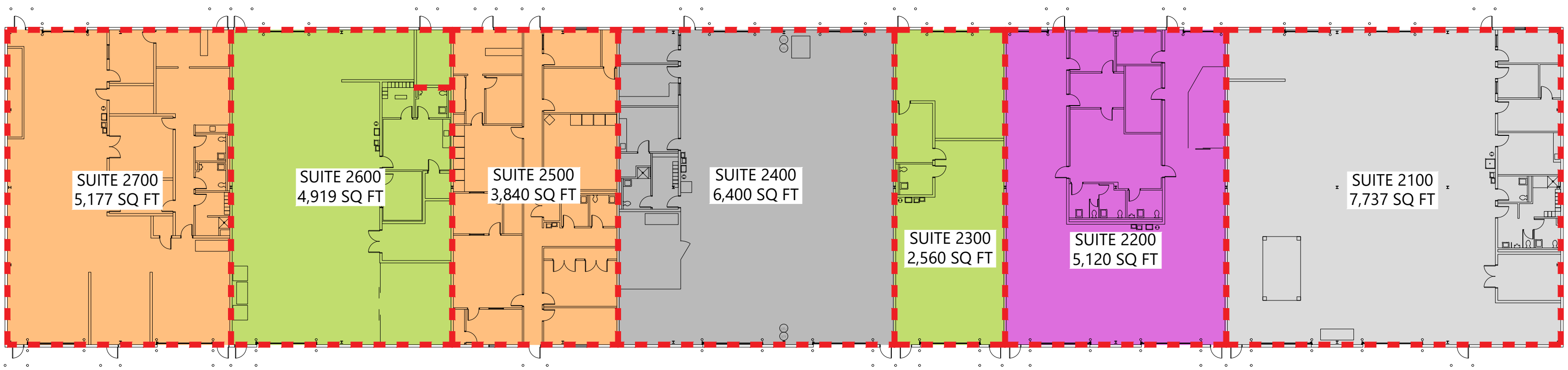
2.6.2 GROUND SERVICE EQUIPMENT STORAGE AND MAINTENANCE FACILITY

The GSE storage and maintenance facility, constructed in 2010, is a multiple-tenant facility located along the south side of West Cayuga Street (Exhibit 2.6-1). The building is a mix of tilt-up concrete and metal panel walls with steel joist and deck roof with a single-ply membrane. The facility is used for the servicing and storage of GSE by airlines and third-party providers of aircraft servicing. The building is approximately 36,000 square feet. The overall structure of the building is in good condition.

The GSE building is approximately 90 feet deep by 420 feet long and is sited along an east/west orientation. The building is located behind and northeast of the North Hangar, east of North Westshore Boulevard, and is connected to the airside via a 25-foot-wide bi-directional airfield access/tug drive.

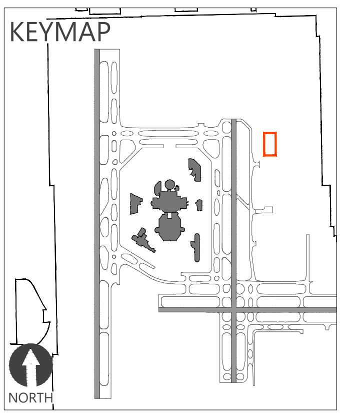
All tenants share a landside parking lot located along the north side of the building that provides a total of 113 vehicular parking spaces. The concrete airside apron on the south side of the building (see **Exhibit 2.6-5**) is approximately 440 feet long by 150 feet deep (66,000 square feet). This includes the 25-foot-wide bi-directional airside access road/tug lane that connects this facility and the terminal complex. The airside apron is primarily used for storing and staging equipment, service vehicles, and typical transport vehicles.

Table 2.6-2 lists the GSE storage and maintenance facility tenant space allocations. The floor plan and tenant space allocation, along with an aerial image of the facility, are presented on Exhibit 2.6-5.



LEGEND

- Air Transport International, Inc.
- American Airlines
- Aircraft Service International Group
- Delta Air Lines
- Southwest Airlines Co.



SOURCES: Google Earth Pro, September 20,2020 (north cargo facilities, Tampa International Airport); Hillsborough County Aviation Authority, 2018.

NORTH 0 Not To Scale

EXHIBIT 2.6-5

GROUND SERVICE EQUIPMENT AND MAINTENANCE FACILITY SPACE ALLOCATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\XREFs\GSE BUILDING.dwgLayout: Layout1 Plotted: May 15, 2024, 02:26PM

TABLE 2.6-2 GROUND SERVICE EQUIPMENT STORAGE AND MAINTENANCE FACILITY TENANT SPACE ALLOCATION

TENANT	SUITE	LEASED AREA (SQ FT)	PERCENTAGE UTILIZATION
Air Transport	Suite 2200	5,120	14%
American Airlines	Suite 2300	2,560	7%
American Airlines	Suite 2600	4,919	14%
ASIG	Suite 2500	3,840	11%
ASIG	Suite 2700	5,177	14%
Delta Air Lines	Suite 2100	7,737	22%
Southwest Airlines	Suite 2400	6,400	18%

SOURCE: Hillsborough County Aviation Authority, *GSE Building Suites*, October 5, 2021.

2.6.3 AIRPORT MAINTENANCE FACILITIES

Airport maintenance activities are located in two facility centers on the Airport, adjacent to the Terminal Complex in the Airport Service Building, and on the northeast side of the Airport in the Airport Maintenance Complex. These facilities cumulatively house all dedicated maintenance staff and maintenance vehicles.

2.6.3.1 AIRPORT SERVICE BUILDING

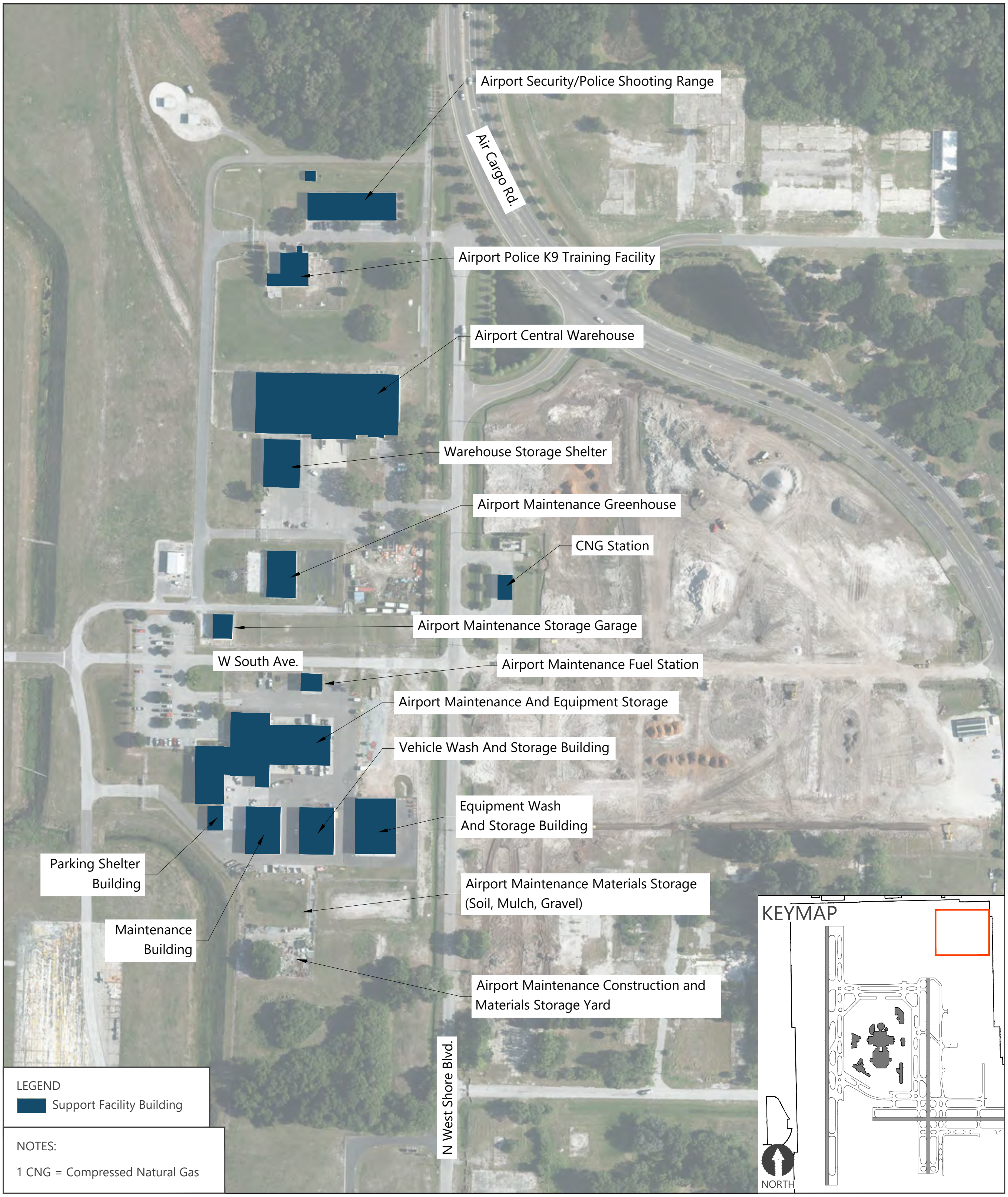
The Airport Service Building, which is located adjacent to the Red Side Departures Level roadway, on the north side of the Landside Terminal Complex, accommodates administration, training, and locker rooms for maintenance personnel. Maintenance operations occupy approximately 6,000 square feet of space in the service building. There are no shops or repair facilities located in the service building since most of the technicians work at adjunct locations throughout the landside terminal in support of regular and emergency maintenance activities.

2.6.3.2 AIRPORT MAINTENANCE COMPLEX

The Airport Maintenance Complex is in the northern portion of the Eastside Aviation Development Area along the west side of North Westshore Boulevard at the intersection of West South Avenue. This campus of facilities is situated approximately 750 feet north of the main Airport fuel farm and south of the Airport police and security facilities. Adjacent to the Airport maintenance and equipment storage building and Airport Central Warehouse, there are approximately 90 vehicular parking spaces for employees and visitors. **Exhibit 2.6-6** illustrates the facilities located in the Airport Maintenance Complex.

The Airport Maintenance Complex includes equipment and vehicle storage, maintenance shops, maintenance vehicle and grounds keeping equipment storage facilities, a vehicle fueling station, a vehicle wash and storage building, an office and other administrative space for maintenance managers and staff, and two small greenhouse facilities. Airfield access is available via a two-way service road extending to the south to provide access to the Eastside Aviation Development Area, to the north to the north airfield service road, and to the west to areas between Runways 1L-19R and 1R-19L.

The Airport Central Warehouse is used to house plumbing and electrical supplies; heating, ventilation, and air conditioning (HVAC) materials; spray paints and lubricants; automotive supplies; tires; baggage system repair parts; tractor and mower equipment repair parts; and other maintenance parts.



SOURCES: HNTB Corporation, *Tampa International Airport Master Plan Update*, October 2013; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 300 ft

EXHIBIT 2.6-6

AIRPORT MAINTENANCE COMPLEX

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibits 2.6-1,6 Support.dwgLayout: 2.6-6 Plotted: May 15, 2024, 02:25PM

Table 2.6-3 lists the primary buildings located in the Airport Maintenance Complex, as well as their condition, year constructed, and size. **Exhibit 2.6-7** provides photos of facilities in the Airport Maintenance Complex. *As of May 2024, the staff occupied portions of the Airport Maintenance and Equipment Storage Building are being refurbished. The project includes new interior finishes, systems, and furniture that has reached the end of its useful life and requires replacement.*

TABLE 2.6-3 AIRPORT MAINTENANCE COMPLEX BUILDINGS

BUILDING	YEAR CONSTRUCTED	CONDITION	AREA (SQ FT)
Airport Maintenance and Equipment Storage	1983	Fair	30,200
Parking Shelter Building	1983	Fair	1,500
Vehicle Wash and Storage Building	1983	Fair	7,000
Maintenance Building	1983	Fair	7,000
Equipment Wash and Storage Building	2021	Good	10,000
Airport Central Warehouse	2008	Good	38,750
Service Building (Terminal Complex)	1982	Fair	6,000
Total			100,450

SOURCES: HNTB Corporation, *Tampa International Airport Master Plan Update*, October 2013; Newhouse & Associates, LLC, January 2022; Walker Consultants, *HCAA Structural Repairs FY 10 Facility Inventory & Recurring Inspection Recommendations*, February 2012; RS&H, Inc., *Airport System Inspection – FY 16*, October 2017.

2.6.4 AIRCRAFT RESCUE AND FIREFIGHTING FACILITY

The ARFF facility opened in 2006 to centralize the ARFF functions, which were previously provided at two ARFF stations. The facility is located airside, adjacent to the southwest corner of the aircraft ramp serving Airside A, to have airfield access for ARFF vehicles and landside access via the Airport entrance roadway for nonsecure access by firefighter private vehicles and other nonsecure vehicles. The facility is bordered by Taxiway J to the south, the Airside A ramp to the east, and George J. Bean Parkway to the west.

In relation to primary airfield circulation routes, the station is north of the intersection of Taxiways L and J, with Taxiway J providing access to both of the parallel runways, as well as the crosswind runway alignment. The position of the midfield ARFF station meets the response time requirements of the FAA to be at the midpoint of the farthest runway within 3 minutes. Additionally, direct access is also afforded to the Landside Terminal Complex and all the airside concourses without having to cross an active runway. The location of the ARFF facility is depicted on Exhibit 2.6-1, and a photo is included on **Exhibit 2.6-8**.

The ARFF facility is approximately 26,000 square feet and is in good condition[13]; it contains the following:

- five separate drive-through bays
- response stations and communications areas
- 14 dorm rooms, rest rooms, showers, and locker rooms
- administrative space and training facilities
- gear storage

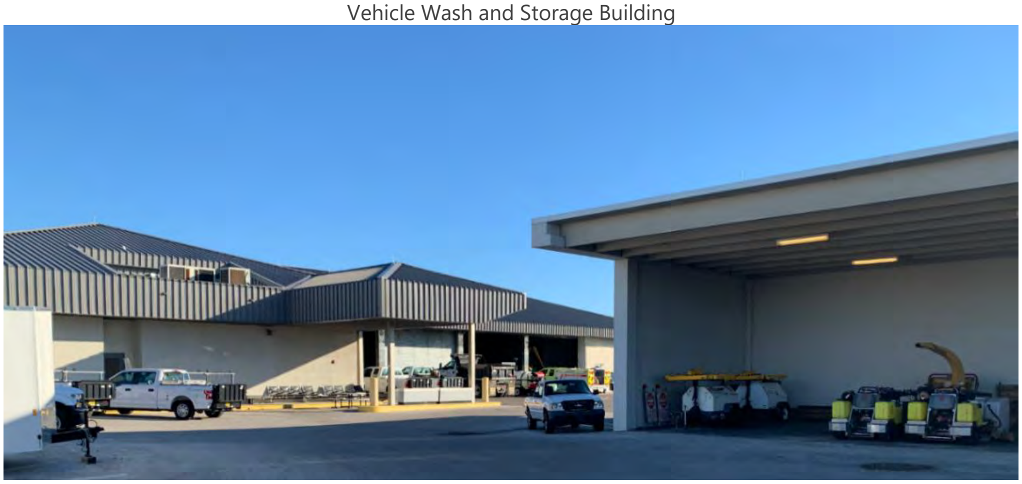
[13] RS&H, Inc., *Airport System Inspection – FY 16*, October 2017.

- fitness functions and recreational areas
- kitchen and laundry areas

EXHIBIT 2.6-7 AIRPORT MAINTENANCE BUILDINGS

Airport Maintenance Fuel Station

Vehicle Wash and Storage Building



Airport Maintenance and Equipment Storage

SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

The Airport's ARFF index is determined by considering the length of aircraft and the average daily departures of aircraft; with five or more average daily departures of aircraft in a single index group serving the Airport, the longest aircraft with an average of five or more daily departures determines the index required for the Airport. The current ARFF index for TPA is Index D. To meet the FAA's requirements for Index D, HCAA maintains ARFF equipment that contains water, chemicals, and other compounds needed for firefighting in an airport environment. The HCAA ARFF Division includes 36 personnel, with a minimum of 10 staff on duty for each of the three shifts. **Table 2.6-4** presents a detailed inventory of the ARFF equipment for TPA.

TABLE 2.6-4 AIRCRAFT RESCUE AND FIREFIGHTING EQUIPMENT

MAKE / MODEL	YEAR	WATER	CHEMICALS
Oshkosh Global Striker	2020	1,500 gallons	210 gallons foam / 500 pounds Purple K
Oshkosh Global Striker	2016	3,000 gallons	400 gallons foam / 500 pounds Purple K
Oshkosh Striker	2013	3,000 gallons	420 gallons foam / 460 pounds Halotron
Oshkosh Striker	2011	1,500 gallons	420 gallons foam / 480 pounds Purple K
Oshkosh Striker	2006	3,000 gallons	210 gallons foam / 460 pounds Halotron
Ford F-350	2019	250 gallons	10 gallons foam
Ford F-350	2018	N/A	N/A
Ford F-350	2017	250 gallons	10 gallons foam

NOTE: N/A – Not Available
SOURCE: Hillsborough County Aviation Authority, January 2022.

EXHIBIT 2.6-8 AIRCRAFT RESCUE AND FIREFIGHTING FACILITY

SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

2.6.4.1 AIRCRAFT RESCUE AND FIREFIGHTING TRAINING FACILITY

In addition to the ARFF station previously described, the Authority maintains an ARFF training facility on the north side of the Airport. The ARFF training facility is located to the southeast of the employee parking lot. The ARFF training facility (Exhibit 2.6-1) is a large circular area consisting of a replicated fuselage cross-section (aircraft mock-up), encircled by a 120-foot diameter "burn area" made up of crushed stone and a 12-foot-wide circular concrete apron around the burn area. Beyond the burn area and concrete apron is a large vehicle maneuvering area that is clear to 150 feet from the center of the circle (300-foot diameter). Outside of that area are the typical support systems, which are sheltered behind a protective burn wall. The support systems consist of a control center, fuel and water storage tanks, and a fuel/water separator.

The existing facility is vital to the training of ARFF personnel because it enables them to perform real-life simulation training and, consequently, to maintain firefighters' proficiency. Because of the complexity of current ARFF equipment and agents, an acceptable level of performance can only be achieved through suitable and thorough training of responsible personnel at a dedicated facility. **Exhibit 2.6-9** illustrates the ARFF training facility.

2.6.5 FUEL FARM

The fuel farm (Exhibit 2.6-1) was constructed in 1982 and is located north and east of the Runway 19L end, along the west side of Westshore Boulevard. Fuel is supplied to the fuel farm by an external pipeline from the Port of Tampa and by trucks that deliver fuel to the Airport. Ground access to the fuel farm is available via Air Cargo Road and West Cayuga Street. A one-way fuel truck circulation roadway serves as an entrance from West Cayuga Street. There are two truck unloading areas provided along the secure section of the fuel truck access road.

The facility consists of a single-story concrete masonry unit (CMU) administrative building, six fuel storage tanks totaling approximately 3.5 million gallons of Jet A storage, and two covered pump areas. The fuel farm area occupies approximately 3.0 acres. According to the 2017 report *Airport System Inspection – FY 16*, the building supporting the fuel farm is in poor condition and fuel tanks and pump areas are in good condition. Roadway improvements, including the addition of a bypass lane for fuel trucks, were completed in 2022. *As of February 2024, construction is underway to add new flame detectors and cameras, new motor operated valves, continuing Emergency Fuel Off (EFSO) work, and tank upgrades.*

Table 2.6-5 summarizes the fuel tanks and their capacities. According to the 2012 MPU, an area to the north of the existing fuel tanks is available for the possible addition of one large and one medium-sized fuel tank. **Exhibit 2.6-10** presents photos of the fuel farm.

TABLE 2.6-5 FUEL FARM STORAGE TANK CAPACITY

NUMBER OF TANKS	FUEL TYPE	INDIVIDUAL TANK CAPACITY (GALLONS)	TOTAL (GALLONS)
2	Jet A	1,050,000	2,100,000
2	Jet A	630,000	1,260,000
2	Jet A	63,000	126,000
		Total Fuel Farm Capacity	3,486,000

SOURCE: HNTB Corporation, *Tampa International Airport Master Plan Update*, October 2013.

SOURCES: Google Earth Pro, December 2019 (aircraft rescue and firefigthing training facility, Tampa International Airport); Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale).; Newhouse & Associates, LLC, January 2022 (site assessment).

NORTH 0 500 ft

EXHIBIT 2.6-9

AIRCRAFT RESCUE AND FIREFIGHTING TRAINING FACILITY

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.6-9 ARFF.dwgLayout: Layout1 Plotted: May 15, 2024, 02:27PM

EXHIBIT 2.6-10 FUEL FARM

Fuel Farm Looking East

Fuel Farm Looking North

SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

2.6.6 CONCESSIONS RECEIVING AND DISTRIBUTION CENTER

The CRDC, which opened in 2016, serves as the centralized receiving and distribution facility for all concessionaries at TPA. The CRDC is located south of the GSE building and is accessible via North Westshore Boulevard; the location is shown on Exhibit 2.6-1. The CRDC includes 10 receiving bays/docks (Docks 1 through 10) and 9 distribution bays (Docks A through H); additional parking for three vehicles exists on each side of the facility for courier parking and other vehicles. The employee parking lot has 43 spaces.

The CRDC receives shipments from a truck in one of the receiving bays, and the items are offloaded into the inbound receiving area, inspected, and repackaged into a truck at one of the distributing bays. This work is done under security surveillance, and the vehicles for distribution are certified safe and sealed for transportation onto the airfield. From there, the trucks enter the airfield through a checkpoint and travel to the Main Terminal and Airsides. According to the Concessions Handbook, the CRDC is open Monday through Friday from 3 a.m. to 3 p.m., 4 a.m. to 12:00 p.m. on Saturday, and 4 a.m. to 8 a.m. on Sunday.

The CRDC is 20,000 square feet and the approximate breakdown of space within the building is as follows:

- Warehouse/Storage/Distribution Area: 11,200 square feet
- Inbound/Receiving Area: 4,000 square feet

- Cooler/Freezer: 2,000 square feet
- Offices: 2,800 square feet

2.6.7 AIRPORT SURVEILLANCE RADAR

The ASR is located on the east side of the Airport, immediately west of Air Cargo Road, south of West Curtis Street, and north of West Cayuga Street. The ASR is surrounded by a 47,700-square-foot fenced area. The elevation of the ASR antenna, including the lightning rods affixed atop the structure, is 150 feet AGL. The ASR tower sits within a paved area approximating 2,200 square feet. There are four auto parking spaces within the ASR paved area, along with support equipment. **Exhibit 2.6-11** presents a photo of the ASR.

EXHIBIT 2.6-11 AIRPORT SURVEILLANCE RADAR

SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

2.6.8 COMPRESSED NATURAL GAS FUEL FACILITY

The CNG fuel facility (Exhibit 2.6-1), constructed in 2012, is located northeast of the intersection of North Westshore Boulevard and West South Avenue, across from the Airport Maintenance Complex. The facility includes two dual-sided pumps, an elevated shelter, vehicle circulation area, and a concrete walled area that contains the aboveground CNG tanks and supporting equipment. The facility occupies approximately 62,500 square feet. The CNG fueling facility serves the Authority owned and operated employee parking and other shuttles, the majority of which are fueled by CNG. **Exhibit 2.6-12** presents a photo of the CNG facility.

EXHIBIT 2.6-12 COMPRESSED NATURAL GAS FACILITY

SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

2.6.9 POLICE CANINE AND TRAINING FACILITY

The police canine and training facility (**Exhibit 2.6-13**), constructed in 2005, is located on the northeast corner of the Airport. This facility is a single-story office and kennel CMU structure with an attached drive-through canopy. The roof is a single-ply thermoplastic polyolefin membrane. The facility's purpose is to house and train the Airport's Police Canine Unit, and it is also used to train canines at the Airport. The facility occupies approximately 3,600 square feet. The overall structure of the building is in good condition[14].

[14] RS&H, Inc., *Airport System Inspection – FY 16*, October 2017.

EXHIBIT 2.6-13 POLICE CANINE AND TRAINING FACILITY

SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

The TPA Police Canine Unit was officially established in 1992. The current unit is composed of three TSA-certified explosive detection canine teams. The canine unit became a member of the TSA National Explosives Detection Canine Program in 2002. An additional team was approved in 2004. Additional training space is available for other police department training activities. The new facility was constructed with the following features:

- designed with six canine dog runs with split indoor/outdoor kennels
- grooming area with washing and drying appliances
- reception area with public restrooms
- administrative offices
- locker/shower area
- training and breakroom with classroom accommodations for up to 24 officers

- kennel service area
- outdoor exercise training area (8,400 square feet) accessible from covered drop-off canopy
- baggage storage room

2.6.10 SHOOTING RANGE

The shooting range, constructed in 2005, is located north of the canine training facility. The building is a single-story firing range CMU structure with precast "T" roof members. The roof system is a single-ply thermoplastic polyolefin membrane. The facility occupies approximately 11,500 square feet and has 20 vehicular parking spaces along the south side of the building. The overall structure of the building is in fair condition[15].

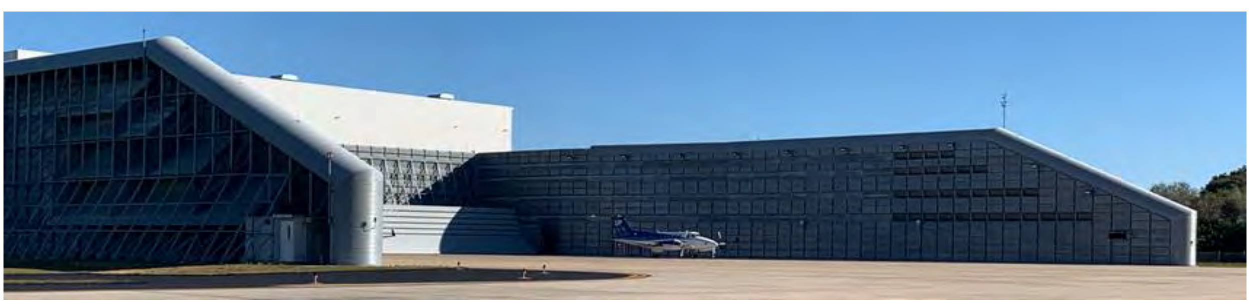
2.6.11 SKYCENTER ONE

SkyCenter One is a nine-story, 274,000 square foot office building located on-Airport property, west of the RCC (Exhibit 2.6-1). Three floors of the building, which opened in 2021, will be occupied by HCAA staff as of March 2022. SkyCenter One provides direct access to the Main Terminal via the RCC SkyConnect station. The RCC is accessible via an elevated covered walkway. SkyCenter One has a 15,000 square feet rooftop atrium, wellness walking trail, fitness center, conference center, and café. A six-level parking garage is located directly north of SkyCenter One.

2.6.12 GROUND RUN-UP ENCLOSURE

The ground run-up enclosure (**Exhibit 2.6-14**) is located between the North and South Hangars and is located approximately 960 feet east of Runway 1R-19L and 430 feet east of Taxiway E. It is located south of United Airlines MRO Hangar and north of the PEMCO South Hangar. The ground run-up enclosure serves the purpose of minimizing noise when engines are tested following repairs, overhauls, and/or maintenance. The ground run-up enclosure has been in operation since 2003. It has an interior width of 265 feet and a depth of 250 feet. Aircraft with wingspans as large as ADG V (up to 214 feet) can be accommodated.

EXHIBIT 2.6-14 GROUND RUN-UP ENCLOSURE



SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

The run-up enclosure is a 43-foot-tall, three-sided structure clad with acoustical absorbing panels to absorb, dissipate, and effectively reduce the noise impacts of aircraft engine ground run-ups. It is used to conduct routine engine maintenance tests during maintenance and repair, which requires the operation of engines at high power

[15] RS&H, Inc., *Airport System Inspection – FY 16*, October 2017.

for extended periods of time. Typically, this would generate continuous elevated noise levels but is minimized using the enclosure. The overall enclosure is in good condition[16].

2.6.13 GOVERNMENTAL, REGULATORY, AND CORPORATE TENANTS

TPA also supports several corporate tenants that operate aviation-related businesses from sites leased from the Authority. These tenants include governmental entities, such as the Tampa Police Department and Hillsborough County Mosquito Control, as well as traditional aviation businesses. The traditional aviation businesses provide services such as charter flights, aircraft maintenance, and small cargo delivery.

2.6.13.1 CITY OF TAMPA AVIATION UNIT

City of Tampa Police Hangar

The City of Tampa Aviation Unit operates from a 1.98-acre site that contains a 10,000-square-foot hangar (**Exhibit 6.1-15**). The facility is located north of Runway 10-28, on the east side of the airfield. The lease with the City of Tampa Police Department expires in 2026.

EXHIBIT 6.1-15 CITY OF TAMPA AVIATION UNIT – HANGAR

SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

City of Tampa Police Substation

This building will revert to HCAA ownership at the end of the lease term in 2034.

2.6.13.2 GLOBAL AVIATION / LSG SKY CHEFS

The Global Aviation / LSG Sky Chefs (**Exhibit 6.1-16**) building is located on the east side of the airfield approximately 2,700 feet east of Runway 1R-16L. It occupies a total of 27,500 square feet. The overall structure of the building is in good condition.

[16] RS&H, Inc., *Airport System Inspection – FY 16*, October 2017.

EXHIBIT 6.1-16 GLOBAL AVIATION / LSG SKY CHEFS FACILITY

SOURCE: Newhouse & Associates, LLC, January 2022 (site assessment).

2.6.13.3 GATE GOURMET

Gate Gourmet is an airline catering services company located at TPA. The building is located on the east side of the airfield, approximately 1,200 feet east of the Runway 1R end (see Exhibit 2.7-2). The building is approximately 9,900 square feet and in fair to poor condition.

2.7 GENERAL AVIATION FACILITIES

General aviation (GA) typically refers to those facilities and the operations of aviation users other than the scheduled commercial airlines, the cargo operators, and the military. General aviation activities comprise recreational flight training, as well as for-hire charter flights, including those used for aerial observation, news reporting, traffic observation, environmental surveys, wildlife counts, police patrol, emergency medical evacuation, pipeline patrol, crop dusting, and business air travel.

GA facilities are located in the southeastern quadrant of TPA on the north and south sides of Runway 10-28. Facilities located north of Runway 28 are dedicated to hangars occupied by corporate tenants, while the FBOs occupy hangars on the south side of Runway 28. **Exhibits 1.7-1** and **1.7-2** depict the locations of the GA corporate facilities, FBO facilities, and government facilities.

The existing GA facilities assessed includes the following:

- Government Agency Facilities
  - US CBP Facilities
  - City of Tampa Police
- FBO Facilities
  - Signature Flight Support (Signature)
  - Sheltair Aviation (Sheltair)
- Corporate Tenant Facilities
  - Jet ICU
  - Private Aviation
  - DeBartolo Aviation

BUILDING DATA TABLE

BLDG NO.	DESCRIPTION
1	Debartolo
2	Private Aviation
3	Vacant Hangar (Previously Walters)
4	Abandoned Fuel Farm
5	City of Tampa Police
6	Jet ICU

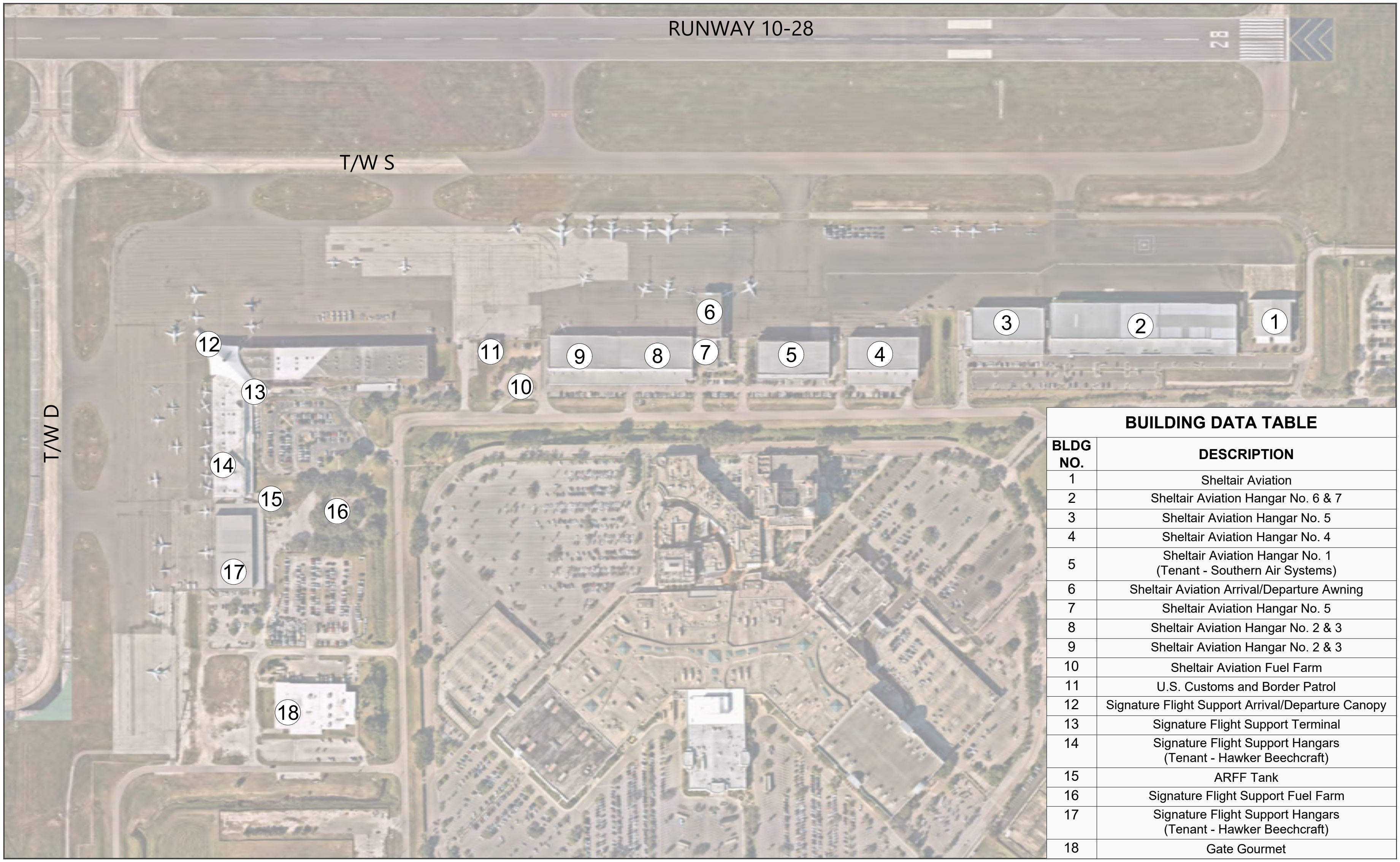
SOURCE: Nearmap, November 2023 (aerial photography - for visual reference only, may not be to scale).

NORTH 0 300 ft

EXHIBIT 2.7-1

EXISTING GENERAL AVIATION FACILITIES (NORTHSIDE)

Drawing: \\EgnyteDrive\Projects_projects\hcaa (tpa)\19041140 - 2019 gc\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Existing General Aviation Facilities (Northside).dwgLayout: 8.5x11L Plotted: May 22, 2024, 10:24AM



BUILDING DATA TABLE

BLDG NO.	DESCRIPTION
1	Sheltair Aviation
2	Sheltair Aviation Hangar No. 6 & 7
3	Sheltair Aviation Hangar No. 5
4	Sheltair Aviation Hangar No. 4
5	Sheltair Aviation Hangar No. 1 (Tenant - Southern Air Systems)
6	Sheltair Aviation Arrival/Departure Awning
7	Sheltair Aviation Hangar No. 5
8	Sheltair Aviation Hangar No. 2 & 3
9	Sheltair Aviation Hangar No. 2 & 3
10	Sheltair Aviation Fuel Farm
11	U.S. Customs and Border Patrol
12	Signature Flight Support Arrival/Departure Canopy
13	Signature Flight Support Terminal
14	Signature Flight Support Hangars (Tenant - Hawker Beechcraft)
15	ARFF Tank
16	Signature Flight Support Fuel Farm
17	Signature Flight Support Hangars (Tenant - Hawker Beechcraft)
18	Gate Gourmet

SOURCE: Nearmap, November 2023 (aerial photography - for visual reference only, may not be to scale).

NORTH

0 500 ft

EXHIBIT 2.7-2

EXISTING GENERAL AVIATION FACILITIES (SOUTHSIDE)

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Existing General Aviation Facilities (Southside).dwgLayout: 8.5x11L Plotted: May 30, 2024, 04:08PM

2.7.1 GOVERNMENT AGENCY FACILITIES

The U.S. Customs and Border Protection and the City of Tampa Police Department are the two government agencies that occupy GA facilities at TPA. The Mosquito Control facility which was located north of Runway 28 has moved to a new site off Airport property. Structures related to the mosquito control operations have been demolished and the parcel is currently vacant.

2.7.1.1 US CUSTOMS AND BORDER PROTECTION

The U.S. Customs and Border Protection is located between the Sheltair and Signature facilities on the south side of Runway 28. The customs facility is used to process international flights arriving through the Signature and Sheltair FBOs. The building is 2,855 square feet and contains administrative offices, passenger waiting areas, and passenger processing areas. The customs facility has a dedicated vehicular parking lot which contains eleven (11) parking spaces. There is a 3,600 square yard apron dedicated to international arriving general aviation aircraft requiring customs clearance. The facility has a limited capacity of 18 passengers maximum. Arriving flights with more than 18 passengers are processed in the Main Terminal building. **Exhibit 2.7-3** provides a landside photo of the GA customs facility.

EXHIBIT 2.7-3: US CUSTOMS AND BORDER PROTECTION BUILDING

SOURCE: American Infrastructure Development, Inc., December 2021.

2.7.1.2 CITY OF TAMPA POLICE DEPARTMENT

The City of Tampa Police Department occupies a 10,500-square-feet hangar located on the north side of Runway 28, between Jet ICU and the vacant hangar previously occupied by Walters Aviation. The hangar has two offices, one pilot lounge, and a dedicated employee parking lot that provides 13 parking spaces. There is one 12,000-gallon Jet-A fuel tank located on the west side of the apron. The apron comprises 1,300 square yards with two separate helicopter parking positions. The City of Tampa Police Department bases three helicopters at TPA and anticipates adding a fourth in the future. **Exhibit 2.7-4** provides photos of the City of Tampa Police Department facility.

EXHIBIT 2.7-4: CITY OF TAMPA POLICE DEPARTMENT FACILITY

SOURCE: American Infrastructure Development, Inc., December 2021.

2.7.2 FIXED BASE OPERATOR FACILITIES

There are two (2) Fixed Based Operators (FBOs) at TPA which have both changed ownership since the completion of the last Airport Master Plan Update. Landmark Aviation is now Signature Flight Support (Signature), and Tampa International Jet Center is now Sheltair Aviation (Sheltair). Additionally, Sheltair has expanded their hangar development in the recent year and currently has a new hangar under construction. Sections 2.7.2.1 and 2.7.2.2 below discuss the existing FBO facilities.

2.7.2.1 SIGNATURE FLIGHT SUPPORT

Signature is a full-service FBO providing services such as hangar and tie-down leasing/rental, aircraft charter, aircraft maintenance, aircraft fueling, and office space leasing. Additionally, Signature offers flight crew and passenger amenities such as passenger lounges, pilot planning rooms, and rental car services. Signature is located southeast of the intersection of Runway 10-28 and 1R-19L. From a hangar and terminal building perspective, there have been no changes in the number of hangars, the apron sizes, the terminal size, number of automobile parking spaces or the location and capacity of the fuel farm since the previous master plan study. *According to HCAA staff, the Signature leasehold boundary has been revised as of March 2024*.

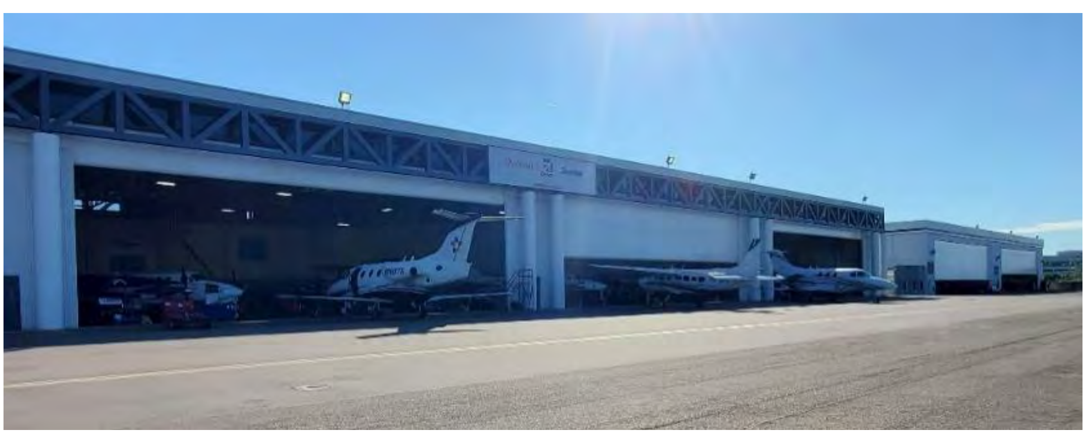
Terminal Building

The terminal building is centered on the Signature development area, with hangars to the east and hangars to the south, forming an “L” shape configuration. A fabric canopy covering the landside and airside of the terminal area provides coverage for arriving and departing passengers from the vehicular parking lot and the aircraft parking apron. The terminal encompasses 10,000 square feet. The first floor is the lobby where passenger and pilot services and amenities are located. The second floor has conference rooms and administrative offices for Signature, Textron Aviation, Hawker Beechcraft sales, and Valor Jets sales. **Table 2.7-1** summarizes the terminal area. **Exhibit 2.7-5** provides photos of several Signature facilities.

EXHIBIT 2.7-5: SIGNATURE FLIGHT SUPPORT FACILITIES

Signature Hangars East of Terminal

Signature Arrival/Departure Canopy



Signature Hangars South of Terminal (Textron Aviation – Tenant)

SOURCE: American Infrastructure Development, Inc., December 2021.

Hangar and Apron

Signature has not expanded their hangar or apron space since 2012. There is a total of 58,900 square yards of apron that fronts all three hangars and the terminal area. Based aircraft are typically stored within the east hangar and/or the adjacent apron. The two hangars and apron south of the terminal are used for aircraft maintenance by Textron Aviation. Table 2.7-1 summarizes the hangar and apron facilities under the Signature leasehold[16].

TABLE 2.7-1: SIGNATURE FLIGHT SUPPORT TERMINAL, HANGAR, AND APRON SUMMARY

FACILITY	OCCUPANT	ACREAGE	ADMINISTRATIVE AREA (SQ FT)	HANGAR (SQ FT)	TOTAL BUILDING AREA (SQ FT)	APRON (SQ YD)
Signature Flight Support[17]t	Signature	17.8	41,200	120,725	161,925	58,900
Terminal Area	Signature and Tenants	-	10,000	-	10,000	-
East Hangar	Signature Based Aircraft	-	-	57,950	57,950	-
South Hangar 1	Textron Aviation	-	14,600	31,525	46,125	-
South Hangar 2 (separate)	Textron Aviation	-	16,600	31,250	47,850	-

SOURCE: American Infrastructure Development, Inc., December 2021.

Fuel Storage Capacity

Signature's fuel farm is located south of the Signature terminal parking lot. **Table 2-2** below summarizes the fuel farm capacity as verified during the inventory site visit for this Airport Master Plan Update. Signature operates a total of four (4) fuel trucks, three (3) 5,000-gallon Jet-A trucks and one (1) 1,000-gallon AvGas truck. Dedicated fuel truck parking is located on the apron in front of the hangars on the east side of the terminal.

TABLE 2.7-2: SIGNATURE FLIGHT SUPPORT FUEL FARM CAPACITY

FUEL TYPE	NO. OF TANKS	INDIVIDUAL TANK CAPACITY (GALLONS)	TOTAL CAPACITY (GALLONS)
Jet-A	2	20,000	40,000
AvGas	1	20,000	20,000
AvGas	1	2,000	2,000
Total	4	Not Applicable	62,000

SOURCE: American Infrastructure Development, Inc., December 2021.

Automobile Parking

The current parking configuration provides a total of 305 automobile parking spaces. Two (2) rental car parking spaces located at the landside entrance to the terminal have been converted to electric car charging stations.

[17] *According to HCAA staff, the Signature leasehold boundary has been modified as of March 2024.*

2.7.2.2 SHELTAIR AVIATION

Sheltair controls the FBO leasehold that was previously under Tampa International Jet Center. The Sheltair hangars and terminal are located east of the U.S. Customs and Border Protection facility. Sheltair is a full-service FBO and provides a variety of services including charter services, hangar storage for aircraft, tie-down rental, aircraft maintenance, and aircraft fueling. Sheltair also provides flight crew and passenger services including waiting areas, on-site rental car services, ground transportation services, flight planning rooms, and conference rooms.

As of December 2021, Sheltair had a total of forty-five (45) based aircraft including helicopters, piston, turboprop, and corporate jet aircraft.

Since the acquisition of Tampa International Jet Center, Sheltair has completed an apron expansion and constructed a new hangar. As of December 2021, two (2) additional hangars with apron were under construction on a parcel east of the John H, Sykes (JHS) Capital hangar[18]. The existing Sheltair facilities are further discussed in the following subsections. **Exhibit 2.7-6** provides photos of the existing Sheltair hangars and terminal area.

Terminal Building

Sheltair's terminal is located on the south side of Runway 10-28, east of the Signature complex, and is connected to Hangar No. 2/No. 3. The terminal airside has a 12,500-square-foot covered area on the apron for arriving and departing aircraft. A similar style of cover is also provided on the landside of the building to provide coverage for arriving and departing passengers in the parking lot area. The terminal building is 14,000 square feet with two floors. The first floor is the lobby where passenger and pilot services and amenities are located. Administrative offices are located on the second floor of the terminal building. **Table 2.7-3** summarizes the terminal area.

Hangar and Apron

As mentioned above, Sheltair has expanded the apron for Hangar No. 4 to the north by 4,200 square feet. The new Hangar No. 5 was constructed on the east side of Hangar No. 4. Hangar No. 5 is 31,850 square feet with an estimated 5,800 square yard apron. The hangar is currently used by Skyway Aviation for aircraft storage. As of December 2021, Sheltair Hangars No. 6 and No. 7 were under construction. These hangars are being constructed as one (1) 92,711 square feet building which will be divided into four (4) separate hangar units, Hangar 6A, 6B, 7A, and 7B. The new hangars will have a shared use apron, totaling approximately 10,300 square yards, and each unit will have office space on the landside of the building. Table 2.7-3 summarizes the hangar and apron facilities under the Sheltair leasehold. Exhibit 2.7-6 provides photos of Sheltair's existing hangars. **Exhibit 2.7-7** shows the location of the existing and new hangar currently under construction on the airfield. *According to HCAA staff, as of March 2024, Sheltair has ownership of the former JHS hangar and has completed the construction of Hangars 6 and 7.*

Former JHS Capital Hangar

The former JHS Capital hangar is located within Sheltair's leasehold. The facility includes a 13,550 square feet hangar with a 2,300 square yard apron. There are 11 vehicular parking spaces covered by 2,200 square feet of awning and 1 uncovered handicapped parking space.

[18] *Construction was finalized on Hangars 6 and 7 in 2023.*

EXHIBIT 2.7-6: SHELTAIR AVIATION FACILITIES

Sheltair Terminal Area and Hangars No. 2 and No. 3

Sheltair Hangar No. 1

Sheltair Hangar No. 5

NOTE: Sheltair's terminal airside arrival and departure cover
SOURCE: American Infrastructure Development, Inc., December 2021.

TABLE 2.7-3: SHELTAIR AVIATION TERMINAL, HANGAR, AND APRON SUMMARY

FACILITY	OCCUPANT	ADMINISTRATIVE AREA (SQ FT)	HANGAR (SQ FT)	TOTAL BUILDING AREA (SQ FT)	APRON (SQ YD)
Sheltair Aviation					
Terminal Area	Sheltair	14,000	-	14,000	-
East Hangar (Hangar No. 1)	Southern Air Systems Maintenance	4,900	26,950	31,850	-
West Hangar (Hangars No. 2 and 3)	Sheltair, Primo's Gourmet Catering, ExecuJet	19,600	53,900	73,500	-
Second Eastern Hangar (Hangar No. 4)	Sheltair, Tenants	4,900	26,950	31,850	-
Hangar No. 5	Sheltair, Skyway Aviation, GoGo Rental Car	4,900	26,950	31,850	5,800*
Hangars No. 6A and 6B	Sheltair	5,800	29,300	35,100	10,300*
Hangars No. 7A and 7B	Sheltair	9,800	47,800	57,600	
JHS Capital Hangar	*JHS Capital*	*2,580*	*13,550*	*16,130*	*2,300*
Grand Total		66,480	255,400	291,880	62,800**

NOTES: *Figures estimated.; ** Including all apron areas

SOURCES: HNTB, *Tampa International Airport Master Plan Update*, October 2012 American Infrastructure Development, Inc., December 2021 (site visit); Sheltair Aviation, *Hangars 6 and 7 Bid Plans*, March 2020.

EXHIBIT 2.7-7: SHELTAIR AVIATION ONGOING EXPANSION

Rendering of Existing and Proposed Facilities

NOTE: Hangars 6 and 7 were constructed in 2023.

SOURCE: Nearmap, November 2021 (aerial photography – for visual reference only, not to scale); American Infrastructure Development, Inc., December 2021; Sheltair, https://sheltairaviation.com/wp-content/uploads/2021/02/Sheltair-TPA_Hangars-67.pdf, accessed December 2021.

Fuel Storage Capacity

Table 2-4 below summarizes the fuel farm capacity verified during the inventory site visit. The fuel farm is located west of Sheltair Hangar No. 3 and is accessible via Jim Walter Boulevard. Sheltair operates six (tanks) including two (2) 500-gallon above ground fuel tanks for diesel and motor gasoline. Sheltair operates a total of four (4) fuel trucks, two (2) 5,000-gallon Jet-A trucks, one (1) 7,000-gallon Jet-A truck, and one (1) 1,000-gallon AvGas truck. Dedicated fuel truck parking is located on the apron in front of the hangar on the west side of the terminal, adjacent to the U.S. Customs and Border Protection apron. The four (4) fuel truck parking spaces are identified by yellow pavement markings.

TABLE 2.7-4: SHELTAIR AVIATION FUEL FARM CAPACITY

FUEL TYPE	NO. OF TANKS	INDIVIDUAL TANK CAPACITY (GALLONS)	TOTAL CAPACITY (GALLONS)
Jet-A	3	20,000	60,000
AvGas	1	10,000	10,000
Diesel	1	500	500
Motor Gasoline	1	500	500
Total	**6**	**Not Applicable**	**71,000**

SOURCE: American Infrastructure Development, Inc., December 2021 (site visit).

Automobile Parking

The existing parking configuration provides 280 automobile parking spaces across all the Sheltair hangars. Sheltair constructed Hangar No. 5, which has a dedicated landside parking lot adding fifty (50) parking spaces. Twenty-four (24) of those parking spaces are covered by an awning attached to the hangar. Hangars No. 6 and 7 are currently under construction and the planned parking lot will add 247 parking spaces resulting in an overall total of 577 parking spaces.

2.7.3 CORPORATE TENANT FACILITIES

A couple of leaseholds have changed tenants, but the facilities have remained unchanged since the completion of the 2012 MPU. The following subsections describe the existing GA corporate tenant facilities.

2.7.3.1 JET ICU

The facilities formerly occupied by Flight Express Air Cargo are now occupied by Jet ICU. The hangar on the Jet ICU leasehold is 6,400 square feet with a 4,700 square yard apron. The hangar has a dedicated parking lot that provides thirteen (13) vehicular parking spaces. There is a 12,000-gallon Jet-A above ground fuel tank on the west side of the apron. Jet ICU is currently in the planning phase of relocating their operations east of Runway 19L. Construction of the new facilities is expected to begin in February 2022. As part of this expansion, Jet ICU is expected to build a new 30,000 hangar[19]. **Exhibit 2.7-8** provides photos of the existing Jet ICU hangar and fuel tank.

[19] Tampa Bay Times, https://www.tampabay.com/news/business/2021/03/05/air-ambulance-service-jet-icu-relocating-to-tampa-international-airport/, accessed December 2021.

EXHIBIT 2.7-8: JET ICU FACILITY

Hangar Exterior

Aboveground Fuel Tank

SOURCE: American Infrastructure Development, Inc., December 2021.

2.7.3.2 PRIVATE AVIATION

This leasehold previously identified as Black Diamond Aviation is now occupied by Private Aviation. The Private Aviation hangar is 15,000 square feet with an 1,800 sq. yard apron and a dedicated vehicular parking lot with 9 spaces. The hangar features a pilot's lounge, passenger lounge, and a breakroom. Private Aviation bases one (1) jet aircraft at TPA. The hangar is used exclusively for storage and light maintenance on a Bombardier Global Express. There is a 12,000-gallon above ground Jet-A fuel tank located on the east side of the hangar. **Exhibit 2.7-9** provides photos of the Private Aviation facility.

EXHIBIT 2.7-9: PRIVATE AVIATION FACILITY

Hangar Exterior

Hangar Interior

SOURCE: American Infrastructure Development, Inc., December 2021.

2.7.3.3 DEBARTOLO AVIATION

Since the 2012 MPU, the DeBartolo facilities have remained unchanged. The hangar is 12,000 square feet, with a 1,500-square-yard apron and a 12,000-gallon aboveground Jet-A fuel tank located on the west side of the hangar. There is a dedicated vehicular parking lot located on the north side of the hangar providing eight parking spaces. The hangar is primarily used for aircraft storage and light maintenance of a single based Gulfstream G600 aircraft, and it includes a locker room/bathroom, passenger lobby, pilots' office, directors' office, and a breakroom. **Exhibit 2.7-10** provides a photo of the DeBartolo facility.

EXHIBIT 2.7-10: DEBARTOLO AVIATION FACILITY

Hangar Exterior and Interior

SOURCE: American Infrastructure Development, Inc., December 2021.

2.8 UTILITIES

The primary utilities servicing TPA include domestic water, wastewater, electric (distribution power lines only), communication fiber, natural gas, and jet fuel lines. This section provides a high-level overview of the major elements of utility infrastructure serving the Airport.

The data identified in this report were compiled from existing record data and as-built plans (AutoCAD and geographic information system [GIS]) provided by the Authority. Limited utility investigation was performed with the local utility providers, and the report does not identify existing capacity or consider future development.

2.8.1 CENTRAL UTILITY PLANT

The Authority completed the construction and commissioning of a new Central Utility Plant (CUP) in January 2022. The CPU is housed in a 10,000 square foot building and provides heating, cooling, potable water, and fire protection for the Main Terminal and the Main Terminal SkyConnect station. *As of May 2024, demolition of the former utility plant, located in the Airport's previous administration building, is ongoing. The demolition, along with construction of a new FAA parking lot, is an enabling project for the new Red Side vertical circulation building and express curbs.*

2.8.2 DOMESTIC WATER DISTRIBUTION SYSTEM

Potable domestic water service is provided by the City of Tampa via several large-diameter water mains (WMs), as shown on **Exhibit 2.8-1**. The north side of the Airport is serviced by 12-inch Duct Iron Pipe (DIP) and 24-inch DIP WMs along North Hoover Boulevard. The 12-inch WM continues south with a tie-in to the 12-inch DIP WM along the George J. Bean Parkway loop road. The south side of the Airport is serviced by 12-inch and 16-inch DIP WMs along George J. Bean Parkway heading north from a primary WM along Spruce Street.

2.8.3 SANITARY WASTEWATER SYSTEM

The City of Tampa Wastewater Department maintains the primary sewer collection system for the Airport, consisting of a combination of 8-inch vitrified clay, 12-inch Polyvinyl Chloride (PVC), 12-inch cast iron, and 14-inch PVC gravity sewer lines and force main collection systems along George J. Bean Parkway and Bessie Coleman Boulevard, as shown on **Exhibit 2.8-2**.

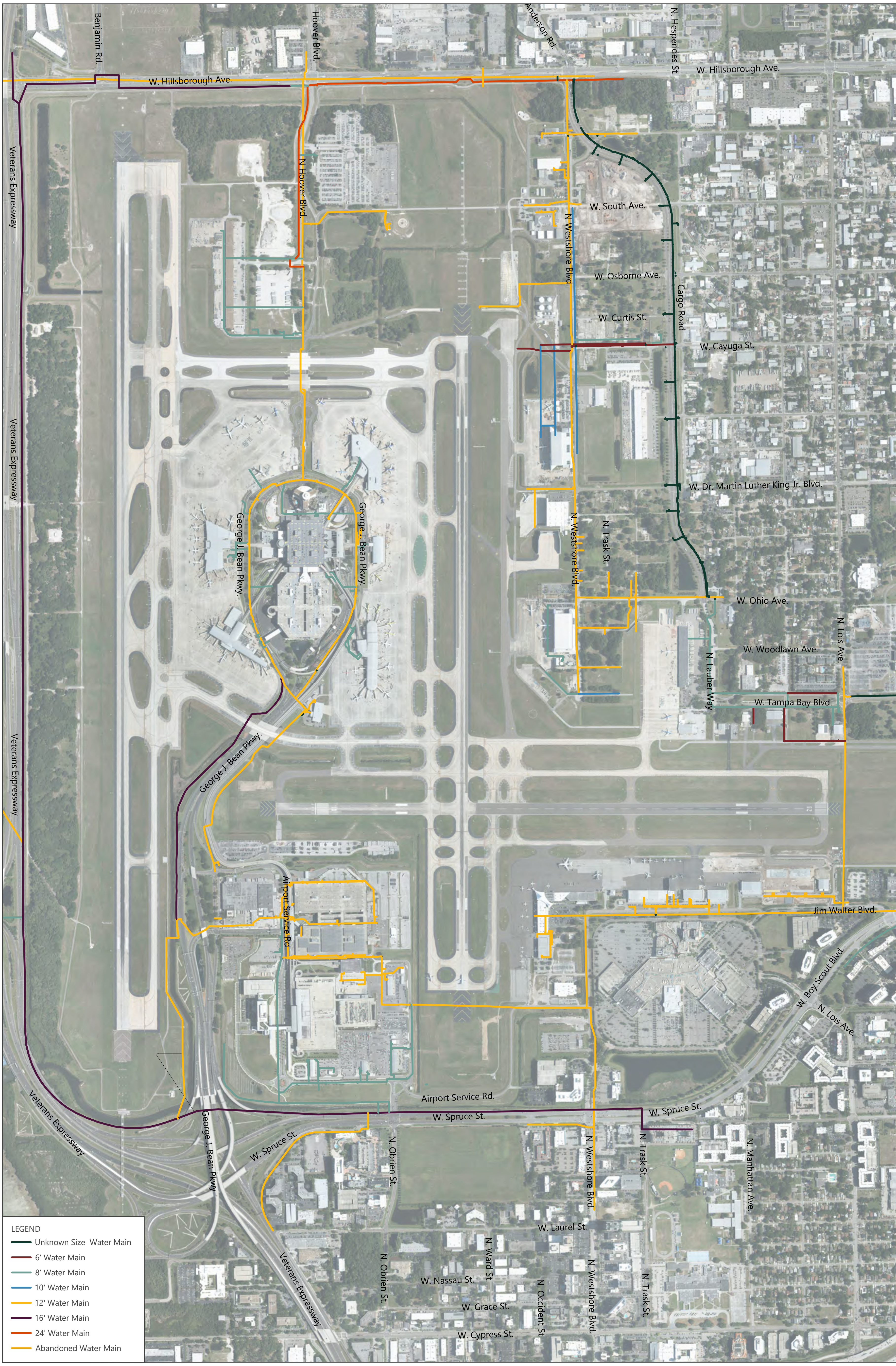
2.8.4 EXISTING POWER/ELECTRICAL SYSTEM

Primary electric power to the Airport is provided by Tampa Electric Company (TECO) via a system of overhead and underground distribution (13 kilovolt [kV]) power lines, as shown on **Exhibit 2.8-3**.

TECO has a substation located on the east side of the Airport approximately 100 feet south of the West Tampa Bay Boulevard and Airport Service Road intersection. The property is owned by the HCAA and leased by TECO. TECO has a buried distribution system from this substation that provides service throughout the Airport site. The location of the TECO's substation within the Airport property limits is indicated on Exhibit 2.8-3.

2.8.5 EXISTING RENEWABLE ENERGY SYSTEM

The Authority has constructed a large 2-megawatt (MW) solar array located on the south TPA Economy Parking Garage. The array is a sustainability commitment by both TECO and the HCAA that provides solar energy to TECO's customers and vehicle charging stations, as well as provides shade for parking patrons, as shown on **Exhibit 2.8-4**.



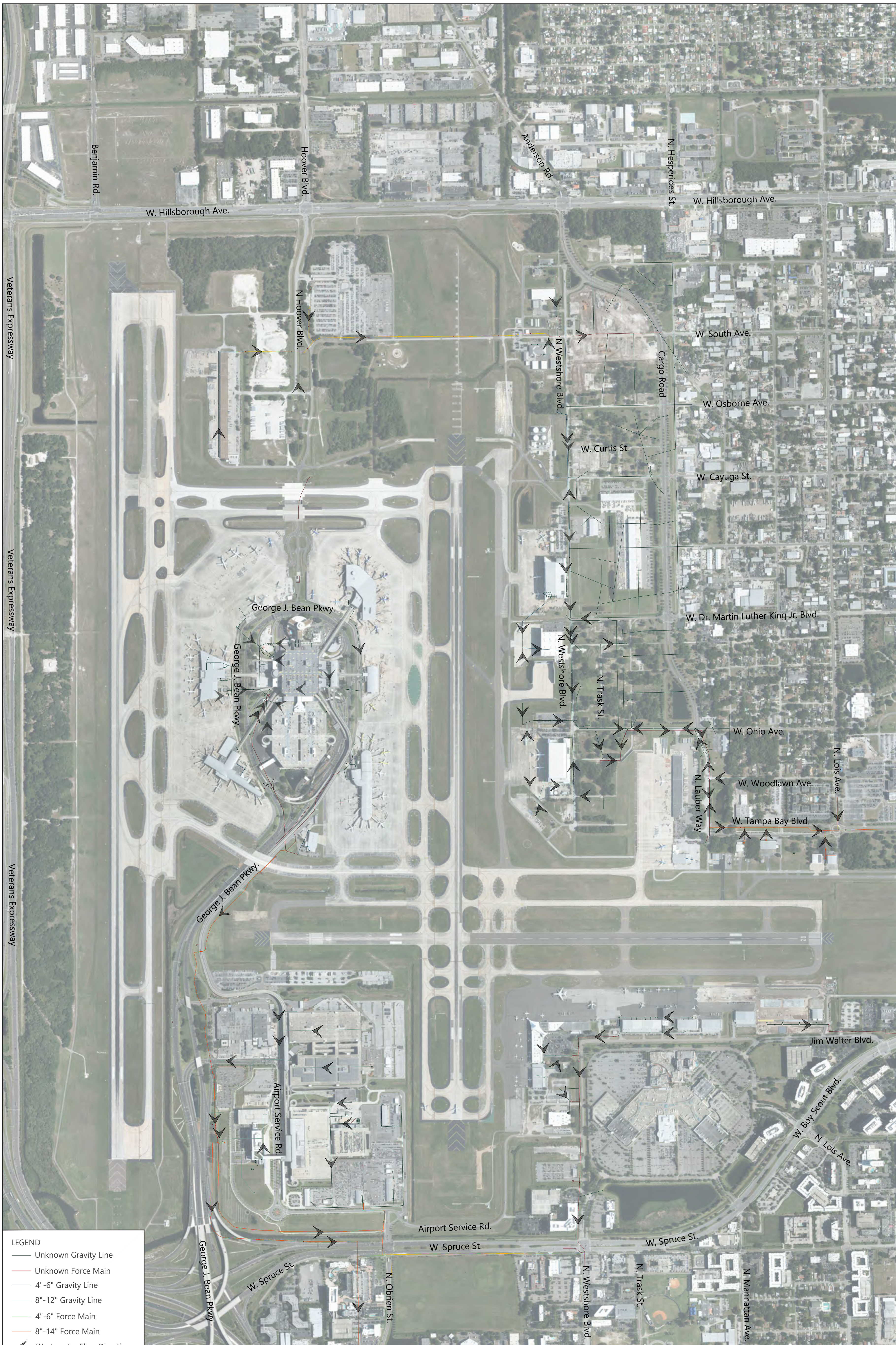
SOURCES: Tampa International Airport, *COMPOSITE-UTILITIES-TPA.dwg*, November 2021; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 1,200 ft

EXHIBIT 2.8-1

EXISTING DOMESTIC WATER UTITLIES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.8-1 to 2.8-7 Utilities.dwgLayout: 2.8-1 Plotted: May 15, 2024, 02:55PM



SOURCES: Tampa International Airport, *COMPOSITE-UTILITIES-TPA.dwg*, November 2021; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

EXHIBIT 2.8-2

EXISTING WASTEWATER UTILITIES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.8-1 to 2.8-7 Utilities.dwgLayout: 2.8-2 Plotted: May 20, 2024, 04:08PM

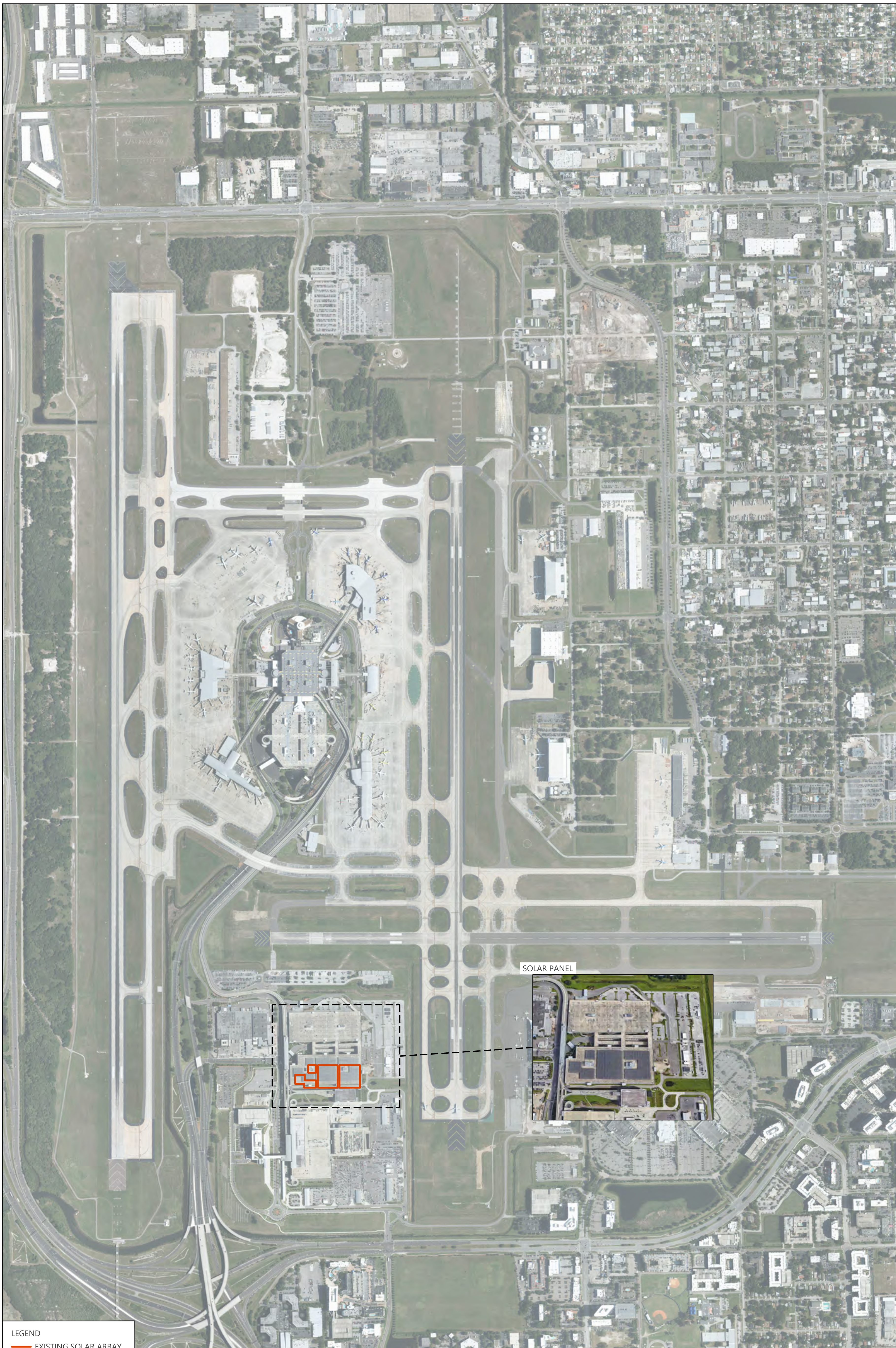
SOURCES: Tampa International Airport, *COMPOSITE-UTILITIES-TPA.dwg*, November 2021; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 1,200 ft

EXHIBIT 2.8-3

EXISTING POWER/ELECTRICAL SYSTEM

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.8-1 to 2.8-7 Utilities.dwgLayout: 2.8-3 Plotted: May 15, 2024, 02:56PM



SOURCES: Tampa International Airport, *COMPOSITE-UTILITIES-TPA.dwg,* November 2021; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 1,200 ft

EXHIBIT 2.8-4

EXISTING RENEWABLE ENERGY SYSTEM

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.8-1 to 2.8-7 Utilities.dwgLayout: 2.8-4 Plotted: May 15, 2024, 02:56PM

2.8.6 FUEL SYSTEM

2.8.6.1 JET FUEL (JET-A)

Jet Fuel Delivery from Off-Site Pipeline

The Tampa Airport Pipeline Corporation is the primary supplier of Jet-A aviation turbine fuel to TPA from a tank farm located at the Port of Tampa Terminal. The 6-inch fuel line crosses the airstrip north along the east side of Runway 10-28 from Airport Service Road to West Tampa Bay Boulevard, and it supplies the tank farm at the Airport. **Exhibit 2.8-5** shows the primary fuel lines.

Jet Fuel Delivery On-Airport

The HCAA has a tank farm located on the northeast side of the Airport off West Cayuga Street. Multiple fuel lines service the Airport from this location (12 inches, 18 inches, and 20 inches). The bulk fuel storage facility on the Airport consists of six aboveground storage tanks, providing approximately 3,486,000 gallons of storage capacity. It also includes pumps, filters, valves, connecting piping, storage and shop buildings, control room, transmission lines, hydrant loop piping around each airside terminal, and hydrant valves and controls, along with miscellaneous structures and equipment necessary for a fully functioning jet fuel storage facility and underground hydrant system, which serve the ramps and aprons at each airside terminal and common or segregated air cargo facilities, as depicted on **Exhibit 2.8-5**.

2.8.6.2 NATURAL GAS SYSTEM

TECO Peoples Gas (TPG) provides the distribution of natural gas to the Airport. **Exhibit 2.8-6** shows the primary distribution lines. A 2-inch steel gas main services the main terminal area. This line originates along West Hillsborough Avenue, continues south along North Hoover Boulevard Commerce Boulevard, and terminates near the Airport hotel.

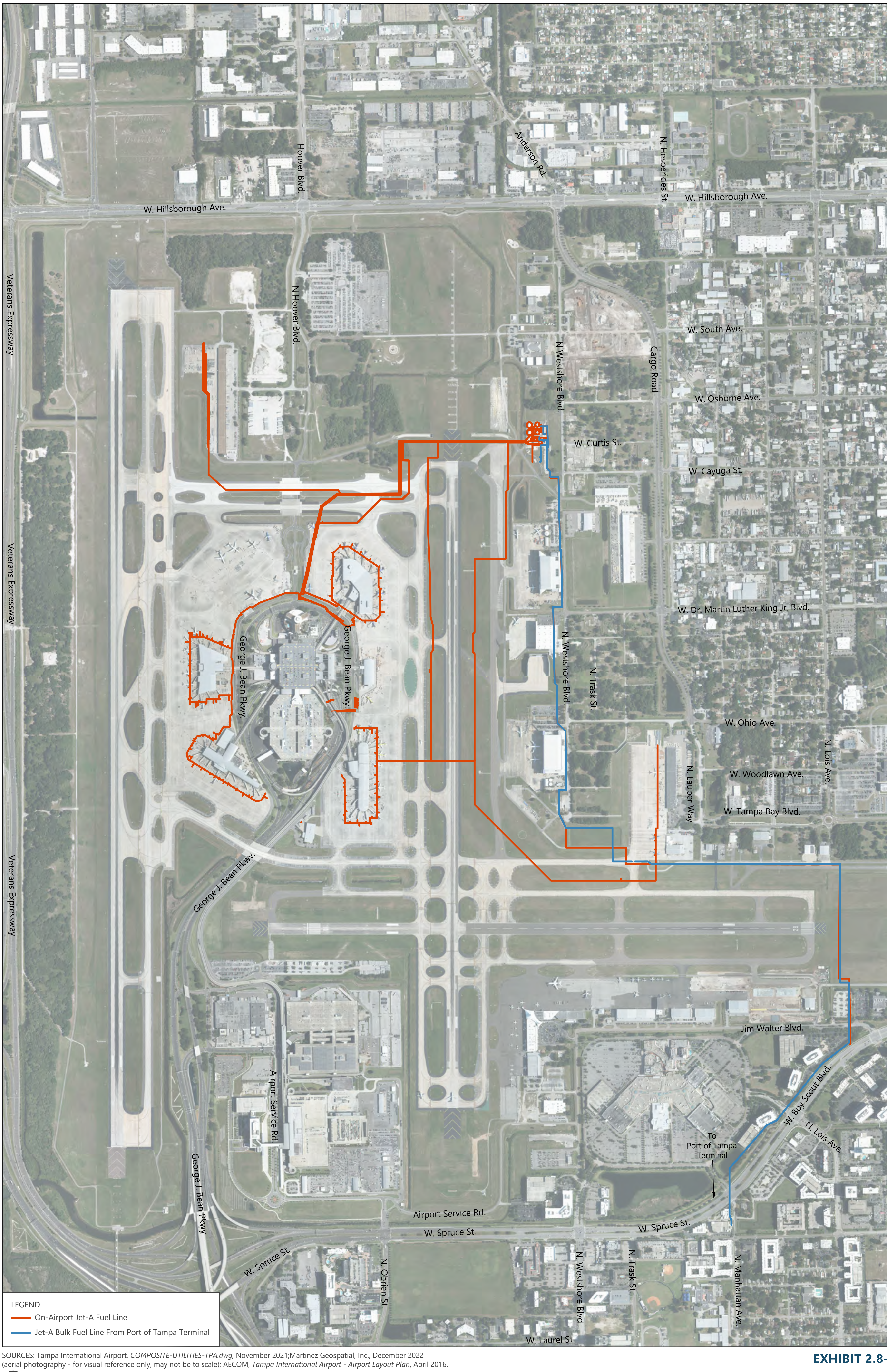
TPG has gas distribution lines of various sizes along Jim Walter Boulevard / North Westshore Boulevard and along South Airport Service Road to the TPA RCC. TPG has a gas main the crosses north along the east side of Runway 10-28 from Airport Service Road to West Tampa Bay Boulevard.

2.8.7 COMMUNICATIONS NETWORK

The Airport property has an extensive network of private, federal, and county telecommunication and fiber providers. Due to the extensive network of existing facilities, a more detailed investigation is recommended using subsurface utility engineering investigation methods to validate the utility data identified. **Exhibit 2.8-7** identifies the primary data lines.

2.8.8 SUNSHINE 811

The Sunshine 811 ticketing system was referenced to obtain a list of other utility providers with facilities on or near the Airport. A list of these utility providers is included in **Appendix C** of this document.



SOURCES: Tampa International Airport, *COMPOSITE-UTILITIES-TPA.dwg*, November 2021;Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 1,200 ft

EXHIBIT 2.8-5

EXISTING FUEL LINES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.8-1 to 2.8-7 Utilities.dwgLayout: 2.8-5 Plotted: May 20, 2024, 04:08PM

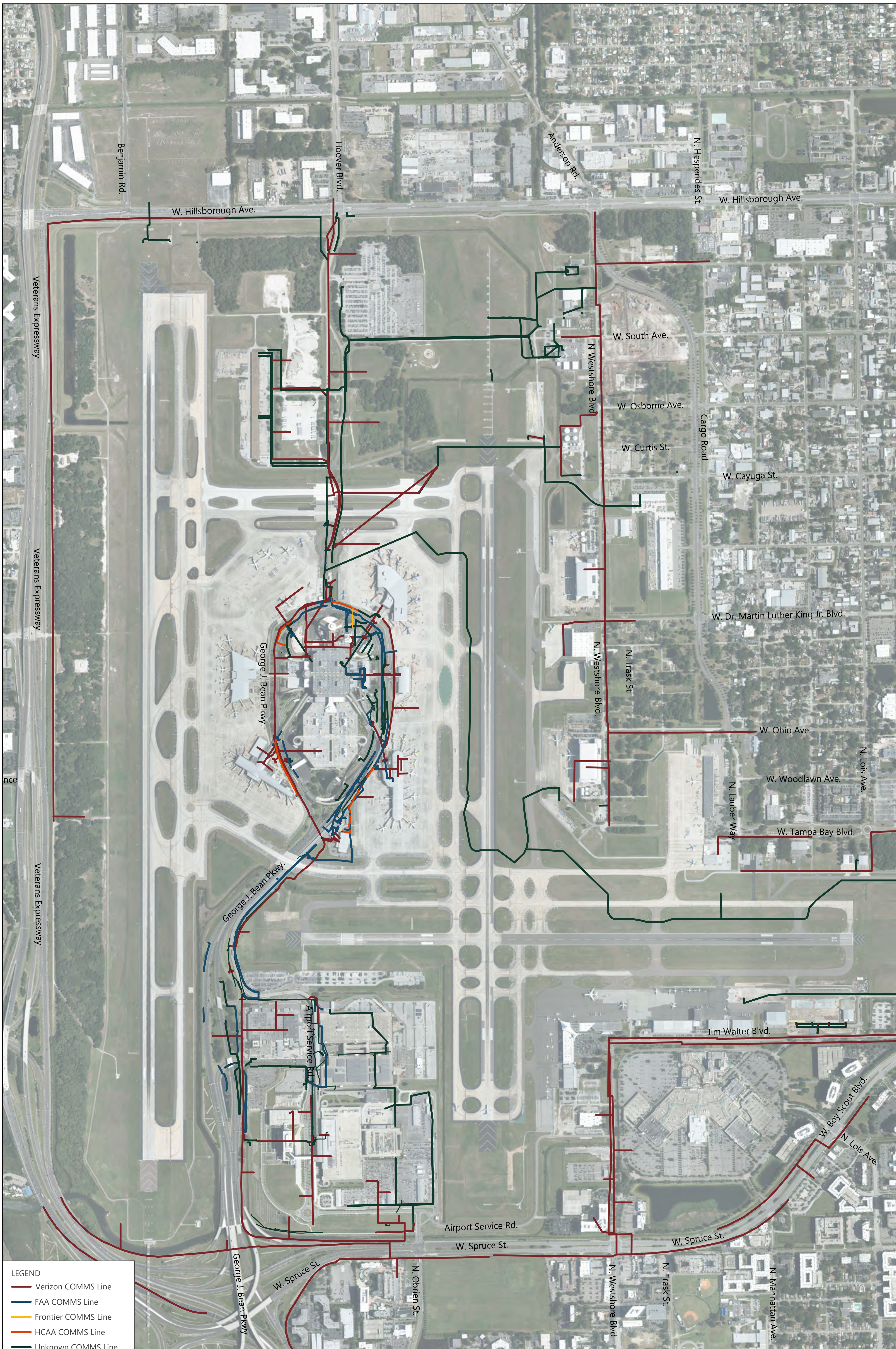
SOURCES: Tampa International Airport, *COMPOSITE-UTILITIES-TPA.dwg*, November 2021; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH
0 1,200 ft

EXHIBIT 2.8-6

EXISTING NATURAL GAS SYSTEM

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.8-1 to 2.8-7 Utilities.dwgLayout: 2.8-6 Plotted: May 20, 2024, 04:09PM



SOURCES: Tampa International Airport, *COMPOSITE-UTILITIES-TPA.dwg*, November 2021; Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); AECOM, *Tampa International Airport - Airport Layout Plan*, April 2016.

NORTH 0 1,200 ft

EXHIBIT 2.8-7

EXISTING COMMUNICATION UTILITIES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 1A- Data Collection and Inventory of Existing Conditions\Drawings&Models\AutoCAD\Exhibit 2.8-1 to 2.8-7 Utilities.dwgLayout: 2.8-7 Plotted: May 20, 2024, 04:10PM

2.9 BAGGAGE HANDLING SYSTEMS

The existing baggage handling system is discussed in **Appendix D**.

2.10 ENVIRONMENTAL CONDITIONS

The environmental conditions inventory was prepared to evaluate the existing environmental conditions of the Tampa International Airport (TPA or Airport) property and the surrounding community with the purpose of determining what, if any, environmental factors should be considered during the planning process.

The inventory considered environmental resource categories defined in the National Environmental Policy Act (NEPA), as outlined in Federal Aviation Administration (FAA) Order 1050.1F, *Environmental Impacts: Policies and Procedures*.[20] Due to the location of the Airport, known conditions at the Airport, and its surrounding environment, the following environmental resource categories were identified as relevant to future development considerations at TPA:

- Air Quality
- Biological Resources
- Coastal Resources
- Hazardous Materials, Solid Waste, and Pollution Prevention
- Historical, Archaeological, Architectural, and Cultural Resources
- Water Resources (including wetlands, floodplains, surface waters, and groundwater)

The known environmental resources that are located on Airport property and that should be considered during preparation of the Master Plan Update are summarized in the following sections. **Exhibit 2.10-1** depicts environmental conditions including natural resources on and near Airport property.

2.10.1 AIR QUALITY

The US Environmental Protection Agency (USEPA) classifies Hillsborough County as an attainment area for all criteria pollutants, except for lead and sulfur dioxide.[21] Hillsborough County contains a localized area that is in nonattainment for lead, approximately nine miles southeast of the Airport. A second localized area within Hillsborough County that is in nonattainment for sulfur dioxide is approximately 11 miles southeast of the Airport.[22] The localized nonattainment areas are finite and related to large stationary sources. Therefore, the Airport is located within an attainment area.

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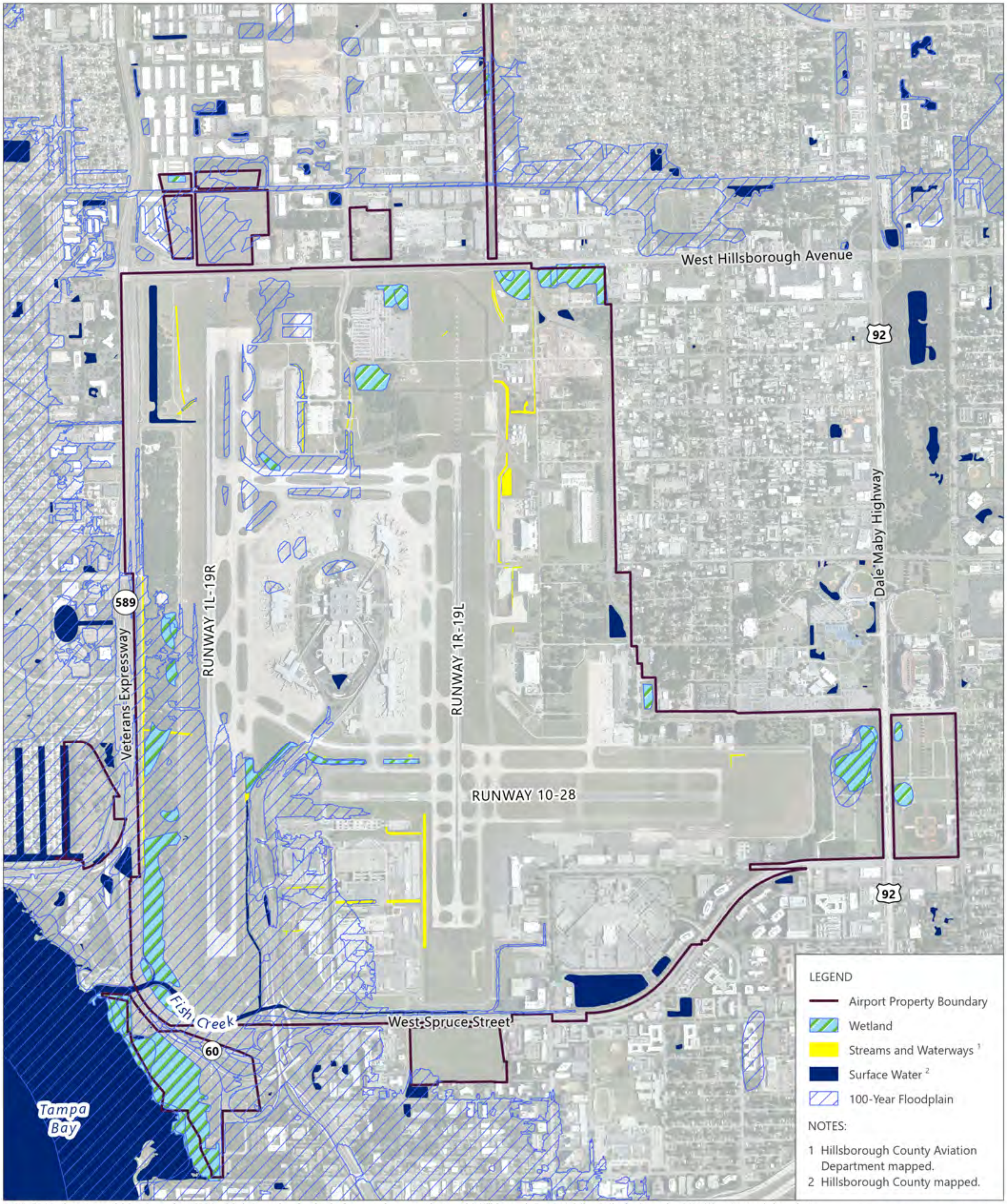
[20] US Department of Transportation, Federal Aviation Administration, Order 1050.1F, *Environmental Impacts: Policies and Procedures*, July 16, 2015.

[21] US Environmental Protection Agency, Green Book, Florida Nonattainment/Maintenance Status for Each County by Year for All Criteria Pollutants, https://www3.epa.gov/airquality/greenbook/anayo_fl.html (accessed January 21, 2022).

[22] US Environmental Protection Agency, NEPAssist, https://www.epa.gov/nepa/nepassist (accessed January 21, 2022).



SOURCES: Martinez Geospatial, Inc., December 2022 (aerial photography - for visual reference only, may not be to scale); Hillsborough County Aviation Authority, December 2020 (Airport property boundary); Hillsborough County Aviation Authority, January 2022 (wetlands, streams, and waterways); Hillsborough County, October 2019 (surface water); Federal Emergency Management Agency, October 2021 (floodplains).

EXHIBIT 2.10-1

NORTH 0 2,500 ft

EXISTING ENVIRONMENTAL CONDITIONS

P:\GIS\Projects\TPA\MXD\TPA_MPU_ExistingConditions_20240314.aprx

2.10.2 BIOLOGICAL RESOURCES

The Florida Department of Environmental Protection classifies the majority of Airport property as developed land; however, natural land cover is present, including small, intermittent areas of emergent aquatic vegetation; estuary; freshwater marsh; intermittent ponds; and mixed rangeland throughout Airport property. Pine flatwood, coniferous upland hardwood, and wetland forest stands are generally concentrated at the north, west, and east edges of the Airfield.[23]

The US Fish and Wildlife Service (USFWS) and the Florida Fish and Wildlife Conservation Commission (FFWCC) have authority over state and federally listed endangered and threatened species, respectively. HCAA has identified threatened and endangered species that have the potential to be present on and around the Airport (see **Table 2.10-1**).[24]

TABLE 2.10-1: FEDERALLY LISTED SPECIES POTENTIALLY OCCURRING NEAR THE AIRPORT

COMMON NAME	SCIENTIFIC NAME	FEDERAL STATUS
Piping Plover	*Charadrius melodus*	Threatened
Wood Stork	*Campephilus principalis*	Threatened
American Alligator	*Alligator mississippiensis*	Threatened
Eastern Indigo Snake	*Drymarchon corais couperi*	Threatened
Gopher Tortoise	*Gopherus polyphemus*	Candidate

SOURCE: Hillsborough County Aviation Authority, *Tampa International Airport Wildlife Hazard Management Plan*, July 2007, Revised: August 2019.

HCAA is required to avoid or minimize to the extent practicable the potential for adversely affecting state or federally protected species and, therefore, must adhere to state and federal requirements regarding management of listed species. Additionally, HCAA must adhere to regulations regarding non-listed species under state protection. Eagles are afforded protection under the US Eagle Protection Act, and while no eagle nests have been identified on Airport property, FFWCC records indicate occurrences of nests in proximity of Airport property.[25]

Under Florida Administrative Code, Chapter 68A-9.012, *Taking of Wildlife on Airport Property,* wildlife burrows, including burrowing owl and gopher tortoise burrows, within safety areas (including the RSA and taxiway safety area) may be destroyed after or while all existing burrowing owl and gopher tortoise(s) within the burrows are flushed out or live captured. Taking[26] of gopher tortoises, however, is prohibited. The Airport's Wildlife Hazard Management Plan (WHMP) requires live-captured gopher tortoise, among other species listed in Florida Administrative Code, Chapter 68A-27, be immediately released on-site, provided the release site and capture site are located on a contiguous pieces of Airport property, or at an off-site location with FFWCC authorization.[27]

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[23] Florida department of Environmental Protection, Geospatial Open Data, https://geodata.dep.state.fl.us/datasets/FDEP::statewide-land-use-land-cover/explore?location=27.928032%2C-82.510172%2C11.66 (accessed January 17, 2022).

[24] Hillsborough County Aviation Authority, *Tampa International Airport Wildlife Hazard Management Plan*, July 2007, Revised: August 2019

[25] Florida Fish and Wildlife Conservation Commission, Eagle Nesting https://geodata.myfwc.com/datasets/eb20bf44aeea44a8ab4a47cd4329c6b6/explore?location=27.966701%2C-82.459794%2C12.45, (accessed January 20, 2022).

[26] "Take" is a technical term in the Endangered Species Act, meaning "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

[27] Hillsborough County Aviation Authority, *Tampa International Airport Wildlife Hazard Management Plan*, July 2007, Revised: August 2019

The USFWS has designated critical habitat for some federally endangered and threatened species in Hillsborough County; however, no designated areas are located on or adjacent to the Airport. HCAA maintains and implements the WHMP through which HCAA actively manages wildlife attractants (i.e., habitat, food sources, etc.) throughout Airport property and deters wildlife that pose a threat to aircraft operations. Based on the findings from a WHA that was completed in 2021, HCAA is evaluating the removal of wildlife attractants west of Runway 1L-19R, including vegetation/tree clearing.

2.10.3 COASTAL RESOURCES

The Coastal Zone Management Act of 1972 ensures effective management, beneficial use, protection, and development of the coastal zone. The entire state of Florida is included within a coastal zone, and Hillsborough County is designated as a Florida Coastal County. Accordingly, any federal activity affecting the coastal zone must be consistent with the Florida Coastal Management Program. The Florida Coastal Management Program consists of a network of 24 Florida statutes defined to protect and enhance the state's natural, cultural, and economic coastal resources, such as beaches, shoreline, water resources, and local land development. The Florida State Clearinghouse, administered by the Florida Department of Environmental Protection Office of Intergovernmental Programs, is the primary contact for receipt of consistency evaluations from federal agencies.[28]

Airport property is within the City of Tampa and unincorporated Hillsborough County. Therefore, the Airport is subject to coastal zone development policy and regulations associated with the *Imagine 2040: Tampa Comprehensive Plan* (Tampa Comprehensive Plan)[29] for the area located in the City of Tampa and the *Unincorporated Hillsborough County Comprehensive Plan*[30] for the area located in unincorporated Hillsborough County. The Coastal Management Element of the Tampa Comprehensive Plan and the Coastal Management Section of the Unincorporated Hillsborough County Comprehensive Plan provide the framework for the use and management of the coastal resources within each jurisdiction. The intent of guidance is to restrict development activities where such activities would damage or destroy coastal resources, to protect human life, and limit public expenditures in areas subject to destruction by natural disaster.

2.10.4 HAZARDOUS MATERIALS, SOLID WASTE, AND POLLUTION PREVENTION

FAA Order 1050.1F identifies the Resource Conservation and Recovery Act (RCRA) (40 Code of Federal Regulations [CFR] 239–282) and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 USC § 103) as the statutes of greatest importance when proposing actions to construct and operate facilities. CERCLA provides for consultation with natural resource trustees and cleanup of any release of a hazardous substance, excluding petroleum, into the environment. The RCRA governs the generation, treatment, storage, and disposal of hazardous wastes and establishes guidelines for hazardous and non-hazardous solid waste management activities.

Review of the USEPA EnviroAtlas interactive online map identified no CERCLA sites on Airport property; however, the Airport does contain multiple active, EPA-regulated RCRA facilities including: Air General, Inc.; Aircraft Service International Group; American Airlines; Evergreen Aviation; Gulfstream International Airlines; Hertz Rental Car

[28] Florida Department of Environmental Protection, Federal Consistency Intergovernmental Coordination and Review, https://floridadep.gov/rcp/fcmp/content/federal-consistency-intergovernmental-coordination-and-review (accessed January 11, 2022).

[29] Hillsborough County City-County Planning Commission, *Imagine 2040: Tampa Comprehensive Plan*, February 20, 2016 (effective), https://planhillsborough.org/wp-content/uploads/2021/08/Adopted-Tampa-2040-Comp-Plan-1.pdf (accessed January 11, 2022).

[30] Plan Hillsborough, *Unincorporated Hillsborough County Comprehensive Plan: Coastal Management*, https://planhillsborough.org/wp-content/uploads/2021/04/Coastal-Management-Section.pdf (accessed January 13, 2022).

Corporation; Oxford Airport Technical Services; Pemco World Air Services; TSA; Textron Aviation; US Airways; United Parcel Service; and the USPS.[31, 32] Although review of records does not indicate the presence of ground contamination, hazardous materials may be present in soil and groundwater (due to previous activities) as well as in building materials. Therefore, hazardous materials may be encountered during demolition and ground-disturbing activities.

2.10.5 HISTORICAL, ARCHAEOLOGICAL, ARCHITECTURAL, AND CULTURAL RESOURCES

The National Historic Preservation Act (NHPA) established the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to consider whether proposed activities have the potential to have an adverse effect on historic properties that are already listed, determined eligible, or not yet evaluated under the NRHP criteria. Properties that are either listed in or eligible for listing in the NRHP are provided the same measure of protection under Section 106.

The NEPAssist tool,[33] which contains data from the NRHP, was used to search for historic properties. No known historic properties were identified within or surrounding the Airport property boundary. Although no known historic properties were identified, development of TPA terminal facilities began in 1971, so original terminal structures are nearing 50 years in age, the age at which they become eligible for consideration as historic resources. Previous cultural resources studies at TPA have identified that the probability of encountering archeological resources during ground disturbing activities is low.

2.10.6 WATER RESOURCES

The Clean Water Act (CWA) regulates discharges of pollutants into the Waters of the United States and regulates quality standards for surface waters.[34] The Florida Department of Environmental Protection is responsible for federally delegated water programs in Florida, including water quality certification and permitting pursuant to the CWA Section 404 program that regulates the discharge of dredged or fill material into Waters of the United States, including wetlands (delegated authority for Section 404 as of December 2020).

2.10.6.1 WETLANDS

Executive Order 11990, *Protection of Wetlands*, requires consideration of indirect effects on wetlands and provides a long-term goal of no net loss of wetlands. Chapter 373 of the Florida Statutes and Florida Administrative Code 62-330 regulates activities in waters of the state, including wetlands. Project impacts to wetlands require obtaining an Environmental Resource Permit (ERP) for regulated activities on or over surface waters or wetlands, as well as activities that alter surface water flows including activities that generate stormwater runoff as well as dredging and filling in wetlands and other surface waters. Through the permitting process, means to eliminate or reduce the impact to wetlands must be demonstrated and any unavoidable impacts must be offset by mitigation.

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[31] US Environmental Protection Agency, EnviroAtlas Interactive Map, https://enviroatlas.epa.gov/enviroatlas/interactivemap/ (accessed January 14, 2022).

[32] Five additional non-aviation-related tenants are also designated EPA-regulated RCRA facilities, including: A&R Autobody, Hall of Fame Golf Course, London Kitchen, and Plummer Incorporated.

[33] US Environmental Protection Agency, NEPAssist, https://www.epa.gov/nepa/nepassist (accessed January 12, 2022).

[34] 33 US Code § 1251, *Clean Water Act*.

HCAA wetlands survey data identifies approximately 130 acres of wetlands present on Airport property (see Exhibit 2.10-1). Wetlands are located along the Airport perimeter and infield areas of the airfield, with a concentration along the southwest Airport boundary nearest Tampa Bay. Any development proposed for non-hardscaped areas on the Airport would need to consider the potential for impacts to wetlands.

2.10.6.2 FLOODPLAINS

To comply with Executive Order 11988, *Floodplain Management*, and DOT Order 5650.2, *Floodplain Management and Protection*, all FAA actions must avoid floodplains if a practicable alternative exists and if no practicable alternative exists, actions in a floodplain must be designed to minimize adverse impacts to the floodplain's natural and beneficial values. Floodplains are defined as lowland and flat areas adjoining waters that are subject to a 1 percent or greater chance of flooding in any given year (i.e., a 100-year flood event). The Federal Emergency Management Agency identifies approximately 645 acres of Airport property as being within the 100-year floodplain.[35] The designated floodplain areas on Airport property are shown on Exhibit 2.10-1. Much of the on-Airport 100-year floodplain is located within unpaved infield areas (i.e., turf, tree stands, etc.) in the southwest portion of the Airport, which is nearest Tampa Bay; a few additional floodplain areas are designated on the north and west sides of the Airport.

2.10.6.3 SURFACE WATERS

The CWA is the primary law that seeks to safeguard water quality in the United States. Under Section 402 of the CWA, the National Pollutant Discharge Elimination System (NPDES) was established to regulate point source discharges, such as releases from wastewater treatment plants and industrial facilities (including airports), and other discharges, such as mobilized sediments and erosion from construction sites. Section 402 also requires facilities that store oil and oil-based products have Spill Prevention Control and Countermeasures (SPCC) Plans to minimize the likelihood or severity of water quality impacts in the event of a spill. In Florida, the USEPA has delegated authority to issue NPDES permits to the Florida Department of Environmental Protection. Direct physical impacts to Waters of the United States, including surface waters, are subject to permitting by the Florida Department of Environmental Protection, under State of Florida's 404 Program, and Florida's ERP requirements.

Surface waters are sensitive to changes in land cover and uses, such as the conversion of turfgrass to impervious surface. Therefore, any proposed improvements or operational changes that increase impervious areas at the Airport may affect stormwater runoff quantities and quality, thus directly or indirectly influencing local water resources.

Tampa Bay, located along the southwest boundary, is the primary surface water resource near the Airport. HCAA data identifies approximately 25 acres of streams and waterways present within the Airport boundary. Hillsborough County data identifies an additional 22 acres of surface water within the Airport boundary. On-Airport surface waters include one stream, Fish Creek, which is a tidal waterbody connected to Tampa Bay and is classified as a Waters of the United States. The remaining surface waters on Airport comprise retention ponds and reservoirs associated with the Airport's drainage system.

[35] The Federal Emergency Management Agency defines Zone A as areas with a 1 percent annual chance of flooding, for which no base flood elevations have been determined; Zone AE as areas with a 1 percent annual chance of flooding, for which the base flood elevations have been determined; and Zone AH as areas with a 1 percent annual chance of shallow flooding, for which base flood elevations have been determined.

2.10.6.4 GROUNDWATER

The Safe Drinking Water Act (SDWA) authorizes the USEPA to set standards for drinking water quality. The USEPA can delegate authority to states to implement the SDWA within their jurisdictions if they meet or exceed USEPA standards. In 40 CFR Parts 141 through 149, federal agencies are prohibited from funding actions that would contaminate USEPA-designated sole-source aquifers or recharge zones.

The Tampa Bay region's water supply is blended from three different sources: groundwater, river water, and desalinated seawater. Groundwater comprises approximately 60 percent of this water supply. Groundwater comes from the Floridan Aquifer.[36] There are no sole-source aquifers or groundwater monitoring stations on Airport property or in the immediate vicinity of the Airport.[37,38]

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36 Tampa Bay Water, Tampa Bay Regional Drinking Water Sources, https://www.tampabaywater.org/tampa-bay-regional-drinking-water-sources (accessed January 11, 2022).

37 US Environmental Protection Agency, Map of Sole Source Aquifer Locations, https://www.epa.gov/dwssa/map-sole-source-aquifer-locations (accessed January 11, 2022).

38 US Geological Survey, National Water Dashboard, https://dashboard.waterdata.usgs.gov/app/nwd/?region=lower48&aoi=default (accessed January 11, 2022)

2022-2042 MASTER PLAN UPDATE

Chapter 3: Aviation Activity Forecasts

CHAPTER 3

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3. AVIATION ACTIVITY FORECASTS

This chapter describes historical and forecast aviation activities for Tampa International Airport (TPA or the Airport) and discusses key factors affecting these trends. Unless specifically noted, historical and forecast data are presented using Hillsborough County Aviation Authority's (HCAA) fiscal year (FY) which commences on October 1 and ends on September 30.

The forecasts were prepared in early 2022 and approved by the Federal Aviation Administration (FAA) on April 29, 2022. Updated information, as provided by HCAA in April 2024, is indicated throughout this chapter in *italicized text*.

3.1 AIRLINES SERVING THE AIRPORT

As of January 2022, scheduled passenger service was provided at the Airport by a total of 19 airlines. Of these airlines, 13 are US airlines and seven are foreign airlines. Five all-cargo airlines also serve the Airport. **Table 3.1-1** lists those airlines.

TABLE 3.1-1 AIRLINES SERVING THE AIRPORT

US AIRLINES[1] (13)	FOREIGN AIRLINES (6)	ALL-CARGO AIRLINES (5)
Alaska Airlines	Air Canada	ABX Air (Amazon Air)
American Airlines	British Airways	Air Transport (Amazon Air)
Avelo	Cayman Airways	Atlas Air (Amazon Air)
Breeze Airways	Copa Airlines	FedEx
Delta Air Lines	Lufthansa	UPS
Frontier Airlines	WestJet	
Global X [2]		
JetBlue Airways		
Silver Airways		
Southwest Airlines		
Spirit Airlines		
Sun Country		
United Airlines		

NOTES:
Scheduled as of January 2022 except where noted below.
1 Includes regional affiliates, where applicable.
2 Global X operates scheduled charter service to the Airport.
SOURCES: Hillsborough County Aviation Authority; Innovata; January 2022.

The Airport has the benefit of a stable air carrier base. Of the airline currently serving the Airport, 9 have continually operated at the Airport since FY 2012, and 14 have operated at the Airport since FY 2016. **Table 3.1-2** presents the years each scheduled passenger airline serving the Airport has provided service at the Airport between FY 2012 and FY 2021.

TABLE 3.1-2 HISTORICAL SCHEDULED PASSENGER AIRLINE BASE

(Fiscal Year Ended September 30)

AIR CARRIER	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Southwest Airlines	●	●	●	●	●	●	●	●	●	●
Delta Air Lines	●	●	●	●	●	●	●	●	●	●
American Airlines	●	●	●	●	●	●	●	●	●	●
United Airlines	●	●	●	●	●	●	●	●	●	●
Spirit Airlines	●	●	●	●	●	●	●	●	●	●
JetBlue Airways	●	●	●	●	●	●	●	●	●	●
Frontier Airlines	●	●	●	●	●	●	●	●	●	●
Air Canada	●	●	●	●	●	●	●	●	●	●
Cayman Airways	●	●	●	●	●	●	●	●	●	●
Sun Country		●	●	●	●	●	●	●	●	●
Silver Airways		●	●	●	●	●	●	●	●	●
Alaska Airlines			●	●	●	●	●	●	●	●
Copa Airlines			●	●	●	●	●	●	●	●
Swift Air [1]			●		●	●	●	●	●	●
Southern Airways Express								●	●	●
Lufthansa [2]				●	●	●	●	●	●	
Edelweiss [2]	●	●	●	●	●	●	●	●	●	
British Airways [2]	●	●	●	●	●	●	●	●	●	
WestJet [2]	●	●	●	●	●	●	●	●	●	
Icelandair						●	●	●		
Air Transat							●	●		

NOTES:
Where applicable, includes affiliated, regional, and merged airlines.
1 Swift Air operates scheduled charter service to the Airport.
2 Service temporarily suspended in FY 2021 but has resumed, or is scheduled to resume in FY 2022
SOURCES: Hillsborough County Aviation Authority; Innovata; January 2022.

3.1.1 AIR SERVICE PATTERNS INVENTORY

3.1.2 HISTORICAL AIRLINE ACTIVITY

The Airport is classified by the FAA as a large-hub facility based on its percentage of nationwide passenger activity,[1] and ranked 23rd in enplaned passengers in the U.S. in CY 2020, according to U.S. Department of Transportation (U.S. DOT) T-100 enplaned passenger data. The Airport primarily serves originating and destination (O&D) passengers, which accounted for approximately 96 percent of all passengers at the Airport in FY 2019. Connecting passengers are carried mostly by Silver Airways and Southwest Airlines. Silver Airways has interline agreements with many larger airlines at the Airport, enabling connections to smaller cities in Florida and the Bahamas which Silver Airways serves. Southwest Airlines operates a point-to-point network that allows some passengers to connect through the Airport.

Table 3.1-3 presents historical domestic and international passenger activity at the Airport between FY 2012 and FY 2021. The Airport experienced growth in each year between 2012 and FY 2019. Between FY 2012 and FY 2019 total enplaned passengers grew at a compound annual growth rate (CAGR) of 4.0 percent. During this time domestic enplaned passengers grew at a CAGR of 3.6 percent, while international enplaned passengers grew at a CAGR of 13.1 percent. Passenger volumes fell in FY 2020 due to the COVID-19 pandemic but have begun to rebound in 2021.

TABLE 3.1-3 HISTORICAL ENPLANED PASSENGERS

FISCAL YEAR	DOMESTIC ENPLANED PASSENGERS	INTERNATIONAL ENPLANED PASSENGERS	TOTAL ENPLANED PASSENGERS	ANNUAL ENPLANED GROWTH
2012	8,197,638	243,499	8,441,137	0.7%
2013	8,232,950	260,310	8,493,260	0.6%
2014	8,381,339	292,408	8,673,747	2.1%
2015	8,924,246	339,090	9,263,336	6.8%
2016	9,067,888	417,991	9,485,879	2.4%
2017	9,201,486	436,584	9,638,070	1.6%
2018	10,035,679	484,873	10,520,552	9.2%
2019	10,510,485	574,805	11,085,290	5.4%
2020	6,400,465	280,598	6,681,063	(39.7%)
2021	7,672,647	44,517	7,717,164	15.5%
Compound Annual Growth Rate				
2012-2019	3.6%	13.1%	4.0%	
2012-2021	-0.7%	-17.2%	-1.0%	

SOURCE: Hillsborough County Aviation Authority, January 2022.

[1] As defined by the FAA, a large hub airport enplanes 1.0 percent or more of nationwide revenue enplanements. This was equal to approximately 3.71 million revenue enplaned passengers in CY 2020, the current period used by the FAA to determine hub status.

Notable details regarding passenger activity at the Airport between FY 2012 and FY 2021 are as follows:

- **FY 2012 through FY 2013**. As the economy recovered from the Great Recession, enplaned passengers began to increase. However, airlines restricted growth in departing seat capacity with the objective of increasing fares and improving financial performance, which limited passenger volume gains at the Airport. In FY 2012, enplaned passengers increased 0.7 percent. Growth over the period was supported by increased seat capacity from Air Canada, American Airlines, and JetBlue Airways. From FY 2012 to FY 2013, enplaned passengers at the Airport increased again by 0.6 percent.
- **FY 2014**. Enplaned passengers increased 2.1 percent. Frontier Airlines enplaned passengers increased 56.7 percent from 60,106 in FY 2013 to 94,169 in FY 2014, primarily due to additional service to Denver and new service to Cleveland and Trenton. Spirit Airlines experienced the second largest domestic growth, with enplaned passengers increasing 24.1 percent. Foreign carrier growth was also robust, as Air Canada, British Airways, Cayman Airways, Edelweiss, and WestJet all reported enplaned passenger increases. Copa Airlines initiated service to Panama City, Panama (PTY) in December 2014.
- **FY 2015**. Enplaned passengers increased 6.8 percent. Nearly all airlines operating at the Airport increased seat capacity during FY 2015, through a combination of new market growth and additional capacity in existing markets. Spirit Airlines and Frontier Airlines added an additional 100,000 and 130,000 departing seats, respectively. Lufthansa initiated service to Frankfurt, Germany (FRA) in September 2015.
- **FY 2016**. Enplaned passengers increased 2.4 percent. Lufthansa operated at the Airport for the entire year after beginning service at the end of FY 2015. Spirit Airlines and Frontier Airlines increased activity at the Airport during FY 2016. Combined, the airlines increased capacity from approximately 390,000 departing seats in FY 2015 to 560,000 departing seats in FY 2016.
- **FY 2017**. Enplaned passengers increased 1.6 percent, the seventh consecutive year of enplaned passenger growth since FY 2011. Both Southwest Airlines and Delta Air Lines increased scheduled seat capacity in existing markets, and Southwest added twice daily service to LaGuardia Airport (LGA). Spirit Airlines and Frontier Airlines added seat capacity in nine markets and initiated service to four new destinations. These increases helped to offset capacity reductions by American Airlines, and JetBlue Airways, which discontinued service to LGA, but transferred some flights to Newark Liberty International Airport (EWR).
- **FY 2018**. Enplaned passengers increased 9.2 percent, the largest single year increase since the Great Recession. American Airlines reported higher passenger volumes after declining enplaned passenger volumes the prior two years. Delta and Southwest each increased domestic seat capacity at the Airport. Spirit Airlines and Frontier Airlines both grew at the Airport, increasing seat capacity. International seat capacity grew as Air Canada, Lufthansa, and WestJet each increased service.
- **FY 2019**. Enplaned passengers increased 5.4 percent in FY 2019. American and Delta both increased capacity by adding larger aircraft and additional flights to their hub airports. Spirit added three destinations from TPA, and increased capacity in nearly every market served from the Airport. International service grew as Delta initiated service to Amsterdam, Netherlands (AMS), Norwegian Air initiated service to London-Gatwick, England (LGW), and Swoop began service to Hamilton, Canada (YHM).
- **FY 2020**. Enplaned passengers decreased 39.7 percent in FY 2020. After increasing capacity during the first six months of the fiscal year, passenger volumes decreased sharply when all airlines greatly reduced capacity at the Airport because of the COVID-19 pandemic. By May 2020, Air Canada, British Airways, Lufthansa, Norwegian, Swoop, and WestJet had all suspended or discontinued service at the Airport.

- **FY 2021**. Enplaned passenger volumes have begun to grow again after the decline in FY 2020. Total FY 2021 enplaned passenger volumes were 15.5 percent greater than in FY 2020. In June 2021, service was further bolstered when Breeze Airways initiated service to six destinations, subsequently growing to ten destinations in July. Copa resumed PTY service in June, and in July, Air Canada reintroduced flights to Toronto, Canada (YYZ), while domestic airlines began to rapidly reintroduce capacity at TPA to take advantage of passenger demand for leisure destinations within the United States.

Resumption of international services are expected to accelerate in FY 2022. British Airways resumed LGW service in November 2021; Air Canada resumed service to Montreal, Canada (YUL) in November 2021 and Ottawa, Canada (YOW) and Halifax, Canada (YHZ) in December 2021. WestJet resumed service to YYZ in November 2021.

Table 3.1-4 presents the historical share of enplaned passengers by carrier at the Airport between FY 2017 and FY 2021. Enplaned passengers are spread over many airlines, with no single carrier historically having more than a 35.6 percent market share over the period shown. Southwest Airlines has held the largest market share over the five-year period shown. Delta Air Lines' share of enplaned passengers has fluctuated since FY 2017, but it's total volume of enplaned passengers has increased in each year through FY 2019. American Airlines, the third largest airline at the Airport, experienced declining share of passengers between FY 2017 and FY 2019, but like Delta Air Lines, also had an increasing number of passengers. Notable airlines growing at the Airport include ultra-low-cost carriers Spirit Airlines and Frontier Airlines which more than doubled their enplaned passenger volumes between FY 2017 and FY 2019. Combined, their market share increased from 7.1 percent of total passengers in FY 2016, to 14.3 percent in FY 2019. This grew further to 17.02 percent of total passengers in FY 2021.

3.1.3 MARKET CHARACTERISTICS

As of January 2022, the airlines serving the Airport operated approximately 38,706 daily departing seats and approximately 236 daily departures.

Nonstop service[2] is provided to 78 domestic destinations and 11 international destinations, as shown in **Exhibit 3.1-1**. *As of April 2024, additional destinations include Cuba, the Dominican Republic, Jamaica, and Zurich.* Passenger demand is sufficient in many markets to support multiple airlines. Of the 78 domestic nonstop service routes, 48 are served by more than one carrier.

The Airport primarily serves origin and destination (O&D) passengers. Due to its geographic location and lack of a hubbing airline, the volume of connecting passenger itineraries at TPA are limited. **Table 3.1-5** depicts historical O&D and connecting passengers between FY2011 and FY2020[3]. The percentage of O&D passengers has grown steadily from 92.7 percent in FY2011 to 96.3 percent in FY2020. In each year since FY2012, Southwest Airlines has accounted for between approximately 50 percent and 64 percent of all connecting passengers at TPA, with the remainder carried primarily by American Airlines, Silver Airways, and United Airlines.

[2] Includes destinations served seasonally.

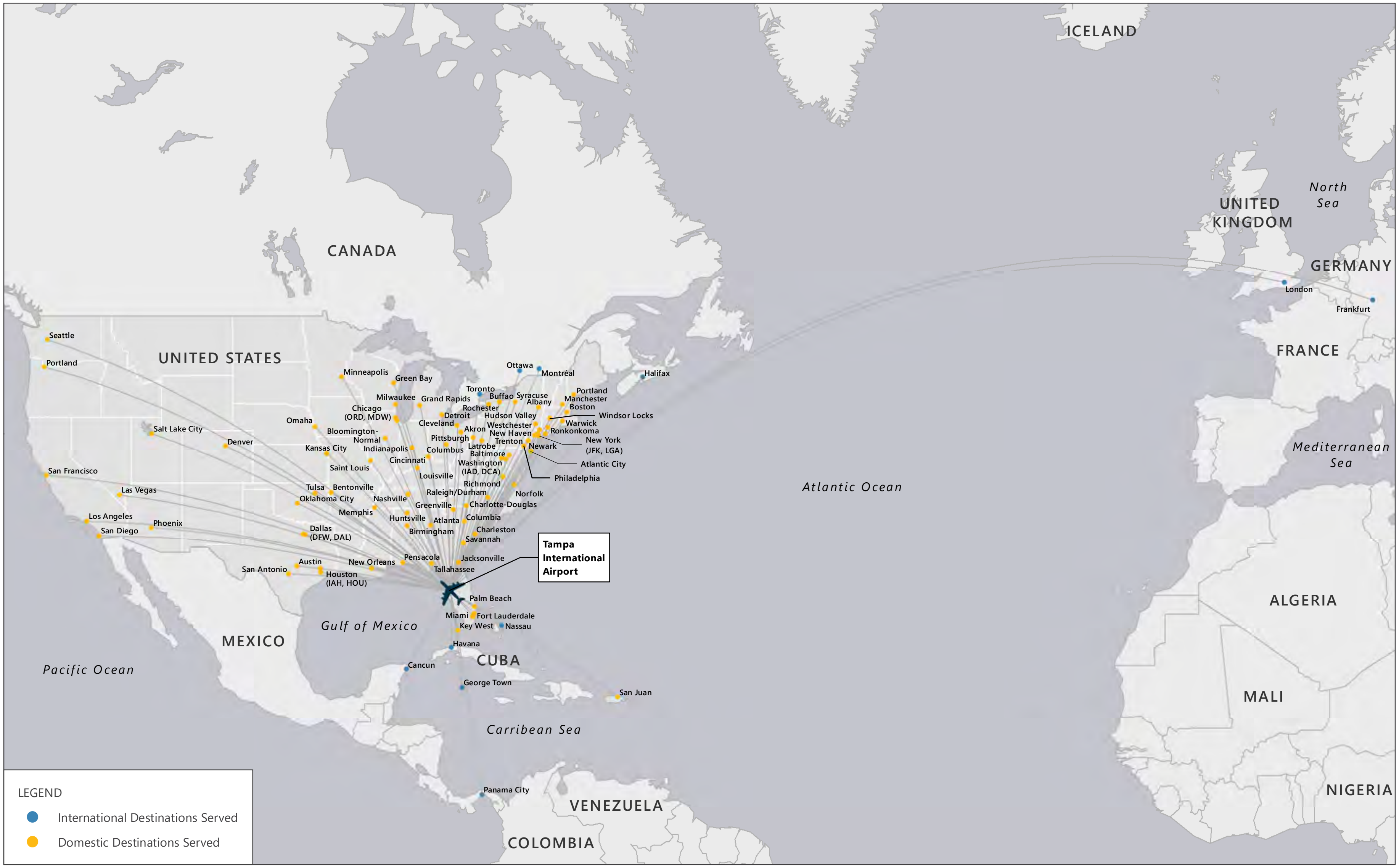
[3] FY 2020 was the latest complete fiscal year for which data were available at the time of this report.

TABLE 3.1-4 HISTORICAL TOTAL ENPLANED PASSENGERS BY AIRLINE

(Fiscal Years Ended September 30)

CARRIER [1]	2017 ENPLANED PASSENGERS	2017 SHARE	2018 ENPLANED PASSENGERS	2018 SHARE	2019 ENPLANED PASSENGERS	2019 SHARE	2020 ENPLANED PASSENGERS	2020 SHARE	2021 ENPLANED PASSENGERS	2021 SHARE
Southwest Airlines	3,428,281	35.6%	3,529,466	33.5%	3,458,483	31.2%	2,023,101	30.3%	2,216,345	28.7%
Delta Air Lines	1,674,140	17.4%	1,735,691	16.5%	1,846,270	16.7%	1,024,792	15.3%	1,346,173	17.4%
American Airlines	1,577,015	16.4%	1,675,610	15.9%	1,747,249	15.8%	1,084,612	16.2%	1,334,081	17.3%
Spirit Airlines	482,498	5.0%	726,518	6.9%	948,061	8.6%	735,749	11.0%	808,499	10.5%
United Airlines	984,969	10.2%	1,069,096	10.2%	1,109,455	10.0%	620,843	9.3%	804,907	10.4%
JetBlue Airways	606,443	6.3%	602,135	5.7%	628,543	5.7%	360,992	5.4%	528,712	6.9%
Frontier Airlines	313,762	3.3%	523,346	5.0%	592,050	5.3%	413,770	6.2%	423,100	5.5%
Alaska Airlines	58,577	0.6%	59,612	0.6%	73,380	0.7%	58,878	0.9%	94,147	1.2%
Sun Country	21,342	0.2%	27,390	0.3%	65,311	0.6%	42,415	0.6%	59,991	0.8%
Silver Airways	101,255	1.1%	122,104	1.2%	81,053	0.7%	52,514	0.8%	56,104	0.7%
Breeze Airways	0	0.0%	0	0.0%	0	0.0%	0	0.0%	26,062	0.3%
Air Canada	132,355	1.4%	143,843	1.4%	151,282	1.4%	92,194	1.4%	8,311	0.1%
Copa Airlines	21,244	0.2%	24,813	0.2%	34,790	0.3%	14,308	0.2%	8,142	0.1%
British Airways	69,685	0.7%	70,800	0.7%	79,508	0.7%	36,687	0.5%	0	0.0%
Lufthansa	56,563	0.6%	61,138	0.6%	64,893	0.6%	34,696	0.5%	0	0.0%
WestJet	46,276	0.5%	47,865	0.5%	51,370	0.5%	34,556	0.5%	0	0.0%
Edelweiss Air	23,662	0.2%	18,029	0.2%	15,339	0.1%	5,148	0.1%	0	0.0%
Cayman Airways	21,310	0.2%	21,705	0.2%	19,794	0.2%	8,582	0.1%	0	0.0%
Icelandair	773	0.0%	10,743	0.1%	10,205	0.1%	0	0.0%	0	0.0%
All Others [2]	17,920	0.2%	38,018	0.4%	102,028	0.9%	36,907	0.6%	2,590	0.0%
Airport Total	**9,638,070**	**100.0%**	**10,520,552**	**100.0%**	**11,085,290**	**100.0%**	**6,681,063**	**100.0%**	**7,717,164**	**100.0%**

NOTES:
1 Includes regional/commuter affiliates and airlines included in mergers.
2 Consists of airlines no longer serving the Airport, unaffiliated airlines, and/or charter airlines.
SOURCES: Hillsborough County Aviation Authority; Innovata, September 2021.



SOURCES: Esri World Data, 2010 (countries and lakes); Esri USA Data, 2010 (states) Ricondo & Associates, Inc., based on Diio, LLC., Diio Mi Schedule Dynamic Table Report, December 2021 (routes and airports).

EXHIBIT 3.1-1

NORTH 0 1,000 mi

DESTINATIONS SERVED

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TABLE 3.1-5 HISTORICAL ENPLANED ORIGIN AND DESTINATION (O&D) PASSENGERS

FISCAL YEAR	O&D ENPLANED PASSENGERS	O&D PERCENTAGE OF PASSENGERS	CONNECTING PASSENGERS	CONNECTING PERCENTAGE OF PASSENGERS	TOTAL ENPLANED PASSENGERS
2011	7,772,104	92.7%	610,779	7.3%	8,382,883
2012	7,843,321	92.9%	597,816	7.1%	8,441,137
2013	7,908,692	93.1%	584,568	6.9%	8,493,260
2014	8,110,004	93.5%	563,743	6.5%	8,673,747
2015	8,686,728	93.8%	576,608	6.2%	9,263,336
2016	9,019,987	95.1%	465,892	4.9%	9,485,879
2017	9,183,101	95.3%	454,969	4.7%	9,638,070
2018	10,068,414	95.7%	452,138	4.3%	10,520,552
2019	10,595,329	95.6%	489,961	4.4%	11,085,290
2020	6,432,648	96.3%	248,415	3.7%	6,681,063
Compound Annual Growth Rate					
2011 - 2019	3.9%		(3.7%)		3.6%
2011 - 2020	(2.1%)		(8.6%)		(2.5%)

NOTE: FY2020 was the last complete fiscal year of data available at the time of this report.
SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. DOT DB1b Survey, January 2022; OAG Analyser, January 2022.

The distribution of O&D markets is an important characteristic, which is particularly true for the Airport, as it primarily serves O&D passengers. **Table 3.1-6** presents the Airport's top 20 domestic O&D markets during the four quarters ended the third fiscal quarter of 2021, the period for which data are available. Also shown are primary and secondary airline market shares, and those airlines operating nonstop service in the market. The Airport's top 20 domestic O&D markets represent nearly two-thirds of total domestic O&D demand, and the top six markets combined represent almost a third of total domestic O&D demand. These top markets are served by a broad base of airlines, which generally supports competitive air fares, and of the top 20 domestic markets, all were served on a nonstop basis by more than one carrier, and 16 are served nonstop by at least three airlines.

Table 3.1-7 presents the top 20 international O&D markets during FY2019, the last fiscal year before international travel was affected by the pandemic. The top 20 international O&D markets accounted for 53 percent of total international O&D demand, however, the top three international markets accounted for approximately 25 percent of total international O&D demand.

International O&D include both those passengers departing the Airport on an international flight segment, as well as those whose ultimate destination is an international point, but who use a flight segment to or from another domestic airport that serves as the international gateway (e.g., a passenger flying from Tampa to Paris, France [CDG] via Atlanta [ATL]). While this type of passenger is on an international itinerary, the Airport reports this type of passenger as a domestic enplaned passenger. International O&D demand is dispersed to many markets that are not served nonstop from the Airport. Accordingly, many international O&D passengers are accommodated as connections through other U.S. gateway airports.

This trend is illustrated in **Exhibit 3.1-2**, which presents the volume of international O&D passengers departing the Airport on an international flight segment versus a domestic flight segment for the period between FY2012 and

FY2019. The percentage of total international O&D passengers departing TPA on an international flight segment has increased in each year since FY 2012.

Similarly, the total volume of international O&D passengers departing the Airport on an international flight has also grown since FY2012. The growing percentage of international O&D passengers departing TPA on international flight segments has been driven by increased international service. The greatest periods of growth, between FY2015 and FY2019, coincided with the addition of nonstop international flights by Lufthansa and Southwest Airlines, which began international service from TPA in FY2015 and FY2017, respectively. Other notable airlines initiating or expanding international service during this time included Copa, Delta Air Lines, Icelandair, and Silver Airways.

TABLE 3.1-6 TOP 20 DOMESTIC ORIGIN AND DESTINATION (O&D) MARKETS (FOUR QUARTERS ENDING Q3 FY2021)

RANK	MARKET	O&D PASSENGERS (PDEW)	PERCENTAGE OF O&D PASSENGERS	PRIMARY AIRLINE	MARKET SHARE	SECONDARY AIRLINE	MARKET SHARE	AIRLINES PROVIDING NONSTOP SERVICE [1]
1	New York City [2]	1,335	8.5%	JetBlue Airways	30.7%	United Airlines	28.9%	American Airlines, Delta Air Lines, Frontier Airlines JetBlue Airways, Southwest Airlines, Spirit Airlines United Airlines
2	Chicago [3]	1,171	7.5%	Southwest Airlines	36.5%	United Airlines	22.0%	American Airlines, Frontier Airlines, Southwest Airlines, Spirit Airlines, United Airlines
3	Boston [4]	762	4.9%	JetBlue Airways	44.4%	Southwest Airlines	19.0%	Delta Air Lines, Frontier Airlines, JetBlue Airways, Southwest Airlines, Spirit Airlines, United Airlines
4	Washington, DC [5]	755	4.8%	Southwest Airlines	51.6%	American Airlines	17.0%	American Airlines, JetBlue Airways, Southwest Airlines, Spirit Airlines, United Airlines
5	Detroit	667	4.3%	Delta Air Lines	54.4%	Spirit Airlines	38.8%	Delta Air Lines, Southwest Airlines, Spirit Airlines
6	Philadelphia	641	4.1%	American Airlines	52.6%	Frontier Airlines	23.9%	American Airlines, Frontier Airlines, JetBlue Airways, Southwest Airlines, Spirit Airlines
7	Atlanta	638	4.1%	Delta Air Lines	54.9%	Southwest Airlines	26.2%	Delta Air Lines, Frontier Airlines, Southwest Airlines, Spirit Airlines
8	Denver	594	3.8%	Southwest Airlines	45.5%	United Airlines	27.4%	Frontier Airlines, Southwest Airlines, United Airlines
9	Dallas [6]	563	3.6%	American Airlines	45.8%	Southwest Airlines	31.2%	American Airlines, Southwest Airlines, Spirit Airlines
10	Minneapolis	473	3.0%	Delta Air Lines	50.1%	Sun Country Airlines	24.1%	Delta Air Lines, Frontier Airlines, Southwest Airlines, Spirit Airlines, Sun Country
11	Cleveland	362	2.3%	Frontier Airlines	41.4%	Spirit Airlines	34.1%	Frontier Airlines, Southwest Airlines, Spirit Airlines, United Airlines
12	Houston [7]	348	2.2%	Southwest Airlines	38.3%	United Airlines	37.9%	Southwest Airlines, Spirit Airlines, United Airlines
13	Indianapolis	345	2.2%	Southwest Airlines	66.2%	Spirit Airlines	22.1%	Southwest Airlines, Spirit Airlines
14	Las Vegas	323	2.1%	Spirit Airlines	34.5%	Southwest Airlines	33.1%	Frontier Airlines, Southwest Airlines, Spirit Airlines
15	San Juan	303	1.9%	Spirit Airlines	36.6%	Southwest Airlines	33.1%	JetBlue Airways, Southwest Airlines, Spirit Airlines
16	Los Angeles [8]	273	1.7%	Delta Air Lines	37.5%	American Airlines	22.4%	Alaska Airlines, Delta Air Lines
17	Nashville	266	1.7%	Southwest Airlines	83.6%	American Airlines	6.8%	Southwest Airlines, Spirit Airlines
18	Pittsburgh	262	1.7%	Southwest Airlines	60.9%	Spirit Airlines	24.6%	Southwest Airlines, Spirit Airlines
19	Cincinnati	242	1.5%	Delta Air Lines	45.2%	Frontier Airlines	42.1%	Delta Air Lines, Frontier Airlines, Southwest Airlines
20	South Florida [9]	239	1.5%	American Airlines	48.5%	Spirit Airlines	24.0%	American Airlines, Silver Airways, Southern Air Express, Southwest Airlines, Spirit Airlines
Other O&D Markets		**5,117**	**32.6%**					
Total Domestic O&D Passengers		**15,676**	**100.0%**					

NOTES: Figures may not add due to rounding. PDEW = Passengers Daily Each Way

1 Scheduled service operated during the four quarters ending Q3 FY2021.

2 Includes John F. Kennedy International (JFK), Newark Liberty International (EWR), and LaGuardia (LGA) Airports

3 Includes Chicago O'Hare (ORD) and Chicago Midway (MDW) International Airports.

4 Includes Boston Logan International (BOS), Manchester-Boston Regional (MHT), Portland Jetport (PWM), and T.F. Green International (PVD) Airports

5 Includes Ronald Reagan National (DCA), Dulles International (IAD), and Baltimore/Washington International (BWI) Airports.

6 Includes Dallas Fort Worth International Airport (DFW) and Dallas Love Field (DAL).

7 Includes Bush Intercontinental Airport/Houston (IAH) and William P. Hobby Airport (HOU).

8 Includes Los Angeles International (LAX), Ontario International (ONT), Hollywood Burbank (BUR), Long Beach (LGB), and John Wayne (SNA) Airports.

9 Includes Ft. Lauderdale/Hollywood International (FLL), Miami International (MIA), and Palm Beach International (PBI) Airports.

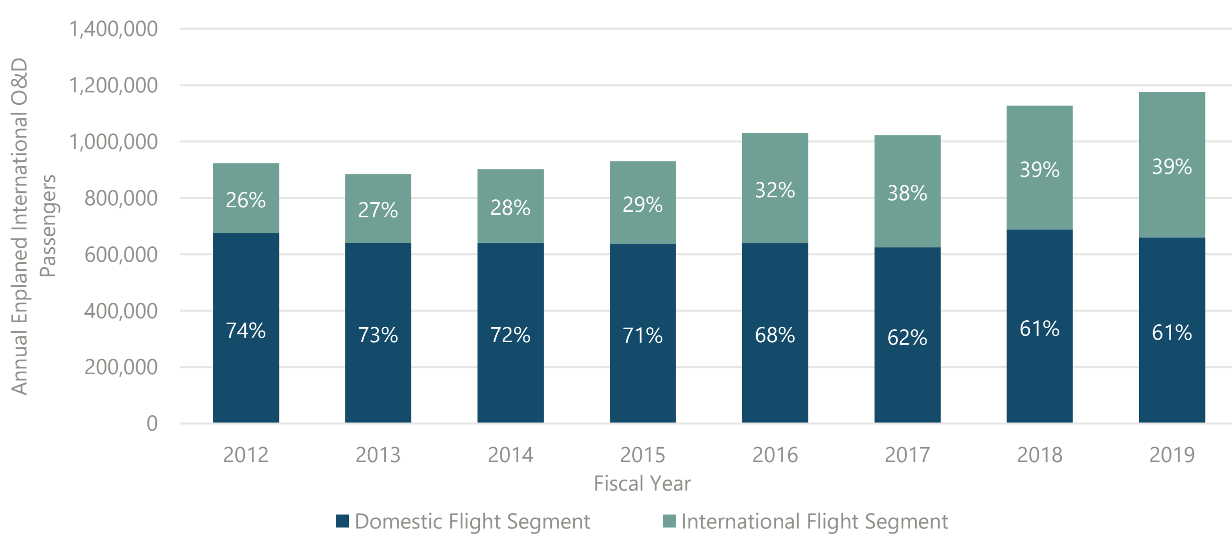
SOURCE: U.S. Department of Transportation, DB1b Survey, January 2022; Innovata; January 2022; OAG Analyser, January 2022.

TABLE 3.1-7 TOP 20 INTERNATIONAL ORIGIN AND DESTINATION (O&D) MARKETS (FY2019)

RANK	DESTINATION	AIRPORT CODE	O&D PASSENGERS (PDEW)	PERCENTAGE OF O&D PASSENGERS
1	Toronto, Canada	YYZ	362	11.5%
2	London, England	LGW/LHR	259	8.4%
3	Havana, Cuba	HAV	167	5.4%
4	Montreal, Canada	YUL	84	2.7%
5	Cancun, Mexico	CUN	71	2.3%
6	Grand Cayman, Cayman Islands	GCM	56	1.8%
7	Ottawa, Canada	YOW	39	1.7%
8	Vancouver, Canada	YVR	44	1.4%
9	Amsterdam, Netherlands	AMS	41	1.3%
10	Halifax, Canada	YHZ	40	1.3%
11	Frankfurt, Germany	FRA	34	1.1%
12	San Jose, Costa Rica	SJO	32	1.0%
13	Hamilton, Canada	YHM	29	0.9%
14	Montego Bay, Jamaica	MBJ	28	0.9%
15	Calgary, Canada	YYC	28	0.9%
16	Panama City, Panama	PTY	27	0.9%
17	Santo Domingo, Dominican Republic	SDQ	25	0.8%
18	Punta Cana, Dominican Republic	PUJ	25	0.8%
19	Taipei, Taiwan	TPE	24	0.8%
20	Mexico City, Mexico	MEX	24	0.8%
Other O&D Markets			**1,299**	**46.7%**
Total International O&D Passengers			**3,102**	**100.0%**

NOTE: Figures may not add due to rounding. PDEW = Passengers Daily Each Way
SOURCE: OAG Analyser; Ricondo & Associates, Inc. (analysis); January 2022.

EXHIBIT 3.1-2 HISTORICAL INTERNATIONAL ENPLANED O&D PASSENGERS AND TYPE OF FLIGHT SEGMENT USED TO DEPART THE AIRPORT



NOTE: Revenue enplaned passengers shown. Volumes are estimated from passenger bookings data and may not equal airport-reported values.
SOURCE: OAG Analyser, January 2022.

3.1.4 HISTORICAL CARGO ACTIVITY

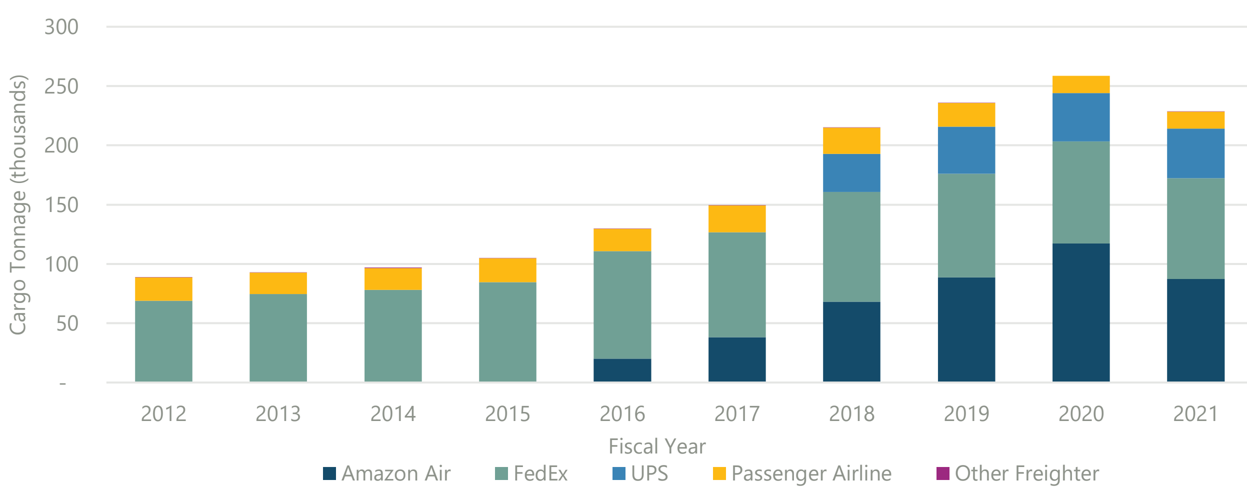
Historically, air cargo activity at TPA has been conducted by a mix of airlines, including both passenger airlines carrying cargo as belly cargo, and all-cargo airlines operating dedicated freighter aircraft. As shown in **Table 3.1-8** and **Exhibit 3.1-3**, total cargo tonnage has increased from approximately 88,800 tons in FY2012 to approximately 228,600 tons in FY2021 while freighter aircraft operations have increased from 1,588 in FY2012 to 8,400 in FY2021.

TABLE 3.1-8 HISTORICAL TOTAL CARGO TONNAGE AND FREIGHTER AIRCRAFT OPERATIONS

FISCAL YEAR	AMAZON AIR CARGO[1]	FEDEX EXPRESS CARGO[1]	UPS CARGO[1]	BELLY CARGO[1]	OTHER CARGO AIRLINE[1]	TOTAL CARGO [1]	FREIGHTER AIRCRAFT OPERATIONS
2012	0	68,872	0	19,713	254	88,838	1,588
2013	126	74,506	0	18,022	124	92,777	1,777
2014	65	78,012	0	18,326	566	96,967	1,901
2015	445	84,261	0	20,189	61	104,955	2,017
2016	19,997	90,704	0	18,951	25	129,677	2,860
2017	38,309	88,492	0	22,622	93	149,515	4,126
2018	68,252	92,433	32,121	22,029	78	214,913	7,748
2019	88,660	87,395	39,570	19,995	235	235,854	8,520
2020	117,322	85,878	40,979	14,372	0	258,552	8,996
2021	87,263	84,969	41,857	14,437	76	228,602	8,400
Compound Annual Growth Rate							
2012- 2019	NA	3.5%	NA	0.2%	-1.1%	15.0%	27.1%
2012- 2021	NA	2.4%	NA	-3.4%	-12.5%	11.1%	20.3%

NOTE: NA – Not applicable
1/ Volumes shown in tons, equal to 2,000 lbs.
SOURCE: U.S. Department of Transportation T-100, December 2021.

EXHIBIT 3.1-3 HISTORICAL TOTAL CARGO TONNAGE



SOURCE: Hillsborough County Airport Authority, December 2021. U.S. Department of Transportation T-100, December 2021.

Cargo tonnage grew moderately between FY2012 and FY2015. The majority of cargo at TPA was transported by FedEx during this time, while a smaller portion was accommodated by passenger airlines. In FY2016, Amazon Air began operating at TPA and quickly increased service. By FY2019, Amazon Air had surpassed FedEx as the largest cargo airline at the Airport in terms of total tonnage. Also contributing to cargo activity growth, UPS initiated service at TPA in FY2018 and has increased its volumes each year since then. Total cargo tonnage peaked in FY2020. Unlike passenger airline demand, cargo airlines experienced substantial demand growth as the global pandemic increased e-commerce activity and the demand for "at-home" delivery of products. Since the FY2020 peak, cargo activity has declined slightly in FY2021, driven primarily by a reduction in Amazon's service as the carrier concentrated some activity at its Lakeland Linder Airport (LAL) hub.

3.1.5 HISTORICAL GENERAL AVIATION AND OTHER AIR TAXI ACTIVITY

The Airport serves an important role for general aviation (GA) and other air taxi operations[4] demand in the region. **Table 3.1-9** depicts general aviation and other air taxi activity at TPA since FY2012.

TABLE 3.1-9 GENERAL AVIATION AND OTHER AIR TAXI OPERATIONS FORECAST

FISCAL YEAR	PISTON AIRCRAFT	TURBOPROP AIRCRAFT	JET AIRCRAFT	TOTAL	PISTON AIRCRAFT SHARE	TURBOPROP AIRCRAFT SHARE	JET AIRCRAFT SHARE
2012	7,413	4,678	20,537	32,628	22.7%	14.3%	62.9%
2013	6,772	4,486	17,704	28,962	23.4%	15.5%	61.1%
2014	7,054	4,433	17,092	28,579	24.7%	15.5%	59.8%
2015	7,086	4,366	15,718	27,170	26.1%	16.1%	57.9%
2016	6,413	3,716	17,732	27,861	23.0%	13.3%	63.6%
2017	5,425	3,659	19,004	28,088	19.3%	13.0%	67.7%
2018	4,601	4,601	17,861	27,063	17.0%	17.0%	66.0%
2019	5,623	6,338	19,075	31,036	18.1%	20.4%	61.5%
2020	6,325	5,938	20,009	32,272	19.6%	18.4%	62.0%
2021	6,739	6,780	27,614	41,133	16.4%	16.5%	67.1%
Compound Annual Growth Rate							
2012- 2019	-3.9%	4.4%	-1.0%	-0.7%			
2012- 2021	-1.1%	4.2%	3.3%	2.6%			

SOURCES: FAA Traffic Flow Management System Counts (TFMSC), January 2022; Hillsborough County Aviation Authority, January 2022.

General aviation and other air taxi activity declined slightly between FY2012 and FY2015, as the industry continued to deal with the effects of the great recession on business and corporate travel. Since FY2015, activity has grown at TPA, driven by a combination of all aircraft types. Jet aircraft operations surged in FY2021 when during the pandemic, nationwide demand for charter flights and fractional ownership programs grew significantly.

Most of the general aviation and other air taxi operations at TPA are conducted by jet and turboprop aircraft. The Airport's proximity to Tampa's downtown and business districts supports robust business and corporate demand. A limited number of piston engine aircraft are based at the Airport. However, most hangar space is occupied by turboprop and jet aircraft, and as a result, most piston aircraft operations in the Tampa area are conducted at

[4] Other air taxi operations include nonscheduled passenger and cargo aircraft (60 seats and fewer or a payload less than 18,000 lbs.) which do not report activity through the U.S. Department of Transportation Form T-100.

surrounding airports, such as Tampa Executive Airport (VDF) located 10 miles to the east, Plant City Airport (PCM) located 20 miles to the east. Both VDF and PCM are operated by the HCAA, and VDF is a designated general aviation reliever airport for TPA. Additionally, Zephyrhills Municipal Airport (ZPH) is located 25 miles to the northeast.

3.2 FACTORS AFFECTING AVIATION DEMAND AT THE AIRPORT

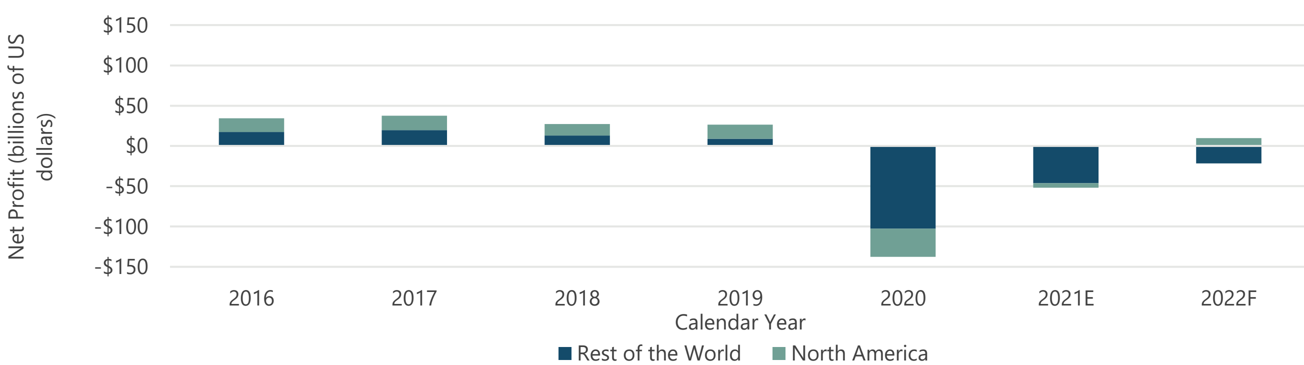
This section discusses the qualitative factors that may influence future aviation activity at the Airport. These factors were considered, either directly or indirectly, in developing the aviation activity forecasts for the Airport.[5]

3.2.1 IMPACT OF THE COVID-19 PANDEMIC

The outbreak and spread of the COVID-19 pandemic severely disrupted global aviation demand[6]. **Exhibit 3.2-1** shows the airline profitability for North America and for the rest of the world from 2016 to 2022 (as forecast). Globally, airlines experienced an operating loss of $137.7 billion in 2020 and are projected to report an additional $52.3 billion loss in 2021. In 2022, North American airlines are projected to record a slight profit, while airlines throughout the rest of the world are expected to lose an additional $21.5 billion. Continued financial losses may ultimately impact the ability of airlines to accommodate demand in the longer term.

The pandemic's impact on air travel began in East Asia in December 2019 and rapidly accelerated to other regions of the world in March and April 2020. Airlines have responded by reducing capacity across their networks due to decreased demand, travel restrictions, and border closures. Several large international foreign-flag airlines suspended all operations for a period in March and April 2020. By May 2020, which represented the low point in terms of passenger airline capacity offered, scheduled departing seats decreased to 24.0 percent of May 2019 capacity for all US airports and 24.9 percent of May 2019 capacity at TPA. Airline capacity started to recover in June, particularly in areas with access to sun and leisure activities, such as Florida, where people could visit while also remaining socially distanced.

EXHIBIT 3.2-1 NET PROFIT OF COMMERCIAL AIRLINES WORLDWIDE (CY2019- CY2022)



NOTE: 2021E – Estimated; 2022F – Forecast
SOURCE: International Air Transport Association, Airline Industry Economic Performance Data Tables, January 2022.

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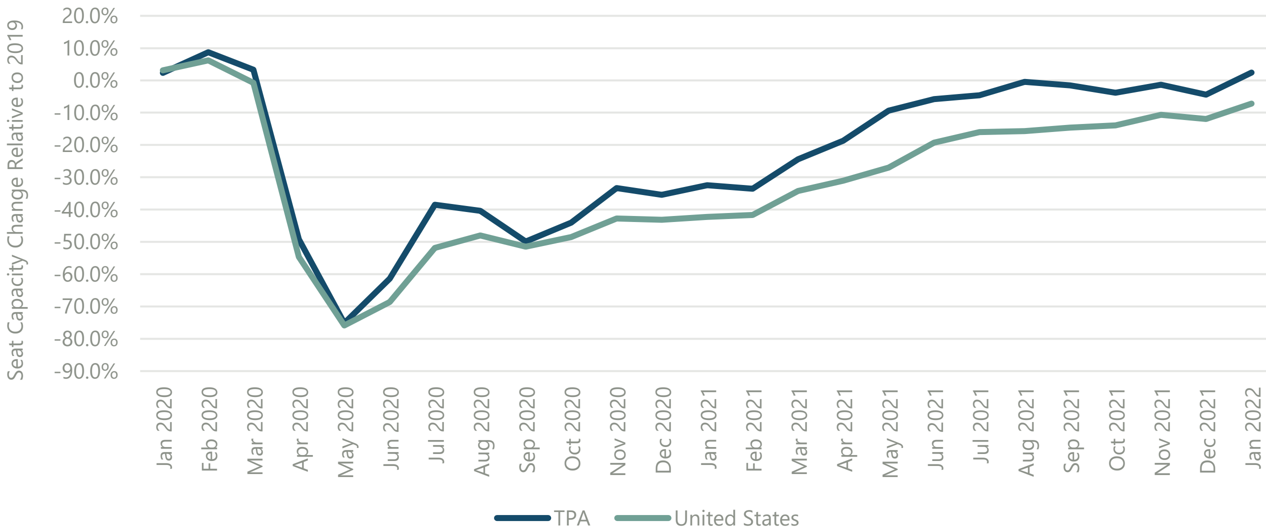
5 In addition to the qualitative factors outlined in Section 3.2, HCAA has an Air Service Incentive Program and collaborates with the region's convention and visitors' bureaus, chambers of commerce, and economic development organizations to support nonstop flights.

6 According to HCAA staff, TPA recovered from the COVID-19 pandemic at a pace that surpassed the national average. As of April 2024, the Airport has fully recovered and is experiencing growth rates similar to those prior to the pandemic.

By December 2020, departing seat capacity increased to 51.6 percent of December 2019 capacity at TPA. Demand for travel to or from TPA has continued to outpace the rest of the nation in FY2021 and the beginning of FY2022. At TPA, January 2022 scheduled departing seats represented 102.4 percent of January 2019 departing seats while nationwide, January 2022 was at 92.8 percent of January 2019 volumes. TPA's seat capacity recovery relative to the United States is depicted in **Exhibit 3.2-2**.

EXHIBIT 3.2-2 SEAT CAPACITY RECOVERY – TPA AND THE UNITED STATES



NOTE: Scheduled seats indexed to the same month in 2019
SOURCE: Innovata, January 2022.

Published airline schedules do not necessarily represent actual flown capacity, as airlines may cancel scheduled flights or change aircraft types with different seat capacities on the day of departure. Flight schedules were generally reliable up to six months into the future prior to the pandemic. However, this window decreased as airlines adjusted capacity to changes in demand, and during the pandemic, schedules have fluctuated significantly as few as four to six weeks into the future. Flight cancellation rates increased at the onset of the pandemic as airlines adjusted to the rapidly changing demand environment. As such, the decrease in capacity actually flown may be greater than what the published schedules indicate. While flight cancellation rates have decreased since their peak in April and May 2020, future schedules are likely to remain volatile until the demand environment stabilizes, especially as airlines react to close-in changes in demand from emerging variants of COVID-19. Ultimately, the pandemic and the lasting impact on demand and airline profitability may result in increased uncertainty in future activity at TPA and throughout the industry.

3.2.2 MERGERS, ACQUISITIONS, AND NEW AIRLINES

U.S. airlines have merged with or acquired other airlines to achieve operational and commercial synergies and to improve financial performance. A wave of consolidation began in 2005 when America West Airlines merged with US Airways, retaining the US Airways brand for the consolidated airline. In 2009, Delta acquired Northwest Airlines. In 2010, United acquired Continental Airlines. In 2011, Southwest acquired AirTran Airways. In 2013, US Airways and American merged, with the consolidated airline retaining the American brand. The most recent consolidation occurred in 2016 when Alaska acquired Virgin America. The two airlines completed their integration in 2018. Consolidation across the industry has resulted in the realignment of several airline route networks as airlines have sought efficiencies in their service. Further consolidation of the U.S. airline industry could affect the amount of capacity offered at the Airport and could alter the competitive landscape.

In FY2021, two new airlines began operating in the U.S., Avelo Airlines began operations in April 2021 and commenced service between the Airport and New Haven (HVN) in November 2021. Breeze Airways began operations in May 2021 and commenced service at TPA in June 2021, with flights to six destinations. As of January 2022, Breeze had increased service to a total of 10 destinations from TPA, and the Airport is also one of the airline's crew bases. Currently Breeze only serves domestic destinations but has publicly indicated an interest in serving international markets in the future.

Both airlines operate service between cities that do not have nonstop services, thus avoiding direct competition with established airlines. As these airlines continue to grow, they will compete with established airlines by creating new nonstop routings for passengers that previously had to fly via a connection. These new nonstop flights may also stimulate additional demand between airports like TPA and other points throughout the country.

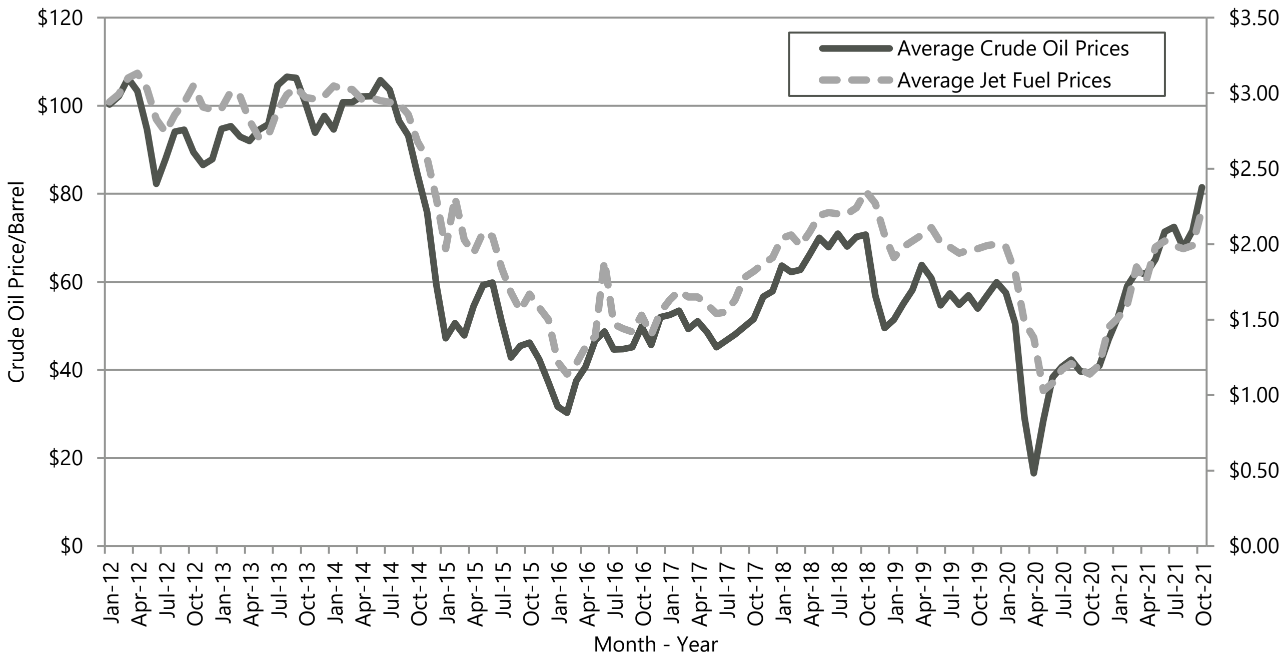
3.2.3 COST OF AVIATION FUEL

As of the third quarter of FY2021, jet fuel accounted for 15.1 percent of total airline operating costs, second only to labor, according to Airlines for America.[7]

In October 2021, the average price of jet fuel was $2.21 per gallon; having grown steadily since April 2020, but still well below previously sustained high prices in 2014. **Exhibit 3.2-3** shows the monthly averages for jet fuel and crude oil prices from January 2012 through October 2021. Fluctuating fuel costs will continue to affect airline profitability. This could lead to changes in air service as airlines adjust capacity and fares to address increases or decreases in the cost of fuel.

[7] A4A *Passenger Airline Cost Index (PACI)*, FQ3 2021.

EXHIBIT 3.2-3 HISTORICAL MONTHLY AVERAGES OF JET FUEL AND CRUDE OIL PRICES



SOURCES: U.S. Bureau of Transportation Statistics, January 2021; U.S. Energy Information Administration, January 2021.

3.2.4 THREAT OF TERRORISM

Since September 11, 2001, the recurrence of terrorism incidents against either domestic or world aviation has remained a risk to achieving forecast levels of activity. Tighter security measures have restored the public's confidence in the integrity of the U.S. and global aviation security systems. However, any terrorist incident targeting aviation could have an immediate and significant impact on the demand for air travel.

3.2.5 NATIONAL ECONOMY

Historically, industry-wide trends in airline travel have been closely correlated with national economic trends, most notably changes in Gross Domestic Product (GDP). National GDP is expected to increase 1.9 percent[8] annually through the forecast period, which should support generally increasing demand for air service over the forecast period. Actual economic activity may differ from this forecast, especially on a year-to-year basis. Demand for air service may be impacted by changes in economic performance.

3.2.6 AIRPORT SERVICE AREA ECONOMY

Demand for air service is influenced by the communities and economic activity surrounding the Airport. While the FAA does not provide specific guidelines for defining an Airport Service Area, it can be described as the geographic area surrounding an airport that generates most "local" activity. This area may also be described as the primary catchment area. The population and economic characteristics of an airport's service area are important factors in

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[8] Woods and Poole Economics, Inc. *Complete Economic and Demographic Data Source*, June 2021.

defining locally generated demand for aviation facilities and service. Economic and demographic changes in the Airport Service Area will have a material impact on future demand of aviation activity.

Exhibit 3.2-4 presents the Airport Service Area. The Airport Service Area includes the primary catchment area, as defined by the HCAA, shown in yellow and includes the Tampa-St. Petersburg-Clearwater Metropolitan Statistical Area (Hernando, Hillsborough, Pasco, and Pinellas Counties) and Citrus County.

In addition to these five counties, the secondary catchment area as defined by the HCAA is shown in blue in Exhibit 3.2-4 and is comprised of surrounding counties within a reasonable driving distance of TPA which generate demand for air service but may be in closer proximity to another commercial service airport than to TPA.

Historical and forecast values through FY2042 for the major socioeconomic metrics evaluated as part of the forecast process for the Airport Service Area as well as United States are presented in **Table 3.2-1**.

Specific trends and events that drive economic activity within the greater Tampa Bay area were also identified and explored. Examples of some of these trends include:

- Nine companies have relocated their headquarters to the Tampa Bay region since January 2021[9]
- Tampa Bay is among the nation's ten fastest growing metro areas for entrepreneurs[10]
- Tampa Bay is ranked third nationally in terms of workforce confidence[11]
- The Tampa-St. Petersburg-Clearwater MSA places in the first quintile of employment growth since CY 2018[12]
- The cruise industry resumed operations from Port Tampa Bay in October 2021 with over 100 cruise ship departures scheduled for the 2021-2022 season[13]

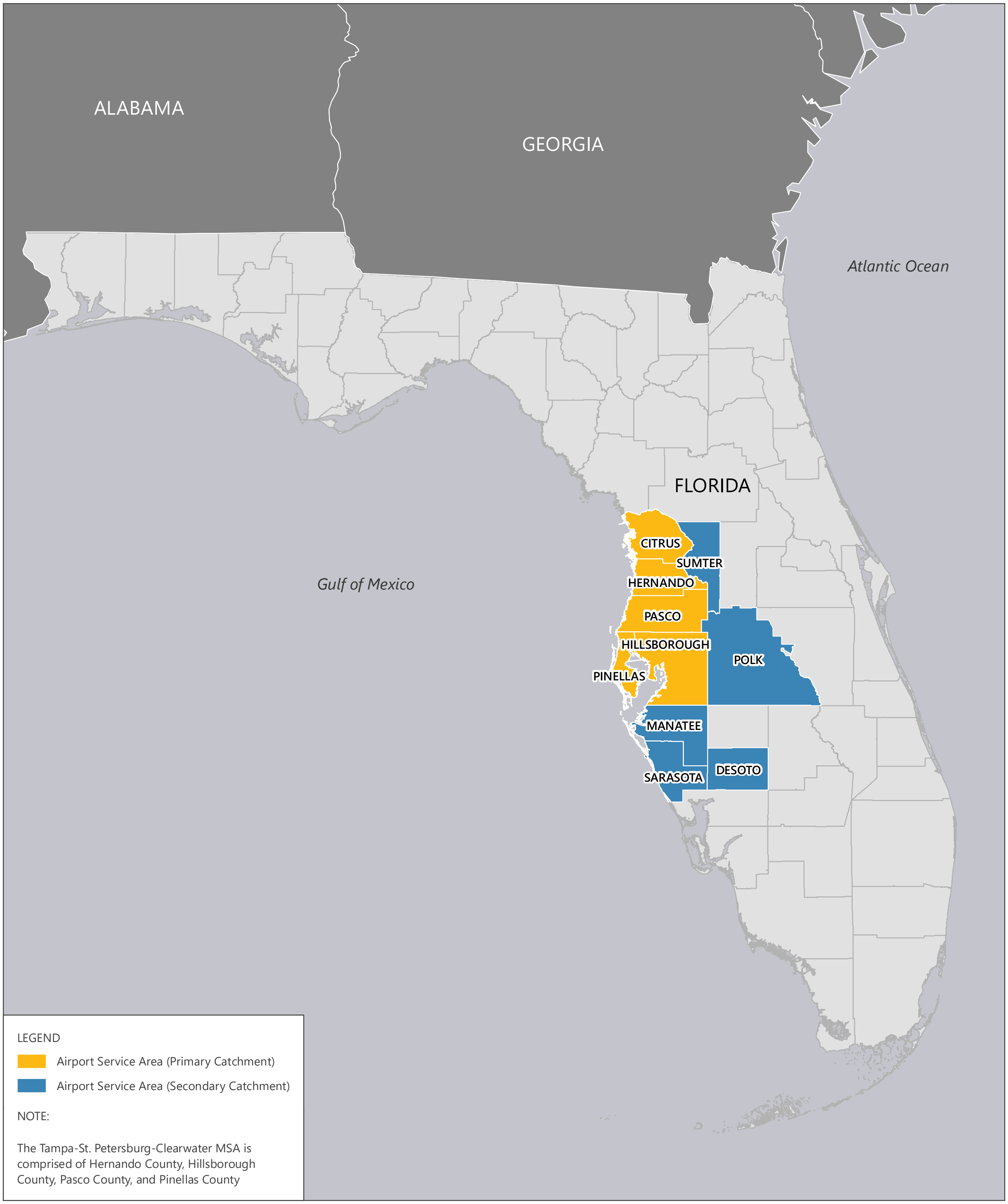
[9] https://www.bizjournals.com/tampabay/news/2021/10/14/st-pete-fortune-500-relocation-incentives.html, accessed November 2021.

[10] https://www.bizjournals.com/orlando/news/2021/10/25/orlando-entrepreneurs-fastest-growing.html, accessed November 2021.

[11] https://www.linkedin.com/feed/update/urn:li:activity:6725097956262989824, accessed November 2021.

[12] Moody's Analytics, Inc., "Précis U.S. Metro - Tampa-St. Petersburg-Clearwater FL," October 2021.

[13] https://www.cruiseandferry.net/articles/cruise-operations-to-resume-at-port-tampa-bay-in-october-1, accessed October 2021.



SOURCE: US Census Bureau, 2020 (counties, states).

EXHIBIT 3.2-4

NORTH

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AIRPORT SERVICE AREAS

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TABLE 3.2-1 (1 OF 2) HISTORICAL AND PROJECTED SOCIOECONOMIC CHARACTERISTICS

FISCAL YEAR	UNITED STATES OF AMERICA					TPA AIR SERVICE AREA				
	TOTAL POPULATION[1]	TOTAL EMPLOYMENT[1]	TOTAL EARNINGS[2]	TOTAL GDP[2]	TOTAL PCPI[2]	TOTAL POPULATION[1]	TOTAL EMPLOYMENT[1]	TOTAL EARNINGS[2]	TOTAL GDP[2]	TOTAL PCPI[2]
Historical										
2012	313,831	178,980	9,901,882	16,083,771	44,605	2,844	1,517	74,774	120,987	40,144
2013	315,994	182,325	10,095,591	16,450,119	44,264	2,881	1,559	75,603	123,752	39,108
2014	318,301	186,234	10,393,314	16,934,253	45,775	2,927	1,605	77,974	126,558	40,304
2015	320,638	190,326	10,786,365	17,591,049	47,571	2,984	1,665	82,395	134,691	41,868
2016	322,946	193,379	10,929,208	17,894,517	48,035	3,049	1,709	84,890	139,270	42,045
2017	324,986	196,337	11,247,244	18,332,209	49,175	3,107	1,773	87,000	142,096	42,901
2018	326,688	200,284	11,569,861	18,935,043	50,450	3,155	1,836	90,362	147,648	43,729
2019	328,241	203,810	11,907,552	19,402,219	51,424	3,195	1,886	94,194	153,982	44,522
2020	329,938	191,619	11,400,861	18,728,983	52,504	3,224	1,806	91,911	148,307	46,441
2021	332,220	209,319	12,427,274	20,259,075	53,262	3,259	1,946	98,343	160,976	46,185
Projected										
2022	334,555	212,087	12,689,561	20,683,423	54,137	3,295	1,977	100,689	164,913	47,029
2023	336,853	214,783	12,955,266	21,112,162	55,027	3,331	2,006	103,070	168,909	47,889
2024	339,161	217,509	13,224,221	21,546,054	55,923	3,367	2,036	105,488	172,966	48,759
2025	341,471	220,224	13,496,440	21,984,561	56,827	3,403	2,066	107,940	177,080	49,641
2026	343,777	222,948	13,771,874	22,427,847	57,739	3,440	2,096	110,428	181,255	50,533
2027	346,074	225,663	14,050,453	22,875,535	58,659	3,476	2,126	112,951	185,488	51,438
2028	348,360	228,363	14,332,204	23,327,658	59,588	3,513	2,156	115,509	189,777	52,354
2029	350,637	231,062	14,617,122	23,784,314	60,525	3,549	2,186	118,101	194,124	53,281
2030	352,908	233,753	14,905,200	24,245,346	61,469	3,586	2,215	120,727	198,528	54,218

NOTES:
CAGR – Compound Annual Growth Rate
GDP – Gross Domestic Product.
PCPI – Per Capita Personal Income
1 In thousands.
2 In millions 2012 USD

TABLE 3.2-1 (2 OF 2) HISTORICAL AND PROJECTED SOCIOECONOMIC CHARACTERISTICS

FISCAL YEAR	UNITED STATES OF AMERICA					TPA AIR SERVICE AREA				
	TOTAL POPULATION[1]	TOTAL EMPLOYMENT[1]	TOTAL EARNINGS[2]	TOTAL GDP[2]	TOTAL PCPI[2]	TOTAL POPULATION[1]	TOTAL EMPLOYMENT[1]	TOTAL EARNINGS[2]	TOTAL GDP[2]	TOTAL PCPI[2]
2031	355,171	236,437	15,196,359	24,710,678	62,420	3,623	2,245	123,388	202,988	55,165
2032	357,419	239,111	15,490,607	25,180,207	63,377	3,659	2,275	126,083	207,504	56,122
2033	359,655	241,774	15,787,978	25,654,001	64,341	3,696	2,305	128,812	212,076	57,089
2034	361,872	244,431	16,088,581	26,132,171	65,314	3,733	2,334	131,577	216,707	58,067
2035	364,065	247,081	16,392,568	26,614,942	66,296	3,770	2,364	134,379	221,397	59,058
2036	366,231	249,725	16,699,959	27,102,320	67,290	3,806	2,393	137,219	226,148	60,063
2037	368,368	252,360	17,010,709	27,594,166	68,293	3,842	2,423	140,095	230,959	61,080
2038	370,489	254,987	17,324,804	28,090,441	69,304	3,879	2,452	143,009	235,830	62,107
2039	372,595	257,607	17,642,321	28,591,200	70,322	3,915	2,482	145,961	240,761	63,145
2040	374,697	260,220	17,963,446	29,096,747	71,345	3,952	2,511	148,953	245,757	64,191
2041	376,799	262,829	18,288,276	29,607,138	72,374	3,988	2,540	151,986	250,818	65,245
2042	378,907	265,435	18,617,029	30,122,763	73,406	4,025	2,569	155,063	255,948	66,307
CAGR										
2012–2019	0.6%	1.9%	2.7%	2.7%	2.1%	1.7%	3.2%	3.4%	3.5%	1.5%
2012–2021	0.6%	1.8%	2.6%	2.6%	2.0%	1.5%	2.8%	3.1%	3.2%	1.6%
2021–2042	0.6%	1.1%	1.9%	1.9%	1.5%	1.0%	1.3%	2.2%	2.2%	1.7%

NOTES:
CAGR – Compound Annual Growth Rate
GDP – Gross Domestic Product.
PCPI – Per Capita Personal Income
1 In thousands.
2 In millions 2012 USD

3.2.7 OTHER AIRPORTS IN THE REGION

Activity at the Airport could be affected by the availability and quality of air service at nearby airports. Passengers in the region consider factors such as the nonstop service offered, air fares, and air carrier quality, when making travel decisions and passenger diversion could occur if passengers in the Air Service Area choose to use a competing airport instead of the Airport. Airports evaluated as competitors for this analysis are Southwest Florida International (RSW) in Fort Myers, Orlando International (MCO), Sarasota-Bradenton International (SRQ) and St. Petersburg-Clearwater International (PIE) Airports. **Exhibit 3.2-5** presents these airports and their proximity to the Airport.

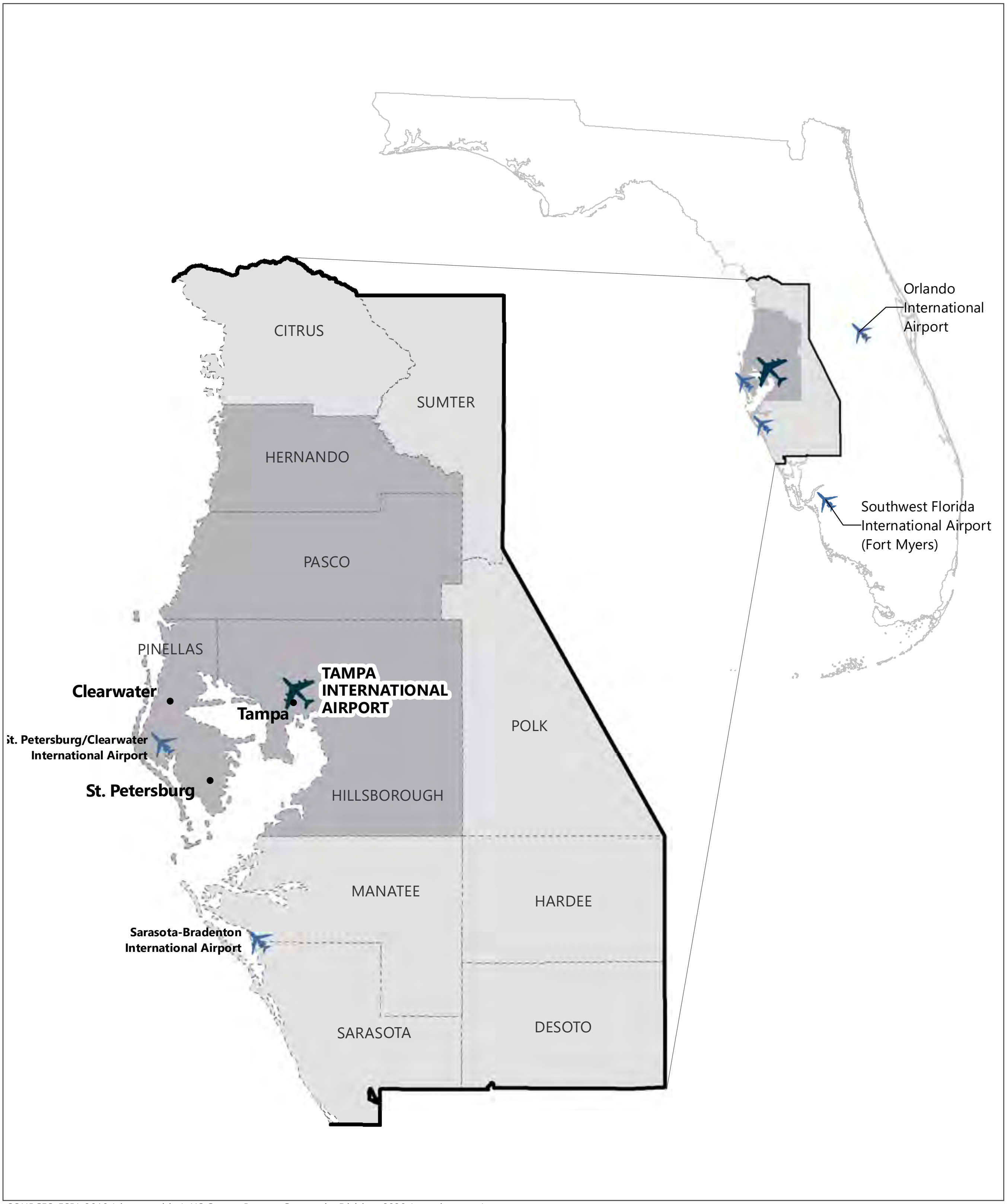
The four competing airports are presented in **Table 3.2-2**, which includes a summary of departing seats, domestic and international markets served, average daily departures, average domestic fares and yields, percentage of passengers originating at each airport, and distance from Tampa.

RSW is located approximately 130 miles south of the Airport along the Gulf Coast on Interstate 75. In January 2022, 13 airlines provided an average of 146 scheduled daily departures to 54 domestic and two international destinations. As shown in Table 3.2-2, a relatively small difference in average domestic fare exists between the Airport and RSW, and only three destinations (Duluth [DLH], Madison [MSN], and MCO) are served from RSW but not served from TPA.

MCO is located to the northeast of Tampa via Interstate 4. In January 2022, 30 airlines provided an average of 452 daily departures to 98 domestic and 40 international destinations. There are 84 destinations that are served nonstop from both MCO and from TPA. Five destinations (Grand Cayman [GCM], Havana, Cuba [HAV], Savannah [SAV], Tallahassee [TLH], and Tulsa [TUL]) are served from TPA but not served from MCO.

SRQ is located approximately 50 miles south of the Airport, along I-75 in the direction of RSW. Since the onset of the pandemic SRQ has experienced significant growth from multiple airlines and has been one of the fastest growing airports in the country. While the average domestic O&D fare at SRQ was approximately $12 higher at SRQ during the twelve-month period ended June 2021, the average fare at SRQ has declined since the onset of this capacity growth, resulting in a declining yield as well. In January 2022, 10 airlines provided nonstop service to 49 destinations, with an average of 54 daily departures. There are 36 destinations served nonstop from both SRQ and the Airport.

PIE is located 12 miles to the west of the Airport, across Old Tampa Bay. Three airlines provide nonstop, less-than-daily, service to 56 domestic and two international destinations in January 2022, with an average of 19 daily departures. Twenty-one of the domestic destinations served from PIE are also served nonstop from TPA. Allegiant provides service to smaller secondary airports in or near large metropolitan areas, which is reflected in the low fares from PIE relative to other airports in Table 3.2-2. Many of the markets served from PIE are served less than daily, providing a less competitive schedule compared to TPA.



SOURCES: ESRI, 2010 (airports, cities); US Census Bureau, Geography Division, 2020 (counties, state).

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EXHIBIT 3.2-5

COMPETING AIRPORTS

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TABLE 3.2-2 COMPETING AIRPORTS SUMMARY

AIRPORT	AVERAGE DAILY DEPARTING SEATS [1]	LARGEST AIRLINE AND ITS SHARE OF TOTAL SEAT CAPACITY [1]	NUMBER OF MARKETS SERVED			AVERAGE DAILY DEPARTURES [4]	AVERAGE DOMESTIC FARE [5]	AVERAGE DOMESTIC YIELD [6]	PCTG OF ORIGINATING O&D PASSENGERS[7]	DISTANCE FROM TPA (MILES)
			DOMESTIC [2]	INTERNATIONAL [3]	TOTAL					
Tampa International Airport (TPA)	38,706	Southwest Airlines; 25.4%	78	11	89	236	$108.74	$0.10	41.2%	-
Competing Airports										
Southwest Florida International Airport (RSW)	24,235	Delta Air Lines; 17.3%	54	2	56	146	$112.29	$0.10	30.0%	130
Orlando International Airport (MCO)	80,010	Southwest Airlines; 19.7%	98	40	138	452	$92.47	$0.08	31.4%	80
Sarasota-Bradenton International Airport (SRQ)	7,824	Southwest Airlines; 32.1%	49	0	49	54	$120.85	$0.12	34.5%	50
St. Petersburg-Clearwater International Airport (PIE)	3,394	Allegiant Air; 95.4%	56	2	58	19	$57.81	$0.07	33.8%	12

NOTES:
1 Seat capacity as scheduled in January 2022.
2 Nonstop service to airports within the U.S. during January 2022.
3 Nonstop service to airports outside of the U.S. in January 2022.
4 Average daily departures as scheduled in January 2022.
5 Average domestic fare as of 12-month period ending June 30, 2021. Excludes ancillary fees and charges.
6 Average domestic yield as of 12-month period ending June 30, 2021. Excludes ancillary fees and charges.
7 Originating O&D passenger percentages as of 12-month period ending September 30, 2020 (FY2020).
SOURCES: Innovata, January 2022; U.S. Department of Transportation Form T-100, January 2022; Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation, DB1B Survey, January 2022.

3.3 FORECAST OF PASSENGER DEMAND AND AIRLINE OPERATIONS

3.3.1 ACTIVITY FORECAST METHODOLOGY

Forecasts of passenger airline activity were developed on a market-by-market basis for the period beginning in FY2022 through FY2042 (reflective of the 20-year planning horizon prescribed by the Federal Aviation Administration [FAA] for airport master planning). The assumptions, methodologies, and results of the forecast process are described below. Passenger forecasts were developed using enplaned (departing) passengers and then multiplied by two to establish total passengers as prescribed by the FAA.

3.3.1.1 PANDEMIC RECOVERY PERIOD FORECAST METHODOLOGY

The pandemic has temporarily disrupted the relationships between passenger volumes and drivers traditionally used to project demand, such as GDP, employment, and other socioeconomic factors. Passenger travel has more recently been influenced by factors such as travel restrictions, fear of illness, or work policies that have emerged since the onset of the pandemic.

As the effects of the pandemic subside, passenger demand is expected to be influenced again by traditional drivers. However, the return to that point will not be immediate, and the timing will likely be different based on factors such as regional economic recoveries, seat capacity allocation decisions by airlines, and local, national, or international travel restrictions. The return to traditional drivers of growth will likely be uneven across markets and passenger types. As such, the path back to a point where demand is influenced by traditional factors rather than pandemic-related concerns has been modeled using a methodology that considers both qualitative and quantitative factors at the passenger level.

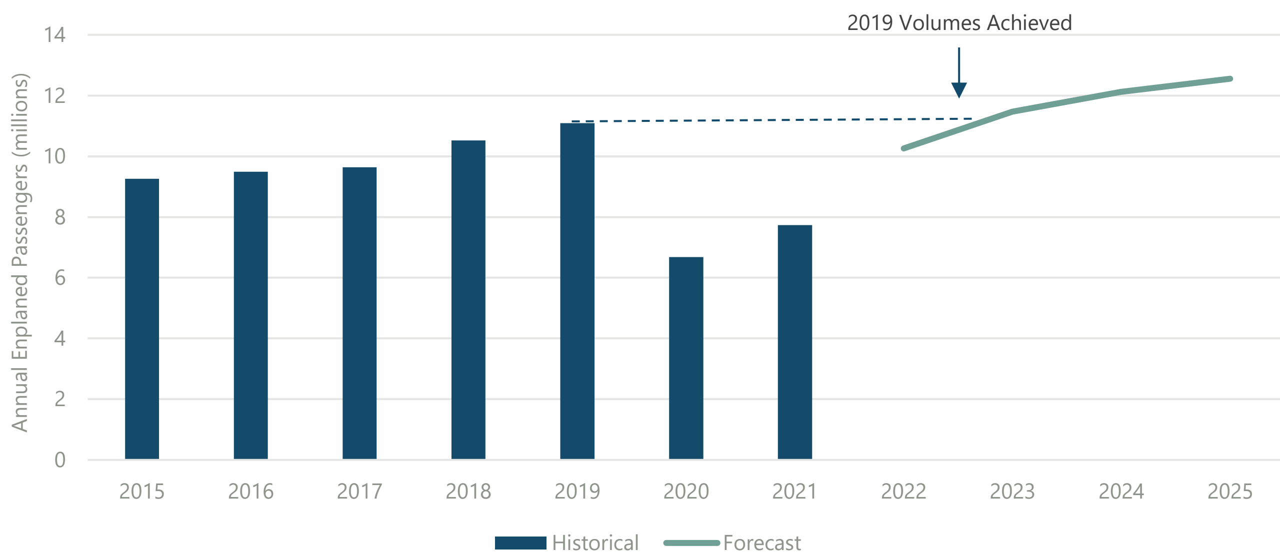
The methodology considered:

- Airline capacity and load factor recovery at TPA;
- Airline capacity recovery at airports served by TPA and in the industry overall;
- Economic recovery forecast for the region and in regions served from TPA;
- The historical revenue produced by passengers in the individual markets served from TPA; and
- Other forecasts developed for the Airport (specifically the FAA Terminal Area Forecast).

Based on a combination of these factors, the return to traditional influences was estimated according to a passenger's origin and destination of travel. As modeled, pandemic-related influences continue to impact some segments of passenger activity through 2025 (although overall growth continues), with traditional influences primarily driving activity throughout the remainder of the forecast period.

Exhibit 3.3-1 depicts the forecast of enplaned passenger growth through FY2025, the final year that any portion of demand is modelled to be influenced by pandemic factors. Note that the return to FY2019 volumes, another measure of recovery, is forecast to occur in FY2023.

EXHIBIT 3.3-1 TOTAL ENPLANED PASSENGER FORECAST FY2021 – FY2025



SOURCE: Hillsborough County Aviation Authority (historical); Ricondo & Associates, Inc. (analysis), January 2022.

The methodology for determining passenger growth outside of the influence of pandemic-related factors is described in the subsequent section.

3.3.1.2 LONG-TERM ACTIVITY FORECAST METHODOLOGY

As the pandemic's influences on passenger demand diminish, it is expected that the traditional relationships between demand and socioeconomics will drive long-term passenger growth.

For analytical purposes, O&D passengers were categorized based on their itinerary type to determine a passenger's true journey. While this categorization differs slightly from how the Airport reports passenger activity, passengers were re-categorized to traditional airport reporting standards for presentation in forecast results.

- Domestic O&D passengers use the Airport as an origin or destination point for journeys within the U.S.
- International O&D passengers use the Airport as an origin or destination point for journeys to or from points outside the U.S. This category includes passengers whose ultimate destination is an international point, but who use a flight segment to or from another domestic airport that serves as the international gateway (e.g., a passenger flying from Tampa to Paris, France [CDG] via Atlanta [ATL]). While this type of passenger is on an international itinerary, the Airport reports this type of passenger as a domestic enplaned passenger.

O&D passengers were forecast using socioeconomic regression analysis techniques that identified predictive statistical relationships between TPA's historical domestic and international O&D passenger volumes and several independent socioeconomic variables (such as population, employment, per capita personal income) sourced from Woods & Poole Economics, Inc (Woods & Poole).

The resulting regression equations were then populated with independent forecasts of the relevant socioeconomic variables (sourced from Woods & Poole and Moody's Analytics), yielding a range of potential O&D passenger growth. The relationships selected for use in this forecast of O&D passengers and their resulting 23-year passenger growth CAGRs are shown in **Table 3.3-1**. Passenger growth was then forecast using these relationships beginning when each market was expected to emerge from the pandemic-driven demand environment.

TABLE 3.3-1 SOCIOECONOMIC REGRESSION ANALYSIS OUTPUTS

DEPENDENT VARIABLE	SOCIOECONOMIC VARIABLE	FY2019 - 2042 CAGR
Domestic O&D Passengers	TPA Air Service Area Per Capita Personal Income	2.9%
Domestic O&D Passengers	TPA Air Service Area Gross Regional Product	2.4%
Domestic O&D Passengers	United States Total Earnings	2.0%
Domestic O&D Passengers	**Average**	**2.5%**
International O&D Passengers	TPA Air Service Area Per Capita Personal Income	3.0%
International O&D Passengers	TPA Air Service Area Gross Regional Product	3.1%
International O&D Passengers	United States Gross Regional Product	2.8%
International O&D Passengers	**Average**	**3.0%**

NOTE: CAGR – Compound Annual Growth Rate
SOURCES: Woods & Poole Economics, Inc.; Moody's Analytics, Inc.; U.S. Department of Transportation DB1B Survey; Ricondo & Associates, Inc. (analysis), October 2021.

The international O&D passenger forecast were further refined to develop the international enplaned passenger forecast. Forecast international O&D passengers were first segmented by their country or region of origin or destination. Separate forecasts of regional activity growth, such Airbus' *Global Market Forecast 2021-2040,* Boeing's *Commercial Market Outlook 2021-2040,* and the Federal Aviation Administration's *Aerospace Forecast 2021-2041* were considered to develop region-specific growth patterns. Future international passengers were then modelled to grow on a country or region-specific basis considering these trends.

Historical volumes of passengers in each country or region served by an international flight from TPA were then evaluated to determine how future international O&D passengers would be accommodated by airlines, either by an international flight segment to or from TPA, or through another U.S. gateway. In general, TPA international O&D passengers travelling to geographically closer points such as Canada and the Caribbean were considered more likely to travel on a nonstop international flight segment than passengers travelling from TPA to longer-haul destinations.

Connecting passengers accounted for between 4.4 and 4.9 percent of total passengers at the Airport between FY2016 and FY2019. This declined further to 3.7 percent in FY2020. Due to the Airport's geographic location and lack of a hubbing airline it is not expected that connecting passengers will compose a significant portion of passenger traffic during the forecast Period. As a result, the forecast assumes that each airline's connecting passengers as a percentage of its total passengers will remain constant throughout the forecast period.

3.3.1.3 OTHER ASSUMPTIONS INCORPORATED INTO ACTIVITY FORECASTS

The following assumptions have also been incorporated into the forecast:

- For these analyses, and as with the FAA's assumptions for its nationwide forecasts, it is assumed that no terrorist incidents that materially impact U.S. air traffic demand during the forecast period will occur.

- While variants of COVID-19 may emerge, it is not assumed that they would result in a similar reduction in air service as experienced at the onset of the pandemic in FY2020.
- Airlines will be financially viable and able to serve future demand.
- Corporate and business travel demand in the Tampa Bay economy is expected to continue to grow throughout the forecast period.
- Tourism will continue to be a significant driver of demand for the Tampa Bay region, and the reopening cruise industry will support visiting passenger demand in both the near-term and longer-term.
- The longer-term relationship between passenger demand and socioeconomic factors will remain intact throughout the forecast period.
- Growth by both U.S. and foreign ultra-low-cost carriers at TPA will support additional international capacity at the Airport.

3.3.2 PASSENGER ACTIVITY FORECAST RESULTS

Table 3.3-2 presents the forecast of passenger activity at the Airport based upon the methodology described previously. As shown, total annual enplaned passengers are forecast to grow to 19.4 million (38.8 total million annual passengers) by FY2042. This represents a CAGR of 2.5 percent from FY2019, or 2.7 percent from FY2023, the first-year total passenger volumes are forecast to equal or exceed pre-pandemic levels.

Recovery from the pandemic is expected to occur more rapidly for domestic passengers as international travel restrictions contribute to a slower international passenger recovery. By FY2023, it is forecast that domestic enplaned passengers will exceed FY2019 volumes, while international enplaned passengers are forecast to exceed FY2019 volumes by FY2024. From FY2019 through FY2042, domestic enplaned passengers are forecast to grow at a CAGR of 2.4 percent, compared to 3.6 percent for international enplaned passengers.

TABLE 3.3-2 ENPLANED (DEPARTING) PASSENGER FORECASTS

FISCAL YEAR	DOMESTIC ENPLANEMENTS	INTERNATIONAL ENPLANEMENTS	TOTAL ENPLANEMENTS
Historical			
2012	8,197,638	243,499	8,441,137
2013	8,232,950	260,310	8,493,260
2014	8,381,339	292,408	8,673,747
2015	8,924,246	339,090	9,263,336
2016	9,067,888	417,991	9,485,879
2017	9,201,486	436,584	9,638,070
2018	10,035,679	483,568	10,519,247
2019	10,510,485	574,805	11,085,290
2020	6,400,465	280,598	6,681,063
2021	7,672,647	44,517	7,717,164
Forecast			
2022	10,210,000	365,000	10,575,000
2023	11,128,000	505,000	11,634,000
2024	11,529,000	606,000	12,135,000
2025	11,921,000	715,000	12,636,000
2026	12,218,000	778,000	12,996,000
2027	12,552,000	809,000	13,361,000
2032	14,292,000	968,000	15,261,000
2037	16,147,000	1,134,000	17,282,000
2042	18,117,000	1,306,000	19,423,000
Compound Annual Growth Rate			
2012 - 2019	3.6%	13.1%	4.0%
Recovery (2021-2023)	20.4%	236.8%	22.8%
Post Recovery (2023-2042)	2.6%	5.1%	2.7%
Full Forecast Period (2022-2042)	2.9%	6.6%	3.1%

SOURCES: Hillsborough County Aviation Authority, January 2022 (Historical); Woods & Poole Economics, Inc.; Moody's Analytics, Inc., January 2022; Ricondo & Associates, Inc. January 2022 (Forecast).

3.3.3 PASSENGER AIRLINE AIRCRAFT OPERATIONS

Passenger airline aircraft operations forecasts were developed on an airline-by-airline basis using the enplaned passenger forecasts. Analyses of airline schedule completion rates (the percentage of scheduled flights that are actually operated), load factors, and published and estimated airline fleet plans were analyzed for each airline. Passenger growth was then accommodated through a combination of new flights, larger aircraft, and/or higher load factors on existing flights. The following are specific fleet assumptions used in the development of the forecasts:

- The general industry trend of upgauging average aircraft size will continue throughout the forecast period.
- Airlines operating flights between TPA and their hubs will increasingly utilize large narrowbody aircraft (e.g., Airbus A321 and Boeing 737 MAX 8 and MAX 9) on these routes.
- The use of high-density narrowbody aircraft will increase as Spirit and Frontier grow at the Airport.
- The replacement of Embraer E-190 aircraft with Airbus A220 aircraft by Breeze and JetBlue will contribute to a higher average aircraft seat capacity over the next five years.
- International passenger growth will be accommodated through a combination of widebody aircraft (long-haul routes) and narrowbody aircraft (Canada, Latin America, and the Caribbean)

Domestic aircraft operations are presented in **Table 3.3-3**. After declining from 166,712 in FY2019 to 129,746 in FY2021, domestic passenger aircraft operations are forecast to grow to 249,600 in FY2042, a CAGR of 1.8 percent from FY2019 to FY2042.

TABLE 3.3-2 DOMESTIC AIRCRAFT OPERATIONS FORECASTS

FISCAL YEAR	DOMESTIC ENPLANED PASSENGERS	DEPARTING SEATS	AVG. SEATS PER DEPT.	AVG. LOAD FACTOR	TOTAL DOMESTIC PASSENGER AIRCRAFT OPERATIONS
Historical					
2012	8,197,638	10,039,704	132.6	81.7%	151,472
2013	8,232,950	10,000,342	132.0	82.3%	151,510
2014	8,381,339	9,946,204	133.5	84.3%	149,042
2015	8,924,246	10,486,593	135.1	85.1%	155,272
2016	9,067,888	10,594,265	138.6	85.6%	152,872
2017	9,201,486	10,754,039	140.2	85.6%	153,464
2018	10,035,679	11,683,026	143.8	85.9%	162,438
2019	10,510,485	12,297,501	147.5	85.5%	166,712
2020	6,400,465	9,267,309	152.9	69.1%	121,198
2021	7,672,647	10,193,248	157.1	75.3%	129,746
Forecast					
2022	10,210,000	12,985,000	162.1	78.6%	160,200
2023	11,128,000	13,814,000	162.5	80.6%	170,000
2024	11,529,000	14,261,000	163.1	80.8%	174,900
2025	11,921,000	14,697,000	163.5	81.1%	179,800
2026	12,218,000	15,014,000	163.9	81.4%	183,200
2027	12,552,000	15,374,000	164.3	81.6%	187,200
2032	14,292,000	17,223,000	166.1	83.0%	207,300
2037	16,147,000	19,152,000	168	84.3%	228,000
2042	18,117,000	21,159,000	169.5	85.6%	249,600
Compound Annual Growth Rate					
2012 - 2019	3.6%	3.6%			3.6%
Recovery (2021-2023)	20.4%	16.4%			14.5%
Post Recovery (2023-2042)	2.6%	2.3%			2.0%
Full Forecast Period (2022-2042)	2.9%	2.5%			2.2%

SOURCES: Hillsborough County Aviation Authority, U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

Table 3.3-4 presents the international passenger aircraft operations forecast. After declining from 7,310 in FY2019 to 1,244 in FY2021, international passenger aircraft operations are forecast to grow to 16,400 in FY2042, a CAGR of 3.6 percent from FY2019 to FY2042. Through FY2023, international recovery is expected to be strongest among U.S. and Canadian carriers, this will result in slightly lower average aircraft size in driving a lower number of seats per departure. As long-haul services increase beyond FY2023, it is forecast that average aircraft size will resume growth.

Total passenger aircraft operations as presented in **Table 3.3-5**, are forecast to grow from 174,022 in FY2019 to 266,100 in FY2042, a CAGR of 1.9 percent.

TABLE 3.3-4 INTERNATIONAL AIRCRAFT OPERATIONS FORECASTS

FISCAL YEAR	INTERNATIONAL ENPLANED PASSENGERS	DEPARTING SEATS	AVG. SEATS PER DEPT.	AVG. LOAD FACTOR	TOTAL INTERNATIONAL PASSENGER AIRCRAFT OPERATIONS
Historical					
2012	243,499	267,449	171.6	91.0%	3,118
2013	260,310	298,056	170.2	87.3%	3,502
2014	292,408	327,116	166.7	89.4%	3,924
2015	339,090	387,203	160.9	87.6%	4,814
2016	417,991	486,346	185.6	85.9%	5,242
2017	436,584	535,354	177.5	81.6%	6,032
2018	483,568	579,977	180.8	83.4%	6,416
2019	574,805	685,026	187.4	83.9%	7,310
2020	280,598	348,922	200.1	80.4%	3,488
2021	44,517	96,438	155.0	46.2%	1,244
Forecast					
2022	365,000	489,000	185.3	78.6%	5,300
2023	492,000	659,000	176.5	80.6%	7,500
2024	606,000	806,000	181.0	80.8%	8,900
2025	715,000	948,000	181.2	81.1%	10,500
2026	778,000	1,027,000	184.8	81.4%	11,100
2027	809,000	1,064,000	185.6	81.6%	11,500
2032	968,000	1,248,000	189.3	83.0%	13,200
2037	1,134,000	1,432,000	193.1	84.3%	14,800
2042	1,306,000	1,616,000	196.7	85.6%	16,400
Compound Annual Growth Rate					
2012 - 2019	13.1%	14.4%			12.9%
Recovery (2021-2023)	232.4%	161.4%			145.5%
Post Recovery (2023-2042)	5.3%	4.8%			4.2%
Full Forecast Period (2022-2042)	6.6%	6.2%			5.8%

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

TABLE 3.3-5 TOTAL AIRCRAFT OPERATIONS FORECASTS

FISCAL YEAR	TOTAL ENPLANED PASSENGERS	DEPARTING SEATS	AVG. SEATS PER DEPT.	AVG. LOAD FACTOR	TOTAL PASSENGER AIRCRAFT OPERATIONS
Historical					
2012	8,441,137	10,307,153	133.3	81.9%	154,590
2013	8,493,260	10,298,398	132.9	82.5%	155,012
2014	8,673,747	10,273,320	134.3	84.4%	152,966
2015	9,263,336	10,873,796	135.8	85.2%	160,086
2016	9,485,879	11,080,611	140.2	85.6%	158,114
2017	9,638,070	11,289,393	141.6	85.4%	159,496
2018	10,519,247	12,263,003	145.2	85.8%	168,854
2019	11,085,290	12,982,527	149.2	85.4%	174,022
2020	6,681,063	9,616,231	154.2	69.5%	124,686
2021	7,717,164	10,277,574	156.9	75.3%	130,990
Forecast					
2022	10,575,000	13,474,000	157.8	78.5%	165,500
2023	11,621,000	14,473,000	156.5	80.3%	177,500
2024	12,135,000	15,068,000	156.4	80.5%	183,800
2025	12,636,000	15,645,000	155.9	80.8%	190,200
2026	12,996,000	16,041,000	156.2	81.0%	194,300
2027	13,361,000	16,437,000	156.5	81.3%	198,600
2032	15,261,000	18,470,000	158.1	82.6%	220,500
2037	17,282,000	20,584,000	159.8	84.0%	242,800
2042	19,423,000	22,775,000	161.2	85.3%	266,100
Compound Annual Growth Rate					
2012 - 2019	4.0%	3.4%			1.7%
Recovery (2021-2023)	22.7%	18.7%			16.4%
Post Recovery (2023-2042)	2.7%	2.4%			2.2%
Full Forecast Period (2022-2042)	3.1%	2.7%			2.4%

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

3.4 CARGO ACTIVITY FORECASTS

Historical cargo activity at the Airport was examined to develop forecasts of total cargo tonnage, all-cargo aircraft operations, and the cargo aircraft fleet mix at the Airport through FY2042.

As discussed in section 2.1, cargo activity at TPA has increased rapidly over the last five years as both Amazon Air and UPS have begun cargo services at TPA. TPA serves as the primary air cargo airport for the Tampa Bay Region as neither PIE nor SRQ currently have regularly scheduled cargo flights. While Amazon has recently reduced service from its FY2020 peak activity levels at TPA, the airline indicated in discussions with the Airport that it will continue to operate multiple daily flights at TPA, providing quick access to the TPA market than cannot be replicated by trucking from its LAL hub. Discussions were also held with UPS and FedEx to review forecast assumptions. Both airlines indicated that TPA is a robust cargo market, and cargo volumes are expected to increase as e-commerce demand grows nationwide.

The forecast of cargo tonnage was developed using socioeconomic regression analysis. Regression analysis was conducted to evaluate the relationship between total cargo volumes at the Airport and local and national socioeconomic variables. **Table 3.4-1** shows the predictive relationships that were identified between the socioeconomic variables and the total cargo tonnage.

Forecasts of cargo activity were also informed by the discussions with the cargo airlines serving TPA. Assumptions incorporated into the forecasts included:

- The average size of cargo aircraft serving TPA is not expected to grow, and most UPS and FedEx operations will be conducted using Airbus A300F and Boeing 767-300F aircraft. Amazon Air is also expected to primarily operate Boeing 767-300F aircraft at TPA.
- FedEx and UPS will continue to serve TPA from its major cargo hubs, though limited opportunity for flying from TPA to non-UPS hubs exists in the future.
- TPA will remain an important part of Amazon Air's network separate from growth at LAL.

The forecast of cargo aircraft operations was developed using the forecast of freighter aircraft cargo tonnage and the expected future freighter aircraft fleet operating at TPA. As previously discussed, it is not expected that the freighter aircraft fleet composition will change significantly over the forecast period. The forecast assumes that average cargo tonnage per operation will remain stable over the forecast period.

Table 3.4-2 presents the forecasts of belly and freighter aircraft cargo tonnage, and freighter aircraft operations. As shown, total cargo tonnage is forecast to grow at a compound annual rate of 2.7 percent from FY2022 through FY2042. Freighter aircraft operations are forecast to grow from 8,600 in FY2022 to approximately 12,900 in FY2042, a CAGR of 2.0 percent.

TABLE 3.4-1 SOCIOECONOMIC REGRESSION ANALYSIS OUTPUTS FOR CARGO TONNAGE

DEPENDENT VARIABLE	SOCIOECONOMIC VARIABLE	FY2019 - 2042 CAGR
Cargo Tonnage	TPA Air Service Area Per Capita Personal Income	2.7%
Cargo Tonnage	TPA Air Service Area Employment	2.6%
Cargo Tonnage	United States Per Capita Personal Income	2.2%
Cargo Tonnage	**Average**	**2.5%**

NOTE: CAGR – Compound Annual Growth Rate
SOURCES: Woods & Poole Economics, Inc. January 2022; Moody's Analytics, Inc. January 2022; U.S. Department of Transportation T-100 January 2022; Ricondo & Associates, Inc. (analysis), January 2022.

TABLE 3.4-2 CARGO TONNAGE FORECAST

FISCAL YEAR	FREIGHTER AIRCRAFT TONNAGE	PASSENGER AIRCRAFT TONNAGE	TOTAL TONNAGE	FREIGHTER AIRCRAFT OPERATIONS
Historical				
2012	69,126	19,713	88,838	1,588
2013	74,755	18,022	92,777	1,777
2014	78,642	18,326	96,967	1,901
2015	84,766	20,189	104,955	2,017
2016	110,726	18,951	129,677	2,860
2017	126,893	22,622	149,515	4,126
2018	192,884	22,029	214,913	7,748
2019	215,860	19,995	235,854	8,520
2020	244,180	14,372	258,552	8,996
2021	212,787	17,183	229,971	8,400
Forecast				
2022	221,000	18,000	238,000	8,600
2023	228,000	18,000	247,000	8,900
2024	236,000	19,000	255,000	9,100
2025	244,000	20,000	263,000	9,400
2026	251,000	20,000	272,000	9,600
2027	259,000	21,000	280,000	9,800
2032	297,000	24,000	321,000	10,900
2037	335,000	27,000	362,000	11,900
2042	372,000	30,000	402,000	12,900
Compound Annual Growth Rate				
2012 - 2019	17.7%	0.2%	15.0%	27.1%
Recovery (2021-2023)	3.5%	2.3%	3.6%	2.9%
Post Recovery (2023-2042)	2.6%	2.7%	2.6%	2.0%
Full Forecast Period (2022-2042)	2.6%	2.6%	2.7%	2.0%

SOURCES: Hillsborough County Aviation Authority, January 2022 (Historical); Woods & Poole Economics, Inc. January 2022; Moody's Analytics, Inc. January 2022; Ricondo & Associates, Inc. January 2022 (Forecast).

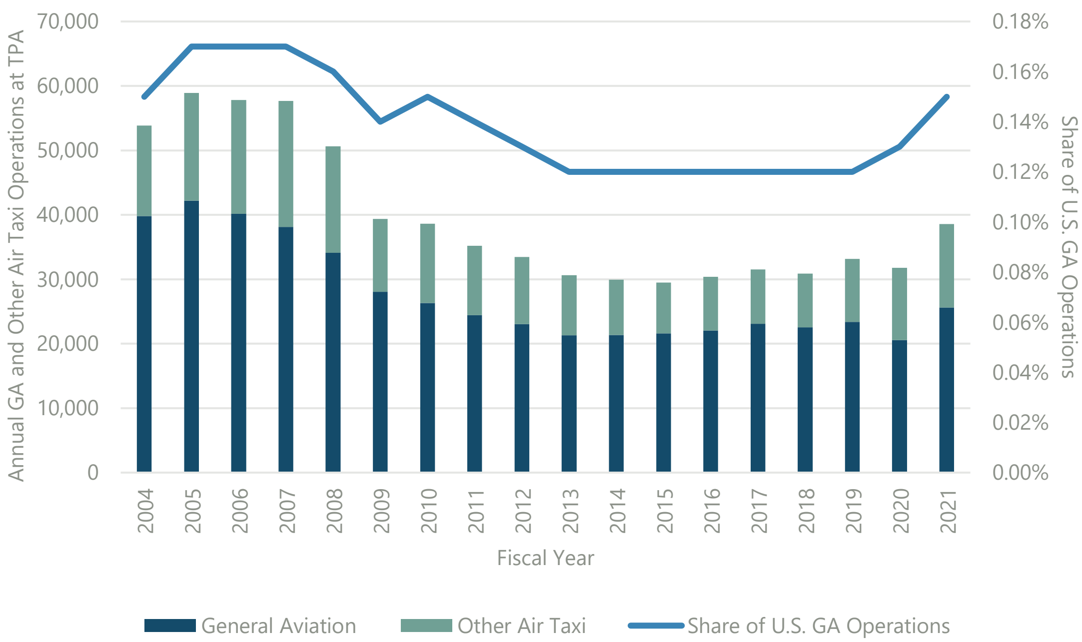
3.5 GENERAL AVIATION ACTIVITY FORECASTS

The following section provides historical and forecast general aviation (GA) activity including other air taxi operations[14], and fleet mix, and based aircraft at the Airport.

General aviation and other air taxi operations at TPA declined significantly at the start of the Great Recession in FY2008, then decreased in each year between FY2009 and FY2015 before resuming growth in FY2016. The decline in general aviation during this period was a result of fewer jet operations as business and corporate traffic were both impacted by the Great Recession. Piston aircraft operations also declined during the period; a trend that was experienced nationwide in the years following the Great Recession. Other air taxi operations were similarly impacted by decreased demand for corporate and business travel.

Exhibit 3.5-1 presents historical general aviation and other air taxi operations at TPA, as well as TPA's market share of total U.S. general aviation operations since FY2004.

EXHIBIT 3.5-1 HISTORICAL GENERAL AVIATION AND OTHER AIR TAXI OPERATIONS AND SHARE OF U.S.



NOTE: GA – General Aviation

SOURCES: FAA *The Operations Network*, January 2022; Hillsborough County Aviation Authority (historical) January 2022; Ricondo & Associates, Inc. (analysis), January 2022.

Interviews were conducted with the fixed base operators at the Airport to identify trends specific to the local market, as well as understand any impacts of the pandemic on TPA general aviation activity. Key feedback from those discussions included:

[14] Other air taxi operations include nonscheduled passenger and cargo aircraft (60 seats and fewer or a payload less than 18,000 lbs.) which do not report activity through the U.S. Department of Transportation Form T-100.

- Corporate, charter, and fractional ownership demand has increased since the pandemic, fuel flowage has increased and hangars are full, with multiple aircraft on hangar wait lists.
- The Airport's location close to Tampa's business district makes it uniquely positioned to serve corporate and business traffic, surrounding general aviation airports lack adequate facilities (e.g., runway length) or are not located within a convenient proximity to downtown Tampa to compete effectively for TPA's corporate and business traffic.
- The average size of aircraft is increasing, especially among mid-sized jets (e.g., Cessna Citation XLS).
- A few piston aircraft are based at TPA, and limited itinerant piston operations occur, but most of the activity the FBOs handle are turbine engine aircraft.
- International general aviation flights have increased and are approaching pre-pandemic levels.

The forecasts of general aviation activity were subsequently developed, and multiple methodologies were explored to forecast general aviation operations at the Airport. These methodologies included:

- **Regression Analysis:** Statistical regression analysis was used to analyze the relationship between historical operations and local or national socioeconomic indicators. This approach did not yield any usable predictive relationships and was not considered further.
- **Total Activity Market Share Analysis:** This approach is based on an estimation of how activity will grow at TPA relative to the rest of the industry. The Airport's share of total U.S. general aviation operations was steady at approximately 0.12 percent between FY2013 and FY2019, before increasing in FY 2019. This share was applied to the forecast of total U.S. general aviation activity in the FAA's *2021 Aerospace Forecast*.
- **Trend Analysis by Aircraft Type:** The Airport's general aviation and other air taxi operations were further segmented by aircraft type (I.e., piston, turboprop, jet) using data from TPA's noise monitoring system. As shown in **Table 3.5-1**, jet traffic has accounted for between 58 percent and 67 percent of total general aviation and other air taxi operations between FY2012 and FY2021. Historical activity for each segment was compared to the corresponding historical nationwide trends in that segment, and then each type of aircraft type was forecast to grow as a function of total U.S. general aviation demand for that specific aircraft type, as forecast in the FAA *2021 Aerospace Forecast*.

TABLE 3.5-1 GENERAL AVIATION AND OTHER AIR TAXI OPERATIONS BY TYPE

FISCAL YEAR	PISTON AIRCRAFT	TURBOPROP AIRCRAFT	JET AIRCRAFT	PISTON AIRCRAFT SHARE	TURBOPROP AIRCRAFT SHARE	JET AIRCRAFT SHARE	TOTAL
2012	7,413	4,678	20,537	22.7%	14.3%	62.9%	32,628
2013	6,772	4,486	17,704	23.4%	15.5%	61.1%	28,962
2014	7,054	4,433	17,092	24.7%	15.5%	59.8%	28,578
2015	7,086	4,366	15,718	26.1%	16.1%	57.9%	27,170
2016	6,413	3,716	17,732	23.0%	13.3%	63.6%	27,861
2017	5,425	3,659	19,004	19.3%	13.0%	67.7%	28,089
2018	4,601	4,601	17,861	17.0%	17.0%	66.0%	27,062
2019	5,623	6,338	19,075	18.1%	20.4%	61.4%	31,067
2020	6,325	5,938	20,009	19.6%	18.4%	62.0%	32,272
2021	6,739	6,780	27,614	16.4%	16.5%	67.2%	41,093

SOURCES: FAA Traffic Flow Management System Counts (TFMSC), January 2022; Hillsborough County Aviation Authority, January 2022.

Most general aviation activity at TPA is conducted in jet aircraft, and jet and turbo-prop aircraft have combined to account for more than 80 percent of total general aviation and other air taxi operations at TPA since FY2018. Based on feedback from FBOs, demand for business and corporate aviation at TPA remains strong, and the FBOs expect the jet and turbo-prop aircraft will continue to account for most of general aviation and other air taxi operations and based aircraft in the future. Because general aviation and other air taxi operations are predominantly jet aircraft, the trend analysis by aircraft type was selected as the forecast approach for general aviation and other air taxi operations. Based aircraft were then forecast to grow by aircraft type considering the forecast growth of operations within each category. Similar to the forecast of aircraft operations, increasing jet aircraft is forecast to result in the increased number of based aircraft. The forecast of aircraft operations by aircraft type are presented in **Table 3.5-2** while the forecast of based aircraft is presented in **Table 3.5-3**.

TABLE 3.5-2 GENERAL AVIATION AND OTHER AIR TAXI OPERATIONS FORECAST

FISCAL YEAR	PISTON AIRCRAFT	TURBOPROP AIRCRAFT	JET AIRCRAFT	PISTON AIRCRAFT SHARE	TURBOPROP AIRCRAFT SHARE	JET AIRCRAFT SHARE	TOTAL GENERAL AVIATION AND OTHER AIR TAXI OPERATIONS
Historical							
2012	7,413	4,678	20,537	22.7%	14.3%	62.9%	32,628
2013	6,772	4,486	17,704	23.4%	15.5%	61.1%	28,962
2014	7,054	4,433	17,092	24.7%	15.5%	59.8%	28,578
2015	7,086	4,366	15,718	26.1%	16.1%	57.9%	27,170
2016	6,413	3,716	17,732	23.0%	13.3%	63.6%	27,861
2017	5,425	3,659	19,004	19.3%	13.0%	67.7%	28,089
2018	4,601	4,601	17,861	17.0%	17.0%	66.0%	27,062
2019	5,623	6,338	19,075	18.1%	20.4%	61.4%	31,067
2020	6,325	5,938	20,009	19.6%	18.4%	62.0%	32,272
2021	6,739	6,780	27,614	16.4%	16.5%	67.2%	41,093
Forecast							
2022	6,300	6,500	29,300	15.0%	15.4%	69.6%	42,100
2023	6,200	6,600	31,600	13.9%	14.8%	71.0%	44,500
2024	6,200	6,700	33,700	13.3%	14.4%	72.5%	46,500
2025	6,100	6,800	35,300	12.7%	14.1%	73.2%	48,200
2026	6,000	6,800	36,600	12.1%	13.7%	73.9%	49,500
2027	6,000	6,900	37,900	11.8%	13.6%	74.8%	50,700
2032	5,700	7,100	43,000	10.2%	12.7%	77.1%	55,800
2037	5,500	7,300	47,800	9.1%	12.0%	78.7%	60,700
2042	5,500	7,900	52,400	8.4%	12.0%	79.6%	65,800
Compound Annual Growth Rate							
2012 - 2019	-3.9%	4.4%	-1.0%				-0.7%
Recovery (2021-2023)	-4.1%	-1.3%	7.0%				4.1%
Post Recovery (2023-2042)	-0.6%	1.0%	2.7%				2.1%
Full Forecast Period (2022-2042)	-0.7%	1.0%	2.9%				2.3%

NOTE: Totals may not add due to rounding
SOURCES: FAA Traffic Flow Management System Counts (TFMSC), January 2022; Hillsborough County Aviation Authority, January 2022 (historical). Ricondo & Associates, Inc., January 2022 (forecast).

TABLE 3.5-3 BASED AIRCRAFT FORECAST

FISCAL YEAR	SINGLE ENGINE	MULTI ENGINE	JET	HELICOPTER	TOTAL
Historical					
2021	9	7	57	6	79
Forecast					
2022	9	7	60	6	82
2027	9	7	70	6	92
2032	8	7	80	6	101
2037	9	7	89	6	110
2042	9	7	97	6	119
Compound Annual Growth Rate					
2021 - 2042	0%	0%	2.6%	0%	2.0%

SOURCES: Federal Aviation Administration *Form 5010-1 Airport Master Record*, January 2022 (historical). Ricondo & Associates, Inc., January 2022 (forecast).

3.6 MILITARY AIRCRAFT OPERATIONS FORECAST

Military aircraft operations are dependent upon U.S. Department of Defense initiatives, which are generally not made available to the public. No changes in the use of the airport by transient military aircraft is assumed in this forecast. Military aircraft operations have been forecast using an approach like that used by the FAA when preparing the TAF. Military aircraft operations were forecast by assuming actual FY2021 operations for each forecast year. Historical and forecast military aircraft operations are presented in **Table 3.6-1**.

TABLE 3.6-1 MILITARY AIRCRAFT OPERATIONS FORECAST

FISCAL YEAR	MILITARY AIRCRAFT OPERATIONS
Historical	
2012	691
2013	430
2014	486
2015	448
2016	467
2017	856
2018	490
2019	567
2020	636
2021	881
Forecast	
2022	881
2023	881
2024	881
2025	881
2026	881
2027	881
2032	881
2037	881
2042	881
Compound Annual Growth Rate	
2012 - 2019	-2.8%
Recovery (2021-2023)	0.0%
Post Recovery (2023-2042)	0.0%
Full Forecast Period (2022-2042)	0.0%

SOURCES: Federal Aviation Administration the Operations Network, January 2022 (forecast).

3.7 AIRCRAFT OPERATIONS SUMMARY

This section presents the summary of aircraft operations forecasts, the aircraft fleet mix, and critical aircraft during the forecast period.

3.7.1 AIRCRAFT OPERATIONS FORECASTS AND FLEET MIX SUMMARY

Table 3.7-1 presents the summarized aircraft operations forecasts. Total aircraft operations are forecast to increase from 181,364 in FY2021 to 345,600 in FY2042, a CAGR of 3.3 percent. A detailed fleet mix is presented in **Table 3.7-2**. The fleet mix was developed as described previously in section 2.3, considering the assumptions and analyses of future airline fleet mixes and expected airline operations at the Airport.

TABLE 3.7-1 SUMMARIZED AIRCRAFT OPERATIONS FORECASTS

FISCAL YEAR	PASSENGER AIRLINE OPERATIONS FORECAST	FREIGHTER AIRCRAFT OPERATIONS	GENERAL AVIATION AND OTHER AIR TAXI OPERATIONS	MILITARY AIRCRAFT OPERATIONS	TOTAL AIRCRAFT OPERATIONS
Historical					
2012	154,590	1,588	32,628	691	189,497
2013	155,012	1,777	28,962	430	186,181
2014	152,966	1,901	28,578	486	183,931
2015	160,086	2,017	27,170	448	189,721
2016	158,114	2,860	27,861	467	189,302
2017	159,496	4,126	28,089	856	192,567
2018	168,854	7,748	27,062	490	204,154
2019	174,022	8,520	31,067	567	214,176
2020	124,686	8,996	32,272	636	166,590
2021	130,990	8,400	41,093	881	181,364
Forecast					
2022	165,500	8,600	42,100	881	217,100
2023	177,500	8,900	44,500	881	231,800
2024	183,800	9,100	46,500	881	240,300
2025	190,200	9,400	48,200	881	248,700
2026	194,300	9,600	49,500	881	254,300
2027	198,600	9,800	50,700	881	260,000
2032	220,500	10,900	55,800	881	288,100
2037	242,800	11,900	60,700	881	316,300
2042	266,100	12,900	65,800	881	345,700
Compound Annual Growth Rate					
2012 - 2019	1.7%	27.1%	-0.7%	-2.8%	1.8%
Recovery (2021-2023)	16.4%	2.9%	4.1%	0.0%	13.1%
Post Recovery (2023-2042)	2.2%	2.0%	2.1%	0.0%	2.1%
Full Forecast Period (2022-2042)	2.4%	2.0%	2.3%	0.0%	2.4%

NOTE: Totals may not add due to rounding.

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100 January 2022; Federal Aviation Administration, Operations Network (OPSNET), January 2022 (historical); Ricondo & Associates, Inc., January 2022 (forecast).

TABLE 3.7-2 AIRCRAFT FLEET MIX

AIRCRAFT CATEGORY	SEAT RANGE	REPRESENTATIVE AIRCRAFT	FY2021		FY2027		FY2032		FY2042	
			OPERATIONS	PERCENT	OPERATIONS	PERCENT	OPERATIONS	PERCENT	OPERATIONS	PERCENT
Passenger										
Small Piston/Turboprop/Regional Jet	<51	CRJ-200	3,800	2.9%	4,000	2.0%	3,300	1.5%	2,700	1.0%
Medium Regional Jet/Turboprop	51-76	CRJ-900; EMB-175	4,200	3.1%	5,800	2.9%	5,700	2.6%	4,800	1.8%
Large Regional Jet/Turboprop	77-100	EMB-190	2,200	1.7%	0	0.0%	0	0.0%	0	0.0%
Small Narrowbody	101-130	B717; A220	5,600	4.2%	7,900	4.0%	8,400	3.8%	8,200	3.1%
Medium Narrowbody	131-160	A320; B737-700	44,300	33.2%	63,600	32.0%	69,200	31.4%	81,400	30.6%
Large Narrowbody	161-199	A321; B737-800	70,300	52.6%	111,400	56.1%	125,500	56.9%	155,900	58.6%
High Density Narrowbody	200-230	A321	1,800	1.4%	4,800	2.4%	6,400	2.9%	10,100	3.8%
Widebody	231+	A350-900; B787-9	1,300	1.0%	1,200	0.6%	2,000	0.9%	2,900	1.1%
Subtotal			**133,500**	**100.0%**	**198,600**	**100.0%**	**220,500**	**100.0%**	**266,100**	**100.0%**
Cargo										
Small/Standard Body		C208; ATR-42F	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Medium Widebody		B737F, B757F	2,200	26.5%	2,500	25.0%	2,400	22.0%	2,600	20.0%
Large Widebody		B767F; MD-11F	6,200	73.5%	7,400	75.0%	8,500	78.0%	10,300	80.0%
Subtotal			**8,400**	**100.0%**	**9,800**	**100.0%**	**10,900**	**100.0%**	**12,900**	**100.0%**
General Aviation/Other Air Taxi										
Piston		Cessna C-182; Cirrus SR-22	6,300	16.4%	6,000	11.8%	5,700	10.2%	5,500	8.4%
Turboprop		King Air 200	6,400	16.5%	6,900	13.6%	7,100	12.7%	7,900	12.0%
Jet		Citation XLS; Gulfstream V	25,900	67.2%	37,900	74.7%	43,000	77.1%	52,400	79.6%
Subtotal			**38,500**	**100.0%**	**50,700**	**100.0%**	**55,800**	**100.0%**	**65,800**	**100.0%**
Military			881	100.0%	881	100.0%	881	100.0%	881	100.0%
Subtotal			**881**	**100.0%**	**881**	**100.0%**	**881**	**100.0%**	**881**	**100.0%**
Airport Total			**181,400**	**100.0%**	**260,000**	**100.0%**	**288,100**	**100.0%**	**345,600**	**100.0%**

NOTE: Totals may not add due to rounding

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100 January 2022; Federal Aviation Administration, Operations Network (OPSNET), January 2022 (historical); Ricondo & Associates, Inc., January 2022 (forecast).

3.7.2 CRITICAL AIRCRAFT

The FAA's current Standard Operating Procedure (SOP) for the FAA Review and Approval of Airport Layout Plans (ALPs) defines the critical aircraft as ". . . the most demanding aircraft type or grouping of aircraft with similar characteristics."[15] Federally funded projects require that the critical aircraft will make regular use of the airport in the planning period. Regular use means 500 or more annual itinerant operations or scheduled service.

Based on current and scheduled operations at the Airport, the existing critical aircraft is the Boeing 777-200, an aircraft design group (ADG) V and taxiway design group (TDG) 5 aircraft. Based on the forecasts and the anticipated future fleet mix of aircraft operating at the Airport, it is forecast that the future critical aircraft will be an ADG V and TDG 5 aircraft such as the Airbus A350-900 or Boeing 787-9.

[15] Federal Aviation Administration, Advisory Circular 150/5000-17, July 2017.

3.8 COMPARISON OF FORECASTS

The Master Plan Update forecast of enplaned passengers and aircraft operations are compared to the FAA's *2021 Terminal Area Forecast* (TAF), the most recently published TAF, in **Table 3.8-1** and **Table 3.8-2**, respectively. These comparisons are depicted graphically in **Exhibit 3.8-1** and **Exhibit 3.8-2**. The TAF was published in March 2022. The Master Plan Update forecast is higher than the TAF values in FY2022. However, by FY2023 the passenger airline forecast is within 2 percent of the 2021 TAF values, while the aircraft operations forecast is consistently within 5 percent of the 2021 TAF values by FY2025.

TABLE 3.8-1 COMPARISON OF ENPLANED PASSENGER FORECASTS

FISCAL YEAR	2022 MASTER PLAN UPDATE FORECAST	2021 TERMINAL AREA FORECAST	DIFFERENCE
Historical			
2012	8,441,137	8,206,805	2.9%
2013	8,493,260	8,250,952	2.9%
2014	8,673,747	8,448,779	2.7%
2015	9,263,336	8,988,634	3.1%
2016	9,485,879	9,197,382	3.1%
2017	9,638,070	9,353,895	3.0%
2018	10,519,247	10,248,150	2.6%
2019	11,085,290	10,787,303	2.8%
2020	6,681,063	6,468,397	3.3%
2021	7,717,164	7,753,117	-0.5%
Forecast			
2022	10,575,000	9,441,637	12.0%
2023	11,621,000	11,404,572	1.9%
2024	12,135,000	11,947,711	1.6%
2025	12,636,000	12,246,562	3.2%
2026	12,996,000	12,579,481	3.3%
2027	13,361,000	12,945,573	3.2%
2032	15,261,000	14,694,637	3.9%
2037	17,282,000	16,481,315	4.9%
2042	19,423,000	18,262,455	6.4%
Compound Annual Growth Rate			
2012 - 2019	4.0%	4.0%	
Recovery (2021-2023)	22.7%	21.3%	
Post Recovery (2023-2042)	2.7%	2.5%	
Full Forecast Period (2022-2042)	3.1%	3.4%	

NOTE: The Terminal Area Forecast excludes nonrevenue passengers, while the Master Plan Update includes nonrevenue passengers. Both forecasts are depicted in fiscal years (October – September).

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100 January 2022; January 2022 (historical); FAA *2021 Terminal Area Forecast*, March 2022; Ricondo & Associates, Inc., January 2022 (forecast).

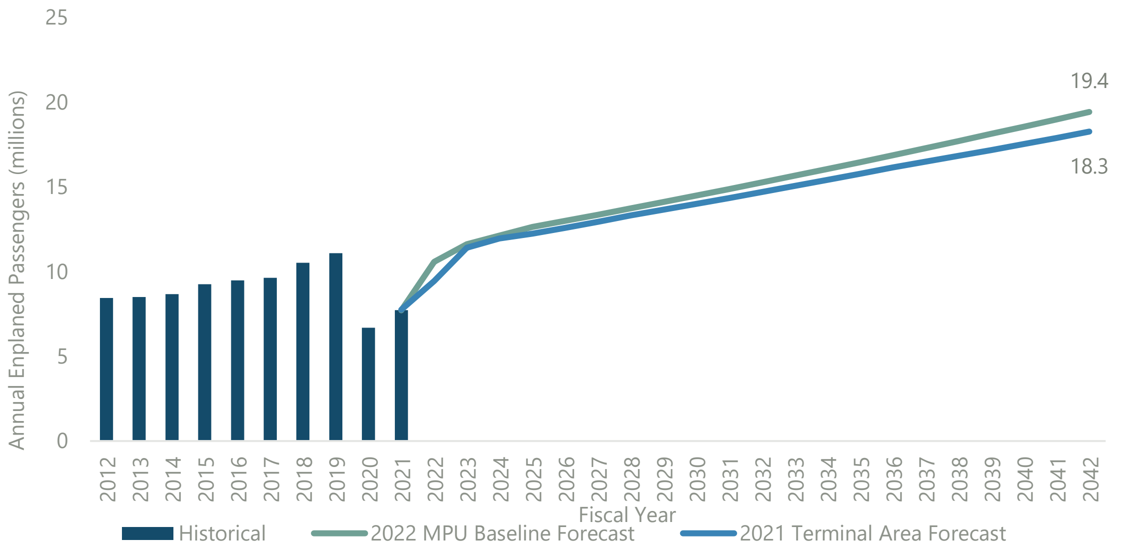
TABLE 3.8-2 COMPARISON OF AIRCRAFT OPERATIONS FORECASTS

FISCAL YEAR	2022 MASTER PLAN UPDATE FORECAST	2021 TERMINAL AREA FORECAST	DIFFERENCE
Historical			
2012	189,497	189,113	0.2%
2013	186,181	186,147	0.0%
2014	183,931	183,889	0.0%
2015	189,721	189,615	0.1%
2016	189,302	189,180	0.1%
2017	192,567	192,511	0.0%
2018	204,154	204,114	0.0%
2019	214,176	214,045	0.1%
2020	166,590	166,590	0.0%
2021	181,364	181,364	0.0%
Forecast			
2022	217,100	205,851	5.5%
2023	231,700	238,940	-3.0%
2024	240,300	254,238	-5.5%
2025	248,600	258,291	-3.8%
2026	254,300	262,848	-3.3%
2027	260,000	267,905	-3.0%
2032	288,100	290,974	-1.0%
2037	316,300	313,506	0.9%
2042	345,600	335,611	3.0%
Compound Annual Growth Rate			
2012 - 2019	1.8%	1.8%	
Recovery (2021-2023)	13.0%	14.8%	
Post Recovery (2023-2042)	2.1%	1.8%	
Full Forecast Period (2022-2042)	2.4%	2.5%	

NOTE: Both forecasts are depicted in fiscal years (October – September).

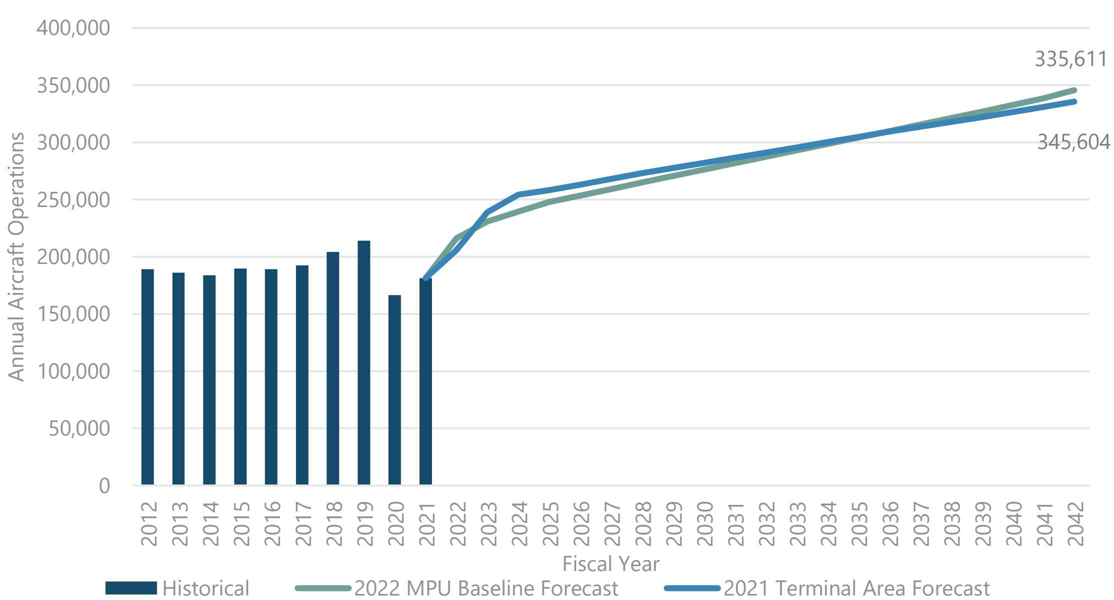
SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100 January 2022; Federal Aviation Administration, Operations Network (OPSNET), January 2022 (historical); FAA *2021 Terminal Area Forecast*, March 2022; Ricondo & Associates, Inc., January 2022 (forecast).

EXHIBIT 3.8-1 COMPARISON OF ENPLANED PASSENGER FORECASTS



NOTE: The Terminal Area Forecast excludes nonrevenue passengers, while the Master Plan Update includes nonrevenue passengers.
SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100 January 2022; January 2022 (historical); FAA *2021 Terminal Area Forecast*, March 2022; Ricondo & Associates, Inc., January 2022 (forecast).

EXHIBIT 3.8-2 COMPARISON OF AIRCRAFT OPERATIONS FORECASTS



SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100 January 2022; Federal Aviation Administration, Operations Network (OPSNET), January 2022 (historical); FAA *2021 Terminal Area Forecast*, March 2022; Ricondo & Associates, Inc., January 2022 (forecast).

3.9 PEAK ACTIVITY METRICS AND DESIGN DAY FLIGHT SCHEDULES

Design Day Flight Schedules (DDFSs) of airline aircraft and passenger activity were developed to assess future facility and operating requirements. These DDFSs represent passenger airline aircraft movements and passenger distribution throughout a peak month average day (PMAD) at the Airport. The Airport's PMAD is defined as the average level of passenger airline operations and passenger activity during the highest-volume month of passenger airline aircraft and flight operations.

This section presents the methodology used to define the DDFS and the analyses and assumptions that went into its development. It is important to recognize that the DDFS is foremost a representation of what could be experienced at the Airport at the specified future planning activity levels (PALs) in terms of a PMAD, specifically reflecting hourly arriving and departing passengers and aircraft. The DDFS secondarily provides an indication of future individual airline activity levels and market service patterns.

The following sections describe the development and results of the DDFSs modeled for the base year (FY2019), and the future planning horizons of FY2032 (PAL1), FY2037 (PAL2), and FY2042 (PAL3). DDFSs were also developed for non-passenger airline activity.

3.9.1 DESIGN DAY FLIGHT SCHEDULE DEVELOPMENT

The DDFSs represent the aircraft and passenger activity anticipated at the Airport during the PMAD. Each DDFS provides information on aircraft arrival and departure time, equipment type, number of arriving and departing passengers, O&D and connecting passengers, seating capacity, load factor, and markets for each commercial flight. A representative airline and/or operator is also included.

3.9.2 DESIGN DAY FLIGHT SCHEDULE – BASE YEAR

Monthly passenger activity for the historical period from FY2015 to FY2020 was reviewed to determine peak month activity. Due to the pandemic and ensuing lower monthly activity in FY2020, the DDFS was selected based on peak month activity from FY2019. Airport and U.S. DOT T-100 enplaned passenger data as well as published schedules identified March as the peak month for total passenger volumes and passenger airline operations in FY2019. Historical monthly onboard revenue enplaned passengers and passenger airline operations data are shown in **Table 3.9-1.**

Table 3.9-2 provides scheduled passenger airline operations, total seat capacity and a comparison of the selected base day to other daily data in March 2019. **Exhibit 3.9-1** and **Exhibit 3.9-2** depict March 2019 scheduled passenger airline daily operations and scheduled seat capacity data, respectively. Thursday, March 14th was identified as a potential PMAD base DDFS. Due to operations typically being higher on Saturday than weekdays in peak seasons for Southwest, published airline schedules for each weekday in March 2019 were reviewed, which verified airline operation levels on March 14th were close to the PMAD. The absolute peak day is seldom selected for the DDFS development; a review and comparison of daily base year activity levels ensures the selected PMAD is appropriate. **Table 3.9-3** presents the top 25 days of scheduled operations and total arriving and departing seats in FY2019 for TPA. As shown, Thursday, March 14th, 2019, represents the fourteenth busiest day by total operations and seats of FY2019, with 555 operations and 86,875 seats.

Published airline schedules for the selected PMAD provide the airline, type of aircraft, number of seats, origin, destination, and flight times for each scheduled passenger airline flight. The number of passengers on each flight was determined by calculating the average monthly flight load factor dividing the number of monthly passengers by the number of monthly seats by airline and market based on March 2019 U.S. DOT T-100 data. This airline/market load factor was applied to the number of seats in the PMAD baseline schedule to determine the number of passengers on each flight for the base year. **Table 3.9-4** displays the base year DDFS results. As shown, the base year DDFS represents 78,900 total passengers and 562 passenger airline operations.

The cargo and other air taxi/general aviation DDFS elements were also based on a PMAD. Specifically, these DDFS elements were based on March 2021 monthly Airport Noise & Operations Monitoring Systems (ANOMS) data provided by the Airport. Military operations in the DDFS were held constant across all schedules, as is standard practice in annual forecasts.

TABLE 3.9-1 HISTORICAL MONTHLY ENPLANED PASSENGERS AND PASSENGER AIRLINE OPERATIONS (2015 TO 2020)

MONTH	FISCAL YEAR ENPLANED PASSENGERS					
	2015	2016	2017	2018	2019	2020
October	659,376	709,926	695,729	751,985	776,533	823,348
November	692,468	767,237	773,172	836,085	873,418	882,077
December	746,822	783,756	786,982	878,263	917,580	**1,016,424**
January	719,609	753,524	765,918	851,679	880,473	928,298
February	698,517	743,129	733,536	822,589	855,831	928,518
March	**937,880**	**946,553**	**961,020**	**1,054,563**	**1,140,200**	637,316
April	877,447	856,512	906,262	957,129	1,023,116	39,365
May	796,095	808,161	835,512	912,123	945,410	105,264
June	763,785	759,361	801,110	850,063	895,846	236,790
July	779,005	753,707	812,769	864,127	908,103	295,032
August	715,410	684,556	742,954	802,126	842,626	269,614
September	622,142	613,650	538,442	671,273	691,471	277,748
Total	**9,008,556**	**9,180,072**	**9,353,406**	**10,252,005**	**10,750,607**	**6,439,794**
MONTH	FISCAL YEAR PASSENGER AIRLINE OPERATIONS					
	2015	2016	2017	2018	2019	2020
October	11,636	11,521	11,252	11,956	12,608	12,896
November	12,416	12,442	12,235	12,915	13,408	14,017
December	13,352	13,337	13,189	14,282	14,696	**15,695**
January	13,269	13,072	13,140	14,318	14,382	14,719
February	11,995	12,573	12,125	13,295	13,240	14,271
March	**15,377**	**15,136**	**14,914**	**15,879**	**16,553**	14,411
April	13,926	13,477	14,233	14,258	15,197	4,213
May	13,205	12,663	13,145	13,779	13,867	3,274
June	12,745	12,312	12,895	13,099	13,259	5,107
July	13,082	12,530	13,169	13,483	13,709	8,128
August	12,119	11,767	12,416	12,493	12,799	7,403
September	10,808	10,499	9,397	11,340	11,302	5,633
Total	**153,930**	**151,329**	**152,110**	**161,097**	**165,020**	**119,767**

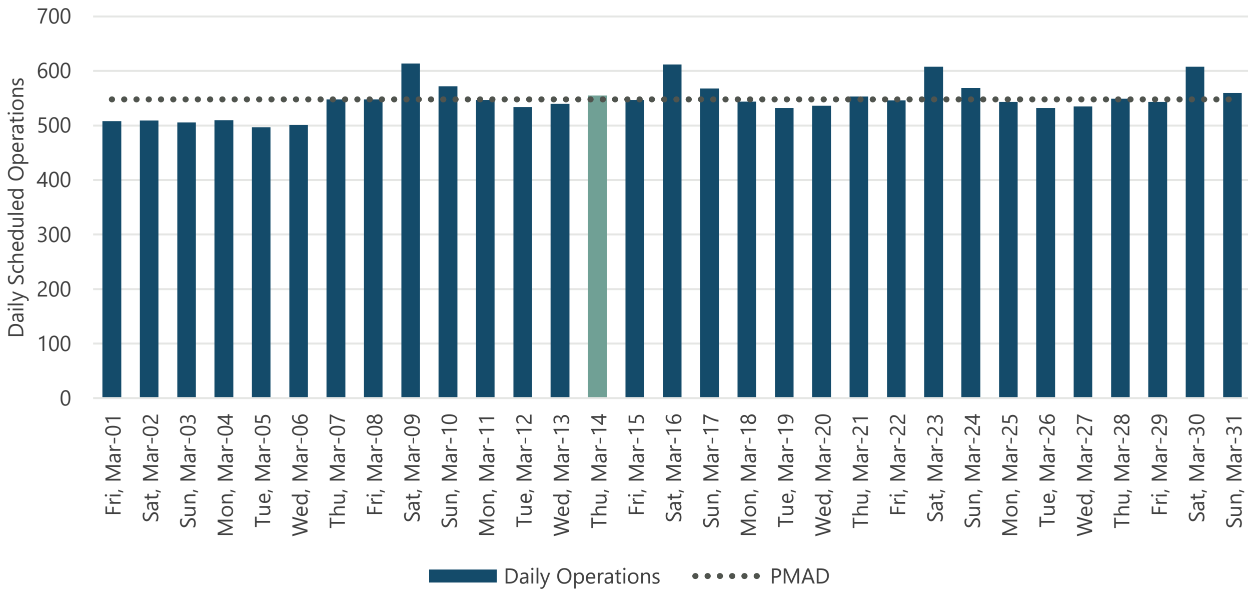
NOTES:
Results based on T-100 data and may vary from actuals reported by Hillsborough County Aviation Authority.
Onboard passengers represent revenue-only passengers.
SOURCES: Innovata, February 2022; Ricondo & Associates, Inc., February 2022.

TABLE 3.9-2 DAILY SCHEDULED PASSENGER AIRLINE ACTIVITY FOR MARCH 2019

DAY	SCHEDULED OPERATIONS	SCHEDULED TOTAL SEATS
Fri, Mar-01	508	80,518
Sat, Mar-02	509	80,287
Sun, Mar-03	506	80,452
Mon, Mar-04	510	80,901
Tue, Mar-05	497	78,336
Wed, Mar-06	501	79,368
Thu, Mar-07	548	86,037
Fri, Mar-08	548	86,656
Sat, Mar-09	614	95,535
Sun, Mar-10	572	89,910
Mon, Mar-11	547	85,744
Tue, Mar-12	534	83,576
Wed, Mar-13	540	84,767
Thu, Mar-14	**555**	**86,875**
Fri, Mar-15	547	86,613
Sat, Mar-16	612	95,102
Sun, Mar-17	568	89,267
Mon, Mar-18	544	85,247
Tue, Mar-19	532	83,372
Wed, Mar-20	536	84,036
Thu, Mar-21	553	86,676
Fri, Mar-22	546	86,343
Sat, Mar-23	608	94,467
Sun, Mar-24	569	89,247
Mon, Mar-25	543	85,009
Tue, Mar-26	532	83,211
Wed, Mar-27	535	83,819
Thu, Mar-28	549	86,246
Fri, Mar-29	543	85,978
Sat, Mar-30	608	94,237
Sun, Mar-31	560	87,873
Total	**16,974**	**2,665,705**
PMAD	548	85,990

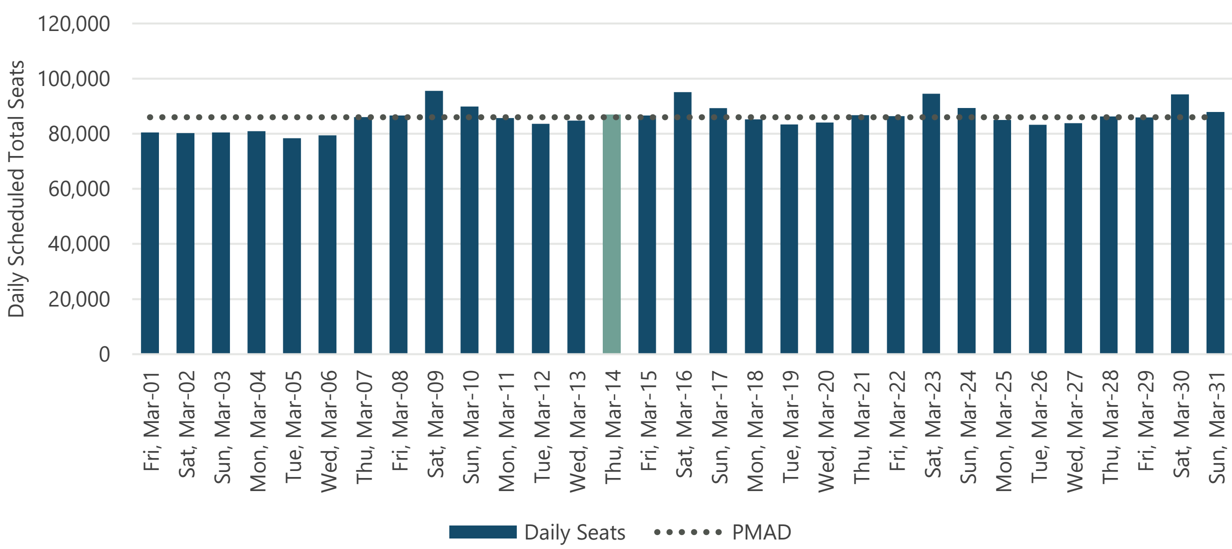
NOTES:
PMAD – Peak Month Average Day (Total divided by 31 days).
SOURCES: Innovata, February 2022; Ricondo & Associates, Inc., February 2022.

EXHIBIT 3.9-1 DAILY SCHEDULED PASSENGER AIRLINE OPERATIONS FOR MARCH 2019



NOTES:
PMAD – Peak month average day (Total divided by 31 days).
SOURCES: Innovata, February 2022; Ricondo & Associates, Inc., February 2022.

EXHIBIT 3.9-2 DAILY SCHEDULED PASSENGER AIRLINE TOTAL SEATS FOR MARCH 2019



NOTES:
PMAD – Peak month average day (Total divided by 31 days).
SOURCES: Innovata, February 2022; Ricondo & Associates, Inc., February 2022.

TABLE 3.9-3 TOP 25 DAYS OF PASSENGER AIRLINE ACTIVITY FOR FISCAL YEAR 2019

SCHEDULED OPERATIONS			SCHEDULED SEATS		
RANK	DAY	OPERATIONS	RANK	DAY	SEATS
1	March 9	614	1	March 9	95,535
2	March 16	612	2	March 16	95,102
3	March 23	608	3	March 23	94,467
3	March 30	608	4	March 30	94,237
5	April 6	594	5	April 6	92,729
6	March 10	572	6	March 10	89,910
7	March 24	569	7	March 17	89,267
8	March 17	568	8	March 24	89,247
9	December 27	564	9	December 27	88,182
10	March 31	560	10	March 31	87,873
11	December 28	559	11	December 28	87,721
11	December 29	559	12	December 29	87,137
13	December 26	556	13	December 26	86,901
14	**March 14**	**555**	**14**	**March 14**	**86,875**
14	December 22	555	15	March 21	86,676
16	March 21	553	16	March 8	86,656
16	April 7	553	17	December 22	86,653
18	December 30	552	18	December 30	86,637
19	December 23	549	19	March 15	86,613
19	March 28	549	20	March 22	86,343
21	March 7	548	21	April 7	86,334
21	March 8	548	22	March 28	86,246
23	March 11	547	23	December 23	86,230
23	March 15	547	24	March 7	86,037
25	March 22	546	25	March 29	85,978

NOTES:
SOURCE: Innovata, February 2022; Ricondo & Associates, Inc., February 2022.

TABLE 3.9-4 DESIGN DAY FLIGHT SCHEDULE RESULTS – BASE YEAR 2019

DESIGN DAY FLIGHT SCHEDULE RESULTS – BASE YEAR 2019					
METRIC	PASSENGERS	SEATS	LOAD FACTOR	AVERAGE SEAT COUNT	OPERATIONS
Arrivals	39,449	44,282	89.10%	158.2	280
Departures	39,451	44,497	88.70%	157.8	282
Total	**78,900**	**88,779**	**88.90%**	**158.0**	**562**

SOURCE: Innovata, February 2022; Ricondo & Associates, Inc., February 2022.

3.9.3 SCHEDULED PASSENGER AIRLINES

Future year DDFSs are based on the Baseline Master Plan Update Forecast. Overall assumptions used in developing the DDFSs include:

- Forecast growth for passengers and operations was based on the corresponding domestic and international annual growth rates presented in the forecasts. Individual airline and/or market activity forecasts were not applied to the DDFS development.
- The base year PMAD to annual ratio of passengers and operations would remain stable over future years in the planning horizon.
- Announced new and reinstated entrants (i.e., Breeze Airways, Edelweiss, etc.) scheduled to begin after the selected base PMAD (March 14, 2019), were incorporated into the PAL1 DDFS. Current available schedules published March 2022 were used for Breeze Airways and Edelweiss and any other entrants with published schedules available for year 2022.
- Five representative new entrant foreign flag airlines will serve the Airport in the 2032 DDFS. These new entrants are shown in the DDFSs as LATAM, NORSE Atlantic Airways, Virgin Atlantic, VivaAerobús, and Viva Air Colombia. These foreign flag airlines can ultimately be another airline but are used as placeholder new entrants with assigned arrival and departure times and correspond to South America, Europe, and Mexico for DDFS planning purposes.
- New destinations and increased service to existing destinations would continue to be served by airlines currently operating at the Airport. New destinations were incorporated based on top O&D markets not served in the 2019 base year DDFS.

The base year DDFS was used in the progressive development of 2032, 2037, and 2042 DDFSs. Load factors and available seats were determined through an iterative process that attempted to simulate an individual airline's changes in flight frequency and aircraft size in response to forecast growth in enplaned/deplaned passengers and aircraft operations. The steps listed below describe an overview of the schedule development process:

1. Forecasts of domestic and international passenger and aircraft operation growth rates were applied to the base year schedule to establish passenger and aircraft operation level “targets” for each of the future DDFSs. These targets provide guidance by maintaining forecast market share and identifying the number of additional daily aircraft operations needed in each of the future schedules.

2. Forecast passenger growth rates from 2019 to 2032 were applied to the base schedule on a route-by-route basis followed by a calculation to determine whether forecast 2032 passenger volumes could be accommodated on base year aircraft seat capacity (i.e., was the load factor below 100 percent). If the load factor was greater than the flight-specific threshold (approximately 95 percent), the base year aircraft was either (1) increased in gauge, (2) unchanged and a new flight added to the airline-market combination, or (3) unchanged if the load factor was below 100 percent to meet forecast operations and projected fleet mix targets. If the forecast passenger growth resulted in reasonable load factors and acceptable aircraft types/sizes, the aircraft assigned in the schedule remained unchanged. In some instances, passenger growth resulted in reasonable load factors; however, the aircraft was changed to represent changes in planned airline fleets (i.e., retirement of specific aircraft).
3. In some cases, professional judgment was used to determine whether an increase in aircraft gauge and/or a new flight(s) was added to an airline-market combination. These decisions were based primarily on whether (1) the airline fleet consists of, or the airline has on order, larger gauge aircraft for the applicable DDFS period, (2) a larger gauge aircraft is available that could reasonably and effectively operate in the market, and (3) a new flight addition would be consistent with forecast growth of additional aircraft operations.
4. If an additional flight(s) was added to an existing market, passengers were redistributed across all flights in that airline-market combination. Flights added to the DDFS were matched with new flight arrivals/departures and based on typical turnaround times for the specific airline and fleet types serving the Airport. If applicable, new flights were assumed to return to their origins/destinations rather than "flowing through" to other origins and destinations. Times for additional flights to existing markets were established considering flights currently provided by the specific airline, estimates of times airline travelers would typically prefer to arrive at and depart from the Airport, and timings of connections in destination hubs (if applicable).
5. Once the 2032 DDFS was complete, the process was repeated for the 2037 DDFS, and then again for the 2042 DDFS. Each planning horizon year DDFS was built upon the prior horizon year's DDFS.

It was assumed that aircraft gauge would not decrease in future years, unless (1) no larger gauge aircraft was available in the fleet, and (2) the new additional flight in the airline-market combination resulted in unreasonably low load factors for the combination. For example, a single daily Airbus 321 operation may have been down-gauged to an Airbus 320 as a new flight using an Airbus 319 was added to the airline-market combination to maintain reasonable load factors that are consistent with airline practices.

3.9.4 ALL-CARGO AND OTHER AIR TAXI/GENERAL AVIATION

As noted, all-cargo and other air taxi/general aviation DDFSs were based on Airport and FAA data and developed in accordance with annual operational growth defined in the Baseline Master Plan Update Forecast. Overall assumptions used in developing the Baseline Demand Scenario all-cargo, air taxi, and general aviation components of the DDFSs include:

- The base year to annual ratio of operations would remain stable over the future years of the planning horizon.
- New all-cargo operations were based on established all-cargo operations that are not operating on the foundational PMAD based on the FAA and Airport data (i.e., an all-cargo operator that currently operates

at TPA, but that may not currently have daily all-cargo service) and established all-cargo operations in the Base DDFS. **Table 3.9-5** and **Table 3.9-6** are based on U.S. DOT T-100 and ANOMS data which were reconciled to inform the development of the base all-cargo DDFS with operations by airline and aircraft type. Since specific arrival and departure times vary throughout the peak month, all-cargo operations were compiled, and arrival and departure times were based on a monthly average percentage of peak month operations within each block hour. **Table 3.9-7** provides the percentage of block hour operations allocated in the DDFS.

- Other air taxi/GA aircraft would remain unchanged in future years (e.g., aircraft were not upgauged from a Cessna 152 to a Cessna 172 or from a Gulfstream 3 to a Gulfstream 4, etc.). To capture different types of aircraft, new operations were based on the average type of aircraft in the peak month ANOMS data, as shown in **Table 3.9-8**. Approximately 80 percent of the air taxi/GA aircraft operating in March 2021 are captured in the DDFS development. New arrival and departure times were based on the average monthly percentage of all other air taxi/GA peak month operations in the block hour. This entailed a staggered distribution of arrival and departures times within the block hour since air taxi/GA times in the Airport data varied significantly. **Table 3.9-9** provides the percentage of block hour operations allocated in the DDFS.

TABLE 3.9-5 U.S. DOT/ANOMS ALL-CARGO OPERATIONS SUMMARY – MARCH 2021

AIRLINE	AIRCRAFT TYPE	MARCH 2021			
		ARRIVALS	DEPARTURES	TOTAL	AIRLINE SHARE
ABX Air (Amazon Air)	Boeing 767-300/300ER	1	1	2	
ABX Air (Amazon Air) Total		**1**	**1**	**2**	**0.26%**
Air Transport ATI (Amazon Air)	Boeing 767-300/300ER	31	31	62	
Air Transport ATI (Amazon Air) Total		**31**	**31**	**62**	**8.16%**
Atlas Air (Amazon Air)	Boeing 767-300/300ER	96	97	193	
Atlas Air (Amazon Air) Total		**96**	**97**	**193**	**25.39%**
FedEx	Airbus A300-600	52	51	103	
FedEx	Boeing 757-200	2	2	4	
FedEx	Boeing 767-300/300ER	50	52	102	
FedEx	McDonnell Douglas DC-10-10	9	9	18	
FedEx	McDonnell Douglas MD-11	8	8	16	
FedEx Total		**121**	**122**	**243**	**31.97%**
Southern Air/Atlas (Amazon Air)	Boeing 737-800	33	33	66	
Southern Air/Atlas (Amazon Air) Total		**33**	**33**	**66**	**8.68%**
UPS	Airbus A300-600	9	9	18	
UPS	Boeing 757-200	65	67	132	
UPS	McDonnell Douglas MD-11	22	22	44	
UPS Total		**96**	**98**	**194**	**25.54%**
All-Cargo Total		**378**	**382**	**760**	**100.00%**

SOURCE: U.S. DOT T-100; Airport Noise & Operations Monitoring Systems (ANOMS), February 2022; Ricondo & Associates, Inc., February 2022.

TABLE 3.9-6 ANOMS FREIGHTER OPERATIONS SUMMARY – MARCH 2021

AIRCRAFT TYPE	MARCH 2021			
	ARRIVALS	DEPARTURES	TOTAL	SHARE
Boeing 767-300/300ER	178	181	359	47.20%
Boeing 757-200	67	69	136	17.90%
Airbus A300-600	61	60	121	15.90%
Boeing 737-800	33	33	66	8.70%
McDonnell Douglas MD-11	30	30	60	7.90%
McDonnell Douglas DC-10-10	9	9	18	2.40%
TOTAL	**378**	**382**	**760**	**100.00%**

SOURCE: Airport Noise & Operations Monitoring Systems (ANOMS), February 2022; Ricondo & Associates, Inc., February 2022.

TABLE 3.9-7 PEAK MONTH BLOCK HOUR OPERATIONS ALLOCATION – ALL CARGO AIRLINES

BLOCK HOUR	MARCH 2021		BASE DDFS	
	ARRIVALS	DEPARTURES	ARRIVALS	DEPARTURES
0	0.3%	0.8%	0	0
1	3.4%	0.3%	1	0
2	5.6%	0.3%	1	0
3	4.0%	0.3%	1	0
4	0.8%	1.6%	0	0
5	15.1%	2.4%	3	0
6	14.8%	7.6%	3	1
7	7.1%	3.1%	1	1
8	3.4%	13.4%	1	2
9	0.3%	9.2%	0	2
10	0.3%	3.9%	0	1
11	2.1%	3.9%	0	1
12	2.1%	0.3%	0	0
13	3.2%	0.0%	1	0
14	0.8%	3.7%	0	1
15	0.5%	0.0%	0	0
16	5.8%	3.4%	1	1
17	2.6%	0.5%	0	0
18	10.1%	3.4%	2	1
19	8.2%	10.7%	1	2
20	7.9%	0.5%	1	0
21	1.3%	18.1%	0	3
22	0.0%	11.3%	0	2
23	0.3%	1.6%	0	0
TOTAL	**100.0%**	**100.0%**	**17**	**17**

SOURCE: Airport Noise & Operations Monitoring Systems (ANOMS), February 2022; Ricondo & Associates, Inc., February 2022.

TABLE 3.9-8 PEAK MONTH OTHER AIR TAXI/GENERAL AVIATION AIRCRAFT OPERATIONS

	MARCH 2021			
AIRCRAFT (CODE - AIRCRAFT TYPE)	ARRIVALS	DEPARTURES	TOTAL	MONTHLY SHARE
PC12 - Pilatus PC-12	95	96	191	5.9%
AC50 - Aero Commander 500	87	81	168	5.2%
C56X - Cessna Excel/XLS	75	76	151	4.7%
H25B - BAe HS 125/700-800/Hawker 800	69	72	141	4.3%
B350 - Beech Super King Air 350	67	67	134	4.1%
BE20 - Beech 200 Super King	57	57	114	3.5%
E55P - Embraer Phenom 300	53	53	106	3.3%
BE40 - Raytheon/Beech Beechjet 400/T-1	51	54	105	3.2%
GLF4 - Gulfstream IV/G400	50	49	99	3.0%
CL60 - Bombardier Challenger 600/601/604	50	48	98	3.0%
SR22 - Cirrus SR 22	49	48	97	3.0%
CL35 - Bombardier Challenger 300	44	42	86	2.6%
C560 - Cessna Citation V/Ultra/Encore	41	37	78	2.4%
C68A - Cessna Citation Latitude	37	38	75	2.3%
C25B - Cessna Citation CJ3	36	34	70	2.2%
CL30 - Bombardier (Canadair) Challenger 300	34	34	68	2.1%
C550 - Cessna Citation II/Bravo	33	34	67	2.1%
F2TH - Dassault Falcon 2000	34	32	66	2.0%
LJ60 - Bombardier Learjet 60	32	30	62	1.9%
C680 - Cessna Citation Sovereign	30	31	61	1.9%
C525 - Cessna CitationJet/CJ1	29	28	57	1.8%
C750 - Cessna Citation X	29	28	57	1.8%
F900 - Dassault Falcon 900	28	26	54	1.7%
PRM1 - Raytheon Premier 1/390 Premier 1	24	26	50	1.5%
BE9L - Beech King Air 90	25	22	47	1.4%
GLF5 - Gulfstream V/G500	21	18	39	1.2%
LJ35 - Bombardier Learjet 35/36	18	19	37	1.1%
BE30 - Raytheon 300 Super King Air	18	18	36	1.1%
C172 - Cessna Skyhawk 172/Cutlass	18	16	34	1.0%
C25A - Cessna Citation CJ2	14	17	31	1.0%
C510 - Cessna Citation Mustang	12	16	28	0.9%
C25C - Cessna Citation CJ4	13	14	27	0.8%
E545 - Embraer EMB-545 Legacy 450	14	13	27	0.8%
Remaining 79 aircraft types [1/]	340	346	686	21.1%
Total	**1627**	**1620**	**3247**	**100.0%**

SOURCE: Airport Noise & Operations Monitoring Systems (ANOMS), February 2022; Ricondo & Associates, Inc., February 2022.

TABLE 3.9-9 PEAK MONTH BLOCK HOUR OPERATIONS ALLOCATION – OTHER AIR TAXI/GENERAL AVIATION

BLOCK HOUR	MARCH 2021		BASE DDFS	
	ARRIVALS	DEPARTURES	ARRIVALS	DEPARTURES
0	2.94%	3.03%	2	2
1	1.47%	1.52%	1	1
2	0.00%	0.00%	0	0
3	2.94%	1.52%	2	1
4	1.47%	1.52%	1	1
5	0.00%	0.00%	0	0
6	0.00%	1.52%	0	1
7	2.94%	4.55%	2	3
8	8.82%	4.55%	6	3
9	7.35%	4.55%	5	3
10	0.00%	6.06%	0	4
11	7.35%	1.52%	5	1
12	7.35%	4.55%	5	3
13	4.41%	6.06%	3	4
14	5.88%	6.06%	4	4
15	4.41%	13.64%	3	9
16	13.24%	6.06%	9	4
17	7.35%	6.06%	5	4
18	5.88%	7.58%	4	5
19	5.88%	7.58%	4	5
20	1.47%	0.00%	1	0
21	1.47%	3.03%	1	2
22	4.41%	6.06%	3	4
23	2.94%	3.03%	2	2
TOTAL	**100.00%**	**100.00%**	**68**	**66**

SOURCE: Airport Noise & Operations Monitoring Systems (ANOMS), February 2022; Ricondo & Associates, Inc., February 2022.

3.9.5 DESIGN DAY FLIGHT SCHEDULE RESULTS

DDFS results and statistics developed from the Baseline Master Plan Update Forecast for 2019 (base year), 2032, 2037, and 2042 schedules are shown in **Tables 2.9-10** through **2.9-19** and **Exhibits 2.9-3** through **2.9-9**. For comparative purposes, these tables and exhibits are spilt by domestic and international activity.

TABLE 3.9-10 DDFS SUMMARY DOMESTIC PASSENGER AIRLINE – BASELINE FORECAST

	PASSENGERS (DOMESTIC)			PASSENGER AIRLINE OPERATIONS (DOMESTIC)		
YEAR	DDFS	ANNUAL	RATIO	DDFS	ANNUAL	RATIO
2019	73,219	21,020,970	0.35%	528	157,678	0.33%
2032	104,948	28,584,689	0.37%	668	207,322	0.32%
2037	118,129	32,294,420	0.37%	735	227,992	0.32%
2042	132,393	36,234,119	0.37%	805	249,630	0.32%
CAGR						
2019 - 2032	2.8%	2.4%		1.8%	2.1%	
2032 - 2037	2.4%	2.5%		1.9%	1.9%	
2037 - 2042	2.3%	2.3%		1.8%	1.8%	

SOURCES: Tampa International Airport; Innovata; Ricondo & Associates, Inc.; February 2022.

TABLE 3.9-11 DDFS SUMMARY INTERNATIONAL PASSENGER AIRLINE – BASELINE FORECAST

	PASSENGERS (INTERNATIONAL)			PASSENGER AIRLINE OPERATIONS (INTERNATIONAL)		
YEAR	DDFS	ANNUAL	RATIO	DDFS	ANNUAL	RATIO
2019	5,681	1,250,670	0.45%	34	7,488	0.45%
2032	10,004	1,936,990	0.52%	58	13,177	0.44%
2037	12,803	2,268,953	0.56%	72	14,831	0.49%
2042	15,189	2,611,334	0.58%	80	16,433	0.49%
CAGR						
2019 - 2032	4.4%	3.4%		4.2%	4.4%	
2032 - 2037	5.1%	3.2%		4.4%	2.4%	
2037 - 2042	3.5%	2.9%		2.1%	2.1%	

SOURCES: Tampa International Airport; Innovata; Ricondo & Associates, Inc.; February 2022.

TABLE 3.9-12 DDFS PASSENGER AIRLINE FLEET SUMMARY – BASELINE FORECAST

YEAR	PASSENGER AIRCRAFT OPERATIONS			
	REGIONAL/ COMMUTER	NARROWBODY	WIDEBODY	TOTAL
2019	37	507	12	556
2032	20	690	12	722
2037	20	769	14	803
2042	22	841	18	881
	Share of Passenger Aircraft Operations			
2019	7%	91%	2%	100%
2032	3%	96%	2%	100%
2037	2%	96%	2%	100%
2042	2%	95%	2%	100%

NOTE: Regional/commuter represents aircraft with seat capacity less than 79 seats. Narrowbody represents single-aisle aircraft with a seat capacity greater than 78 seats. Widebody represents dual-aisle aircraft.
SOURCES: Tampa International Airport; Innovata; Ricondo & Associates, Inc.; February 2022.

TABLE 3.9-13 DDFS SUMMARY – PEAK HOUR PASSENGERS (BASELINE FORECAST)

YEAR	DEPLANED PASSENGERS			ENPLANED PASSENGERS		
	PEAK HOUR	DDFS TOTAL	PEAK HOUR PERCENTAGE	PEAK HOUR	DDFS TOTAL	PEAK HOUR PERCENTAGE
2019	3,521	39,449	8.9%	3,995	39,451	10.1%
2032	5,660	57,864	9.8%	5,034	57,088	8.8%
2037	5,924	65,818	9.0%	6,182	65,115	9.5%
2042	7,173	74,116	9.7%	6,816	73,466	9.3%

SOURCES: Tampa International Airport; Innovata; Ricondo & Associates, Inc.; February 2022.

TABLE 3.9-14 DDFS SUMMARY – PEAK HOUR PASSENGER AIRLINE OPERATIONS (BASELINE FORECAST)

YEAR	ARRIVALS			DEPARTURES		
	PEAK HOUR	DDFS TOTAL	PEAK HOUR PERCENTAGE	PEAK HOUR	DDFS TOTAL	PEAK HOUR PERCENTAGE
2019	24	280	8.6%	28	282	9.9%
2032	35	363	9.6%	33	363	9.1%
2037	36	403	8.9%	38	404	9.4%
2042	43	442	9.7%	42	443	9.5%

SOURCES: Tampa International Airport; Innovata; Ricondo & Associates, Inc.; February 2022.

TABLE 3.9-15 DDFS SUMMARY – PEAK HOUR TOTAL AIRPORT OPERATIONS (BASELINE FORECAST)

YEAR	ARRIVALS			DEPARTURES		
	PEAK HOUR	DDFS TOTAL	PEAK HOUR PERCENTAGE	PEAK HOUR	DDFS TOTAL	PEAK HOUR PERCENTAGE
2019	31	366	8.5%	32	366	8.7%
2032	43	499	8.6%	43	498	8.6%
2037	44	551	8.0%	53	551	9.6%
2042	52	602	8.6%	58	602	9.6%

SOURCES: Tampa International Airport; Innovata; Ricondo & Associates, Inc.; February 2022.

TABLE 3.9-16 HOURLY SUMMARY – PASSENGERS (BASELINE FORECAST)

TIME OF DAY (HOURLY)	2019			2032			2037			2042		
	DEPLANED	ENPLANED	TOTAL	DEPLANED	ENPLANED	TOTAL	DEPLANED	ENPLANED	TOTAL	DEPLANED	ENPLANED	TOTAL
0:00 - 0:59	625	0	625	1,331	0	1,331	1,379	0	1,379	1,402	0	1,402
1:00 - 1:59	0	0	0	647	0	647	658	0	658	665	0	665
2:00 - 2:59	0	0	0	0	0	0	0	0	0	0	0	0
3:00 - 3:59	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:59	178	0	178	0	0	0	0	0	0	0	0	0
5:00 - 5:59	318	597	915	175	1,357	1,532	178	1,349	1,527	187	1,357	1,544
6:00 - 6:59	0	3,263	3,263	1,242	3,376	4,618	1,318	4,276	5,594	1,349	4,539	5,888
7:00 - 7:59	838	2,883	3,721	607	5,034	5,641	767	5,484	6,251	1,002	5,598	6,600
8:00 - 8:59	1,157	2,148	3,305	2,195	3,115	5,310	2,306	3,523	5,829	2,404	3,661	6,065
9:00 - 9:59	2,244	1,821	4,065	5,660	2,868	8,528	5,924	2,969	8,893	7,173	3,533	10,706
10:00 -10:59	2,612	2,202	4,814	2,989	4,648	7,637	3,050	4,878	7,928	3,237	5,890	9,127
11:00 - 11:59	2,365	2,988	5,353	3,676	3,649	7,325	4,445	3,745	8,190	5,051	4,034	9,085
12:00 - 12:59	1,997	2,508	4,505	3,595	3,619	7,214	3,866	4,056	7,922	4,235	4,375	8,610
13:00 - 13:59	2,745	1,933	4,678	4,105	3,228	7,333	5,049	3,863	8,912	5,668	4,250	9,918
14:00 - 14:59	2,465	2,478	4,943	3,718	3,286	7,004	4,940	3,757	8,697	5,744	4,346	10,090
15:00 - 15:59	2,680	2,761	5,441	3,441	4,401	7,842	4,023	5,804	9,827	4,294	6,726	11,020
16:00 - 16:59	2,907	2,434	5,341	3,759	2,875	6,634	4,340	3,387	7,727	5,348	3,790	9,138
17:00 - 17:59	2,103	2,550	4,653	2,742	4,427	7,169	3,549	5,432	8,981	4,383	6,437	10,820
18:00 - 18:59	3,160	2,168	5,328	4,434	2,678	7,112	4,843	3,374	8,217	6,105	4,198	10,303
19:00 - 19:59	2,027	3,450	5,477	2,543	3,162	5,705	2,727	3,546	6,273	2,828	4,495	7,323
20:00 - 20:59	2,088	913	3,001	1,387	3,377	4,764	1,430	3,594	5,024	1,611	3,974	5,585
21:00 - 21:59	1,693	1,860	3,553	3,518	672	4,190	3,744	690	4,434	3,832	855	4,687
22:00 - 22:59	2,869	494	3,363	3,326	1,316	4,642	4,299	1,388	5,687	4,386	1,408	5,794
23:00 - 23:59	2,378	0	2,378	2,774	0	2,774	2,983	0	2,983	3,213	0	3,213
Total	**39,449**	**39,451**	**78,900**	**57,864**	**57,088**	**114,952**	**65,818**	**65,115**	**130,933**	**74,116**	**73,466**	**147,582**
Peak Block Hour	3,160	3,450	5,477	5,660	5,034	8,528	5,924	5,804	9,827	7,173	6,726	11,020
Peak Rolling Hour (10-minute intervals)	3,521	3,995	6,002	5,660	5,034	9,092	5,924	6,182	9,882	7,173	6,816	11,396

SOURCES: Tampa International Airport; Innovata; Ricondo & Associates, Inc.; February 2022.

TABLE 3.9-17 HOURLY SUMMARY – PASSENGER AIRLINE OPERATIONS (BASELINE FORECAST)

TIME OF DAY (HOURLY)	2019			2032			2037			2042		
	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL
0:00 - 0:59	4	0	4	8	0	8	8	0	8	8	0	8
1:00 - 1:59	0	0	0	4	0	4	4	0	4	4	0	4
2:00 - 2:59	0	0	0	0	0	0	0	0	0	0	0	0
3:00 - 3:59	0	0	0	0	0	0	0	0	0	0	0	0
4:00 - 4:59	1	0	1	0	0	0	0	0	0	0	0	0
5:00 - 5:59	2	4	6	1	8	9	1	8	9	1	8	9
6:00 - 6:59	0	24	24	7	20	27	7	25	32	7	26	33
7:00 - 7:59	7	21	28	4	33	37	5	35	40	6	35	41
8:00 - 8:59	11	17	28	14	21	35	14	23	37	14	23	37
9:00 - 9:59	15	14	29	35	19	54	36	19	55	43	22	65
10:00 -10:59	18	16	34	21	29	50	21	30	51	21	35	56
11:00 - 11:59	17	19	36	23	25	48	27	25	52	29	26	55
12:00 - 12:59	15	20	35	23	24	47	24	26	50	26	27	53
13:00 - 13:59	18	14	32	25	20	45	30	23	53	33	24	57
14:00 - 14:59	17	15	32	23	21	44	30	23	53	34	26	60
15:00 - 15:59	18	19	37	22	28	50	25	37	62	26	42	68
16:00 - 16:59	20	17	37	24	19	43	27	22	49	33	24	57
17:00 - 17:59	16	19	35	17	28	45	22	33	55	27	38	65
18:00 - 18:59	22	15	37	26	17	43	28	21	49	34	26	60
19:00 - 19:59	15	26	41	16	20	36	17	22	39	17	27	44
20:00 - 20:59	15	7	22	11	19	30	11	20	31	12	21	33
21:00 - 21:59	13	11	24	22	4	26	23	4	27	23	5	28
22:00 - 22:59	20	4	24	21	8	29	26	8	34	26	8	34
23:00 - 23:59	16	0	16	16	0	16	17	0	17	18	0	18
Total	**280**	**282**	**562**	**363**	**363**	**726**	**403**	**404**	**807**	**442**	**443**	**885**
Peak Block Hour	22	26	41	35	33	54	36	37	62	43	42	68
Peak Rolling Hour (10-minute intervals)	24	28	42	35	33	56	36	38	62	43	42	68

SOURCES: Tampa International Airport; Innovata; Ricondo & Associates, Inc.; February 2022.

TABLE 3.9-18 HOURLY SUMMARY – TOTAL AIRPORT OPERATIONS (BASELINE FORECAST)

TIME OF DAY (HOURLY)	2019			2032			2037			2042		
	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL	ARRIVALS	DEPARTURES	TOTAL
0:00 - 0:59	6	2	8	11	3	14	11	3	14	11	3	14
1:00 - 1:59	2	1	3	7	2	9	7	2	9	7	2	9
2:00 - 2:59	0	0	0	1	0	1	1	0	1	1	0	1
3:00 - 3:59	2	1	3	2	1	3	2	1	3	2	1	3
4:00 - 4:59	2	1	3	1	1	2	1	1	2	1	1	2
5:00 - 5:59	5	4	9	5	8	13	5	8	13	5	8	13
6:00 - 6:59	2	27	29	12	24	36	12	29	41	13	30	43
7:00 - 7:59	11	23	34	10	38	48	11	40	51	12	41	53
8:00 - 8:59	18	22	40	24	32	56	27	34	61	28	34	62
9:00 - 9:59	20	20	40	43	28	71	44	29	73	52	32	84
10:00 -10:59	18	21	39	22	34	56	23	36	59	24	42	66
11:00 - 11:59	23	21	44	33	29	62	38	29	67	40	32	72
12:00 - 12:59	20	24	44	32	31	63	34	35	69	36	37	73
13:00 - 13:59	22	18	40	31	27	58	36	31	67	40	32	72
14:00 - 14:59	21	19	40	32	27	59	40	29	69	46	33	79
15:00 - 15:59	21	28	49	30	43	73	33	53	86	35	58	93
16:00 - 16:59	30	21	51	39	27	66	43	30	73	50	32	82
17:00 - 17:59	21	24	45	24	36	60	30	42	72	35	49	84
18:00 - 18:59	28	21	49	35	27	62	38	31	69	45	37	82
19:00 - 19:59	21	32	53	23	30	53	25	34	59	27	40	67
20:00 - 20:59	18	7	25	16	21	37	17	24	41	18	26	44
21:00 - 21:59	14	16	30	24	10	34	25	10	35	25	12	37
22:00 - 22:59	23	11	34	24	16	40	29	17	46	29	17	46
23:00 - 23:59	18	2	20	18	3	21	19	3	22	20	3	23
Total	**366**	**366**	**732**	**499**	**498**	**997**	**551**	**551**	**1,102**	**602**	**602**	**1,204**
Peak Block Hour	30	32	53	43	43	73	44	53	86	52	58	93
Peak Rolling Hour (10-minute intervals)	31	32	55	43	43	77	44	53	89	52	58	96

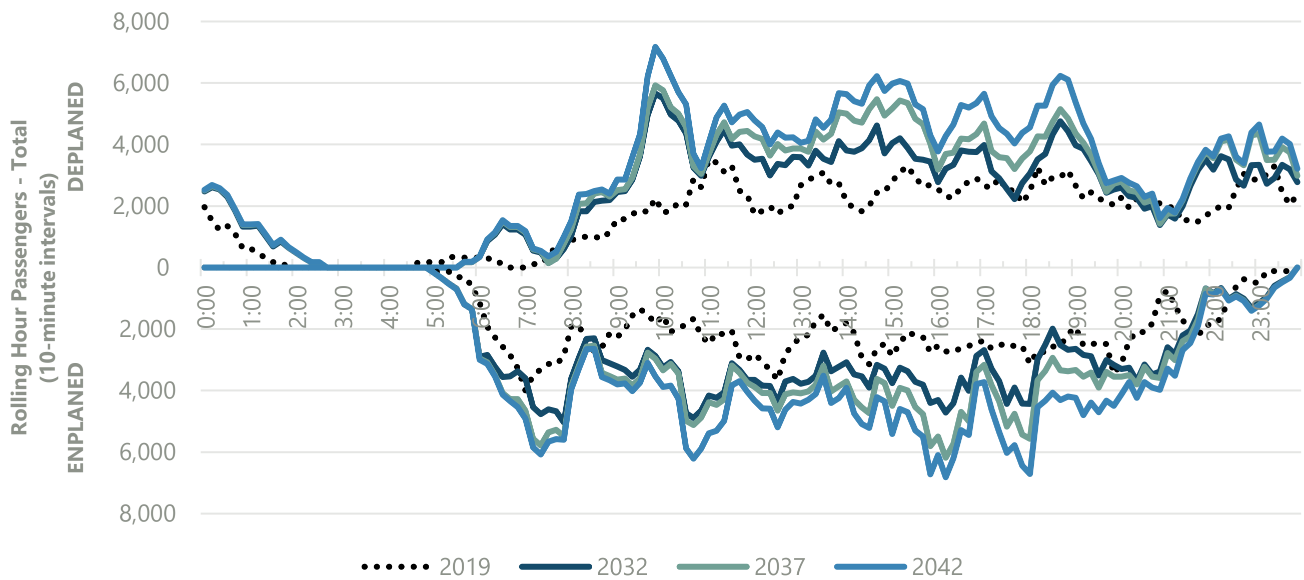
SOURCES: Tampa International Airport; Innovata; Ricondo & Associates, Inc.; February 2022.

TABLE 3.9-19 DDFS AIRCRAFT OPERATIONS SUMMARY (BASELINE FORECAST)

YEAR	CARGO	OTHER AIR TAXI/ GENERAL AVIATION	MILITARY	NON-PASSENGER AIRLINE TOTAL	PASSENGER AIRLINE TOTAL	AIRPORT TOTAL
DDFS Operations						
2019	34	134	2	170	562	732
2032	44	225	2	271	726	997
2037	48	245	2	295	807	1,102
2042	51	266	2	319	885	1,204
Annual Operations						
2019	8,520	33,166	881	42,567	165,166	207,733
2032	10,908	55,813	881	67,602	220,500	288,102
2037	11,924	60,680	881	73,485	242,823	316,308
2042	12,853	65,808	881	79,542	266,063	345,605
DDFS to Annual Operations Ratio						
2019	0.40%	0.40%	0.23%	0.40%	0.34%	0.35%
2032	0.40%	0.40%	0.23%	0.40%	0.33%	0.35%
2037	0.40%	0.40%	0.23%	0.40%	0.33%	0.35%
2042	0.40%	0.40%	0.23%	0.40%	0.33%	0.35%

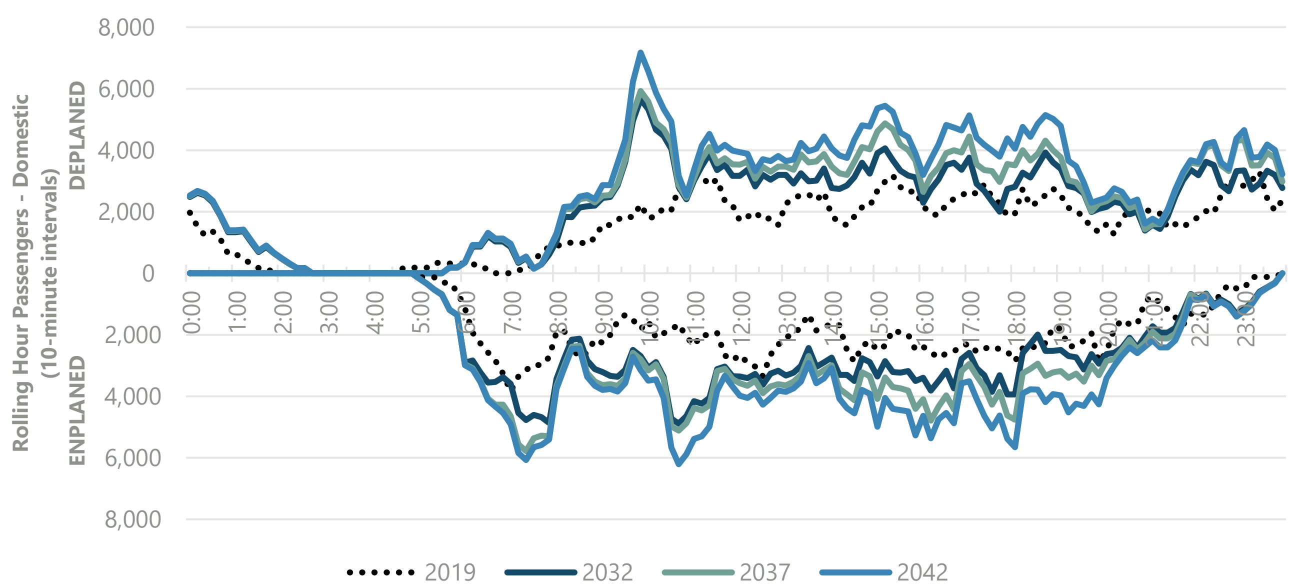
SOURCES: Tampa International Airport; Innovata; Ricondo & Associates, Inc.; February 2022.

EXHIBIT 3.9-3 ROLLING HOUR PASSENGERS - TOTAL (BASELINE FORECAST)



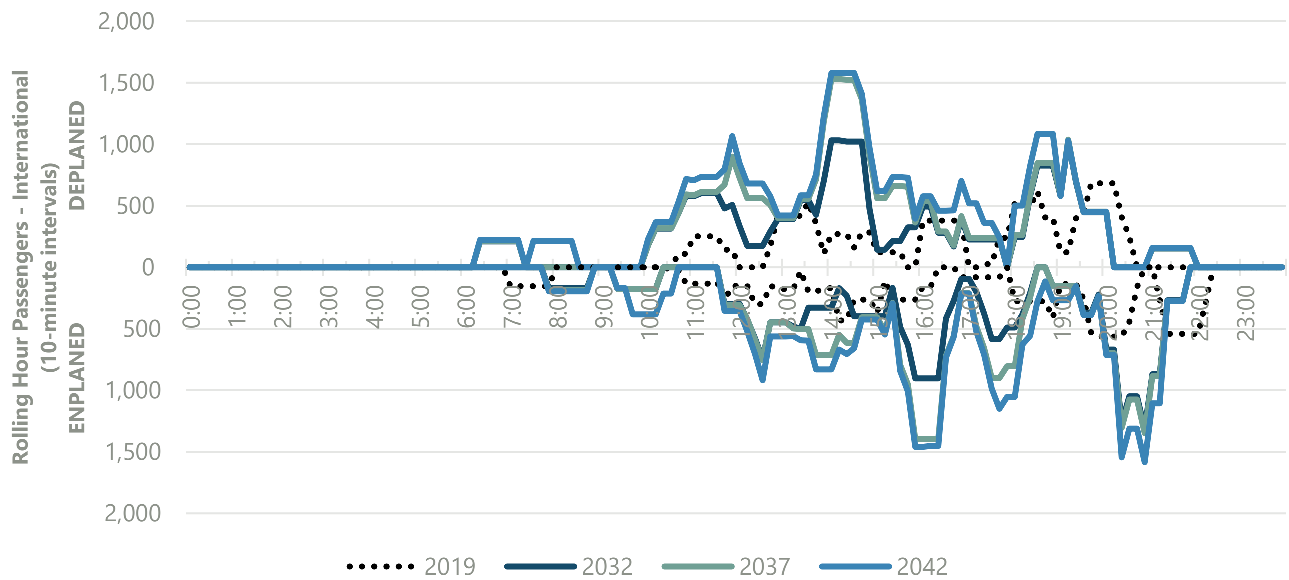
SOURCES: Innovata; U.S. DOT T-100; Ricondo & Associates, Inc.; February 2022.

EXHIBIT 3.9-4 ROLLING HOUR PASSENGERS - DOMESTIC (BASELINE FORECAST)



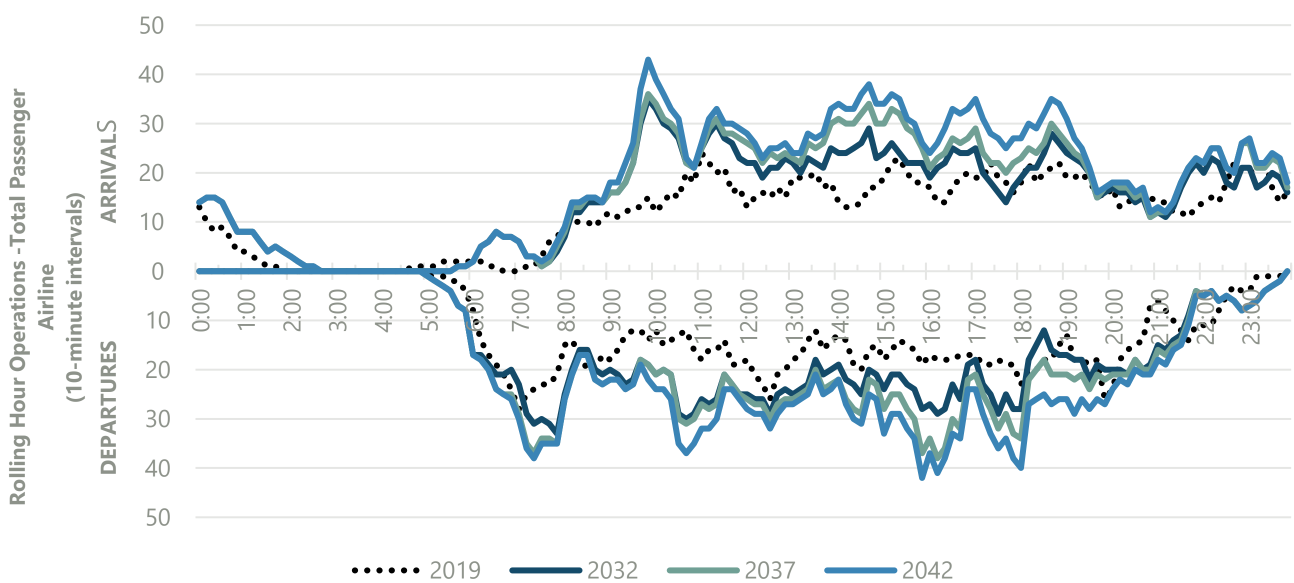
SOURCES: Innovata; U.S. DOT T-100; Ricondo & Associates, Inc.; February 2022.

EXHIBIT 3.9-5 ROLLING HOUR PASSENGERS - INTERNATIONAL (BASELINE FORECAST)



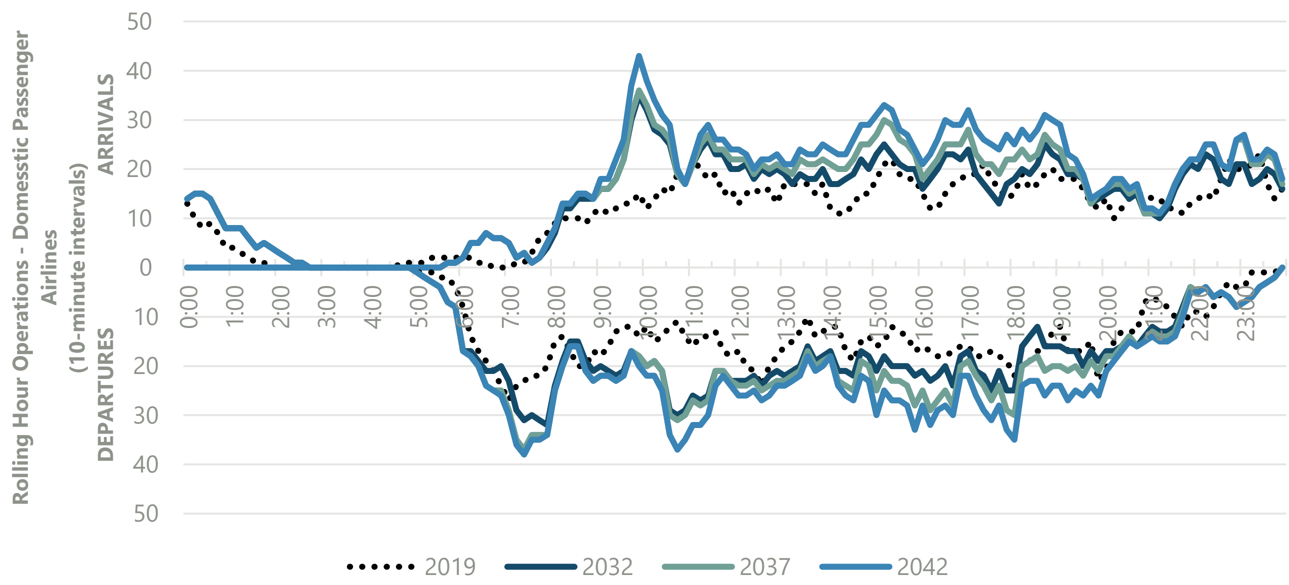
SOURCES: Innovata; U.S. DOT T-100; Ricondo & Associates, Inc.; February 2022.

EXHIBIT 3.9-6 ROLLING HOUR OPERATIONS – TOTAL PASSENGER AIRLINE (BASELINE FORECAST)



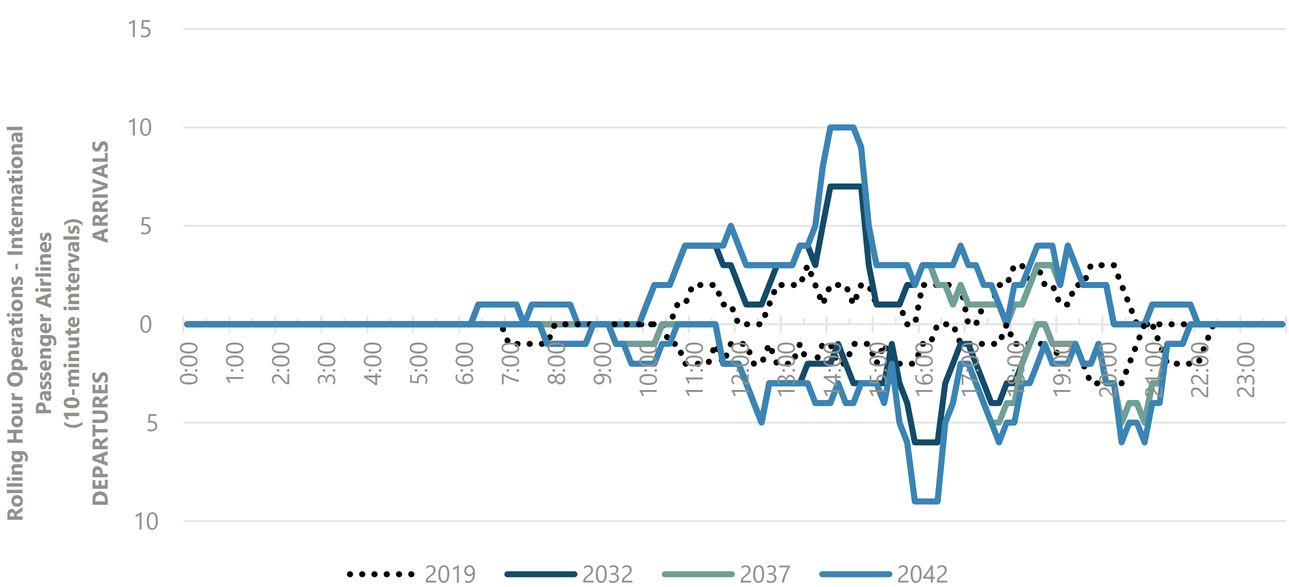
SOURCES: Innovata; U.S. DOT T-100; Ricondo & Associates, Inc.; February 2022.

EXHIBIT 3.9-7 ROLLING HOUR OPERATIONS – DOMESTIC PASSENGER AIRLINE (BASELINE FORECAST)



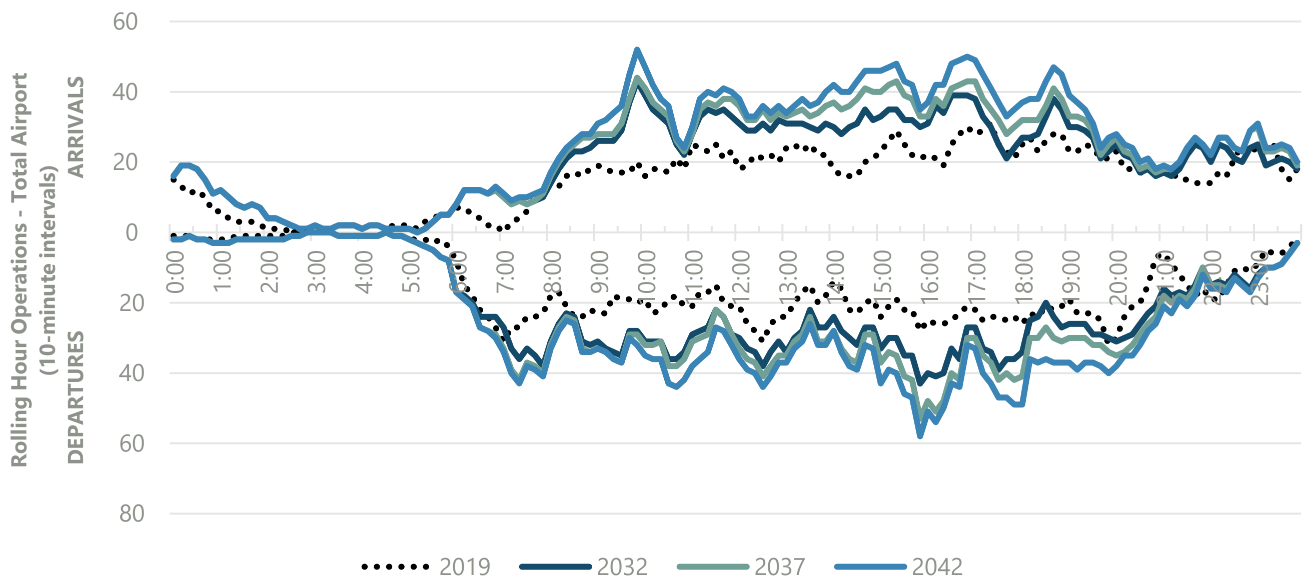
SOURCES: Innovata; U.S. DOT T-100; Ricondo & Associates, Inc.; February 2022.

EXHIBIT 3.9-8 ROLLING HOUR OPERATIONS – INTERNATIONAL PASSENGER AIRLINE (BASELINE FORECAST)



SOURCES: Innovata; U.S. DOT T-100; Ricondo & Associates, Inc.; February 2022.

EXHIBIT 3.9-9 ROLLING HOUR OPERATIONS – TOTAL AIRPORT OPERATIONS (BASELINE FORECAST)



SOURCES: Innovata; U.S. DOT T-100; Ricondo, February 2022.

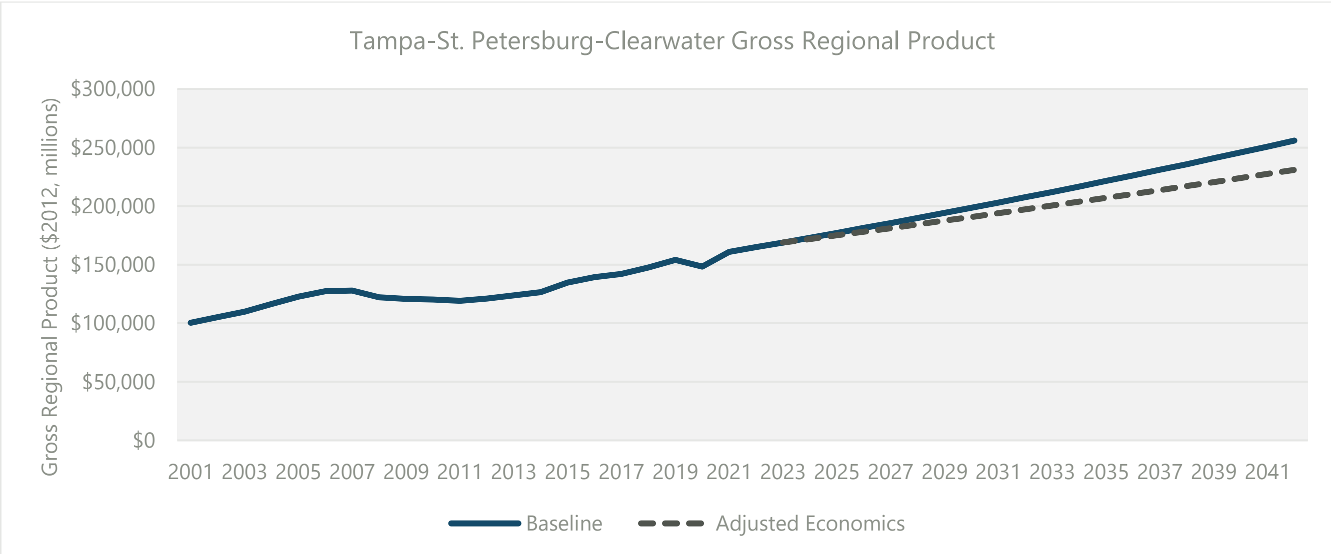
3.10 COMPARISON OF FORECASTS

In addition to the baseline activity forecasts, alternative demand forecast scenarios were developed for the Airport. Three alternative demand scenarios were developed, a lower-than baseline passenger activity scenario, and higher-than baseline passenger activity scenario, and a higher than baseline cargo demand scenario. This section describes the methodologies and results from each scenario.

3.10.1 LOW PASSENGER ACTIVITY SCENARIO

The lower-than baseline passenger activity scenario explored a possible scenario that could lead to lower passenger demand and airlines reducing the supply of seat capacity at the Airport. In this scenario, economic activity was slowed for five years. Beginning in 2024, economic activity is modelled to grow at a slower rate than originally forecast, due to the effects of inflation and a potential recession. The resulting forecast of Tampa-St. Petersburg-Clearwater GRP are shown in **Exhibit 3.10-1**.

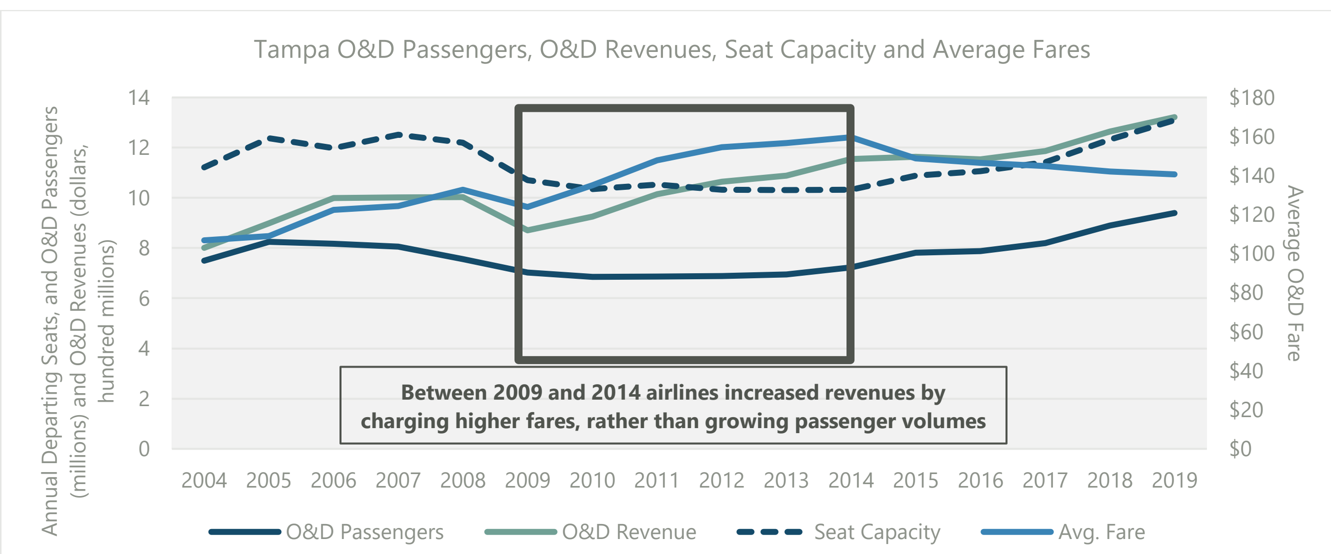
EXHIBIT 3.10-1 LOW SCENARIO ECONOMIC GROWTH FORECAST



SOURCES: Woods & Poole Economics, Inc.; Moody's Analytics; Federal Reserve Bank of Atlanta; Ricondo & Associates, Inc. (analysis), March 2022.

The second element of the low scenario is a period of capacity discipline instituted by the airlines in order to generate higher fares amid rising costs. Airlines restrict seat capacity between 2024 and 2026, similar to what the industry did between 2009 and 2014, shown in **Exhibit 3.10-2**. This allows airlines to realize demand growth through higher average fares, rather than lower passenger volumes. As a result, passenger volumes grow at a slower rate than in the baseline forecasts.

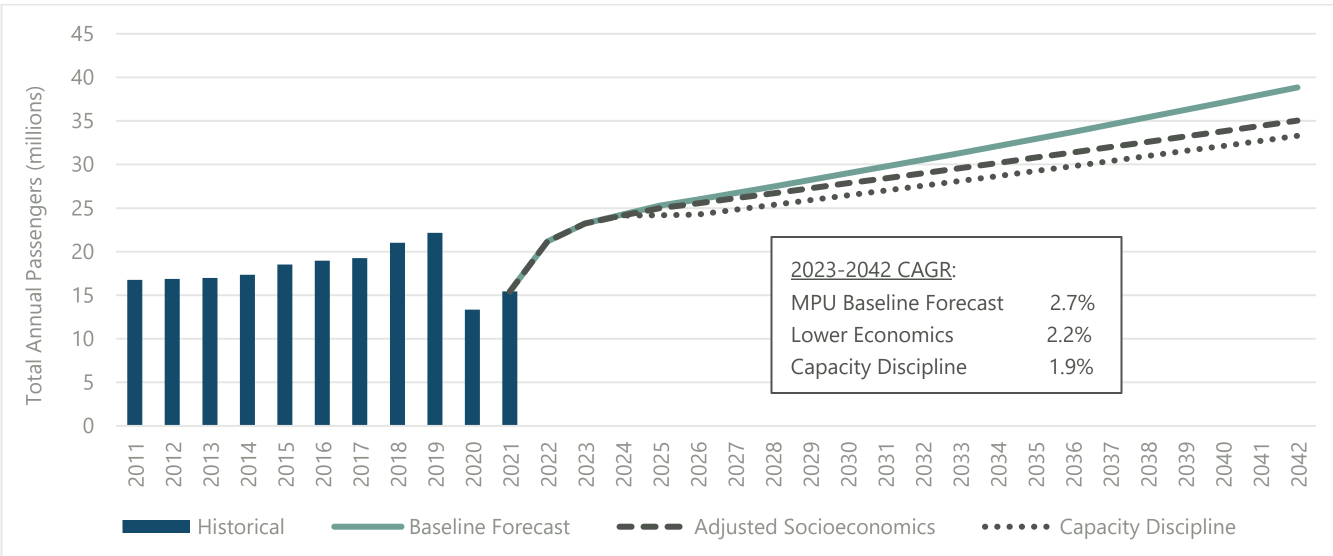
EXHIBIT 3.10-2 HISTORICAL EXAMPLE OF CAPACITY DISCIPLINE



SOURCES: Woods & Poole Economics, Inc.; Moody's Analytics; Federal Reserve Bank of Atlanta; Ricondo & Associates, Inc. (analysis), March 2022.

Finally, the recovery of international demand was assumed to be delayed by 1-3 years relative to the baseline forecasts due to lingering effects of the pandemic, rising fuel costs, and other geopolitical considerations. The incremental impact of each of these elements on the scenario forecast are presented in **Exhibit 3.10-3**. These inputs were incorporated into the forecast model and the results are summarized for enplaned passengers and passenger aircraft operations in **Table 3.10-1** and **Table 3.10-2**, respectively.

EXHIBIT 3.10-3 INCREMENTAL IMPACTS OF SCENARIO ELEMENTS



NOTE: CAGR – Compound Annual Growth Rate. CAGRs are cumulative and reflect the CAGR for total activity with the element.
SOURCES: Woods & Poole Economics, Inc.; Moody's Analytics; Federal Reserve Bank of Atlanta; Ricondo & Associates, Inc. (analysis), March 2022.

TABLE 3.10-1 ENPLANED PASSENGER FORECAST COMPARISON

FISCAL YEAR	BASELINE ENPLANED PASSENGERS	LOW SCENARIO ENPLANED PASSENGERS	DIFFERENCE
Historical			
2012	8,441,137	8,441,137	0
2013	8,493,260	8,493,260	0
2014	8,673,747	8,673,747	0
2015	9,263,336	9,263,336	0
2016	9,485,879	9,485,879	0
2017	9,638,070	9,638,070	0
2018	10,519,247	10,519,247	0
2019	11,085,290	11,085,290	0
2020	6,681,063	6,681,063	0
2021	7,717,164	7,717,164	0
Forecast			
2022	10,575,000	10,575,000	0
2023	11,621,000	11,621,000	0
2024	12,135,000	12,064,000	-71,000
2025	12,636,000	12,087,000	-549,000
2026	12,996,000	12,133,000	-863,000
2027	13,361,000	12,403,000	-958,000
2032	15,261,000	13,778,000	-1,483,000
2037	17,282,000	15,194,000	-2,088,000
2042	19,423,000	16,646,000	-2,777,000
Compound Annual Growth Rate			
2012 - 2019	4.0%	4.0%	
Recovery (2021-2023)	22.7%	22.7%	
Post Recovery (2023-2042)	2.7%	1.9%	
Full Forecast Period (2022-2042)	3.1%	2.3%	

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

TABLE 3.10-2 PASSENGER AIRCRAFT OPERATIONS FORECAST COMPARISON

FISCAL YEAR	BASELINE PASSENGER AIRCRAFT OPERATIONS	LOW SCENARIO PASSENGER AIRCRAFT OPERATIONS	DIFFERENCE
Historical			
2012	154,590	154,590	0
2013	155,012	155,012	0
2014	152,966	152,966	0
2015	160,086	160,086	0
2016	158,114	158,114	0
2017	159,496	159,496	0
2018	168,854	168,854	0
2019	174,022	174,022	0
2020	124,686	124,686	0
2021	130,990	130,990	0
Forecast			
2022	165,500	164,300	-1,200
2023	177,500	175,500	-2,000
2024	183,800	180,700	-3,100
2025	190,200	181,900	-8,300
2026	194,300	182,800	-11,500
2027	198,600	183,500	-15,100
2032	220,500	197,400	-23,100
2037	242,800	211,100	-31,700
2042	266,100	224,400	-41,700
Compound Annual Growth Rate			
2012 - 2019	1.7%	1.7%	
Recovery (2021-2023)	16.4%	15.7%	
Post Recovery (2023-2042)	2.2%	1.3%	
Full Forecast Period (2022-2042)	2.4%	1.6%	

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

3.10.2 HIGH INTERNATIONAL PASSENGER GROWTH SCENARIO

The higher-than baseline international passenger growth scenario assumes that more international O&D passengers utilize nonstop international flights to/from the Airport, rather than connecting via another US gateway. This scenario does not assume significant international passenger demand growth, but some stimulation of demand as new routes are added is assumed.

The scenario assumes that carriers at TPA, led by ULCCs, increase international nonstop service and international O&D passengers that previously utilized a domestic flight segment to/from TPA now fly on a nonstop international flight to/from TPA. Exhibit 3.10-4 compares the percentage of international O&D passengers utilizing an international flight segment to or from the Airport in the baseline and scenario forecasts.

EXHIBIT 3.10-4 PERCENTAGE OF INTERNATIONAL O&D PASSENGERS UTILIZING AN INTERNATIONAL FLIGHT SEGMENT FROM THE AIRPORT

Percentage of International O&D Passengers On An International Flight At TPA

	2019	2042 (Baseline)	2042 (Scenario)
Africa/Middle East	21%	24%	28%
Asia/Australasia	5%	7%	9%
Canada	69%	75%	81%
Caribbean/Central America	22%	47%	75%
Europe	51%	58%	64%
South America	34%	43%	52%

SOURCES: OAG Traffic Analyser;; Ricondo & Associates, Inc. (analysis), March 2022.

Domestic capacity previously utilized by these passengers is partially backfilled by limited connections to/from points north of TPA as a critical mass of international service is reach. The average fleet size is forecast to grow slightly as a result of additional flights conducted by higher-capacity ULCC aircraft. The results of the higher international growth forecast are summarized in **Table 3.10-3**, **Table 3.10-4**, and **Table 3.10-5.**

TABLE 3.10-3 INTERNATIONAL ENPLANED PASSENGER FORECAST

FISCAL YEAR	BASELINE INTERNATIONAL ENPLANED PASSENGERS	SCENARIO INTERNATIONAL ENPLANED PASSENGERS	DIFFERENCE
Historical			
2012	243,499	243,499	0
2013	260,310	260,310	0
2014	292,408	292,408	0
2015	339,090	339,090	0
2016	417,991	417,991	0
2017	436,584	436,584	0
2018	483,568	483,568	0
2019	574,805	574,805	0
2020	280,598	280,598	0
2021	44,517	44,517	0
Forecast			
2022	365,000	365,000	0
2023	492,000	505,000	13,000
2024	606,000	676,000	70,000
2025	715,000	802,000	87,000
2026	778,000	881,000	103,000
2027	809,000	934,000	125,000
2032	968,000	1,178,000	210,000
2037	1,134,000	1,451,000	317,000
2042	1,306,000	1,745,000	439,000
Compound Annual Growth Rate			
2012 - 2019	13.1%	13.1%	
Recovery (2021-2023)	232.4%	236.8%	
Post Recovery (2023-2042)	5.3%	6.7%	
Full Forecast Period (2022-2042)	6.6%	8.1%	

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

TABLE 3.10-4 TOTAL ENPLANED PASSENGER FORECAST

FISCAL YEAR	BASELINE ENPLANED PASSENGERS	SCENARIO ENPLANED PASSENGERS	DIFFERENCE
Historical			
2012	8,441,137	8,441,137	0
2013	8,493,260	8,493,260	0
2014	8,673,747	8,673,747	0
2015	9,263,336	9,263,336	0
2016	9,485,879	9,485,879	0
2017	9,638,070	9,638,070	0
2018	10,519,247	10,519,247	0
2019	11,085,290	11,085,290	0
2020	6,681,063	6,681,063	0
2021	7,717,164	7,717,164	0
Forecast			
2022	10,575,000	10,575,000	0
2023	11,621,000	11,634,000	13,000
2024	12,135,000	12,146,000	11,000
2025	12,636,000	12,650,000	14,000
2026	12,996,000	13,013,000	17,000
2027	13,361,000	13,381,000	20,000
2032	15,261,000	15,296,000	35,000
2037	17,282,000	17,334,000	52,000
2042	19,423,000	19,496,000	73,000
Compound Annual Growth Rate			
2012 - 2019	4.0%	4.0%	
Recovery (2021-2023)	22.7%	22.8%	
Post Recovery (2023-2042)	2.7%	2.8%	
Full Forecast Period (2022-2042)	3.1%	3.1%	

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

TABLE 3.10-5 PASSENGER AIRCRAFT OPERATIONS FORECAST

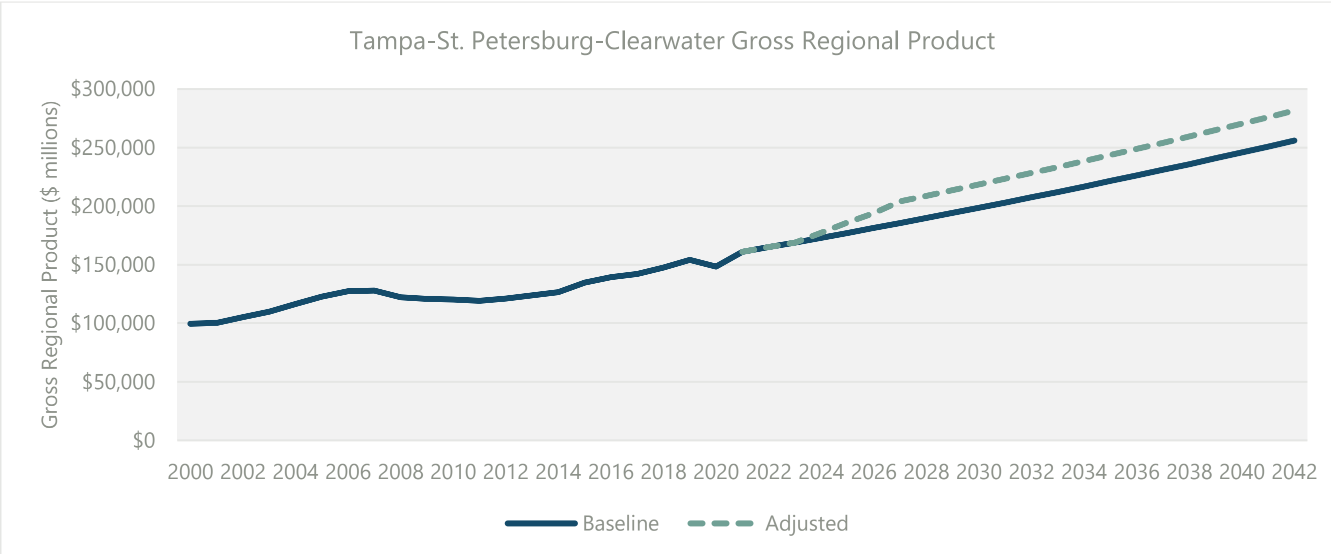
FISCAL YEAR	BASELINE AIRCRAFT OPERATIONS	SCENARIO AIRCRAFT OPERATIONS	DIFFERENCE
Historical			
2012	154,590	154,590	0
2013	155,012	155,012	0
2014	152,966	152,966	0
2015	160,086	160,086	0
2016	158,114	158,114	0
2017	159,496	159,496	0
2018	168,854	168,854	0
2019	174,022	174,022	0
2020	124,686	124,686	0
2021	130,990	130,990	0
Forecast			
2022	165,500	165,500	0
2023	177,500	176,700	800
2024	183,800	183,000	800
2025	190,200	189,300	900
2026	194,300	193,300	1,000
2027	198,600	197,900	700
2032	220,500	220,000	500
2037	242,800	243,200	-400
2042	266,100	267,100	-1,000
Compound Annual Growth Rate			
2012 - 2019	1.7%	1.7%	
Recovery (2021-2023)	16.4%	16.1%	
Post Recovery (2023-2042)	2.2%	2.2%	
Full Forecast Period (2022-2042)	2.4%	2.4%	

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

3.10.3 HIGH GROWTH PASSENGER GROWTH SCENARIO

The higher-than baseline total growth scenario models are more robust demand environment than the baseline forecast. In this scenario, economic activity is modelled to grow at a faster rate than originally forecast for a five-year period through 2028. Beyond 2028, the economy was modelled to grow at the same rate as originally forecast, but overall economic activity remains higher than in the baseline forecasts. The economic forecast used in this scenario is presented in **Exhibit 3.10-5**.

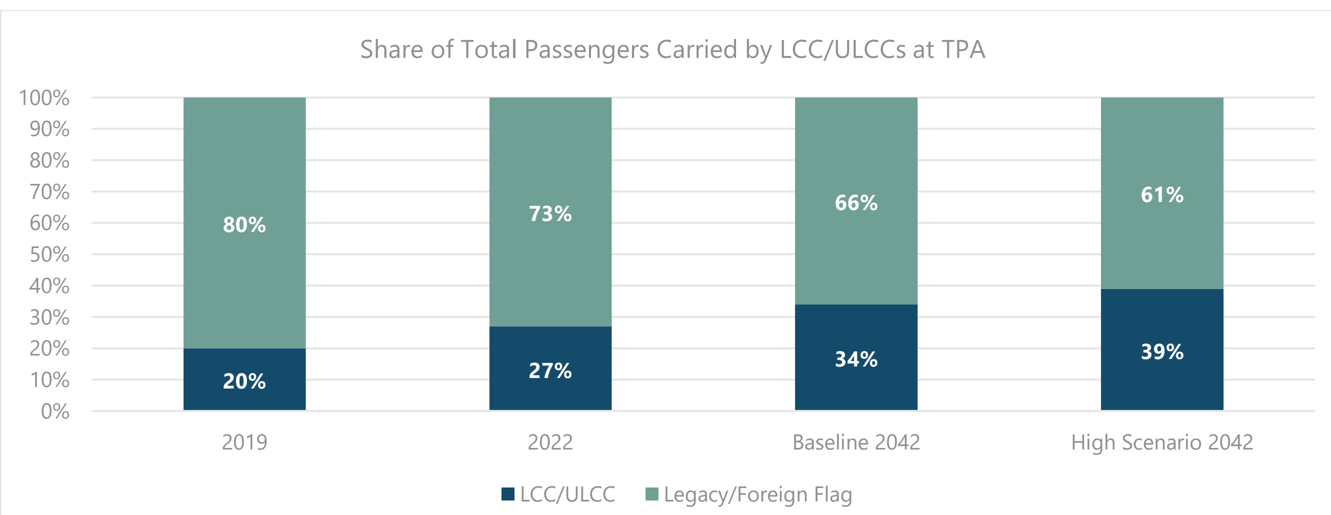
EXHIBIT 3.10-5 HIGH SCENARIO ECONOMIC GROWTH FORECAST



SOURCES: Woods & Poole Economics, Inc.; Moody's Analytics; Federal Reserve Bank of Atlanta; Ricondo & Associates, Inc. (analysis), March 2022.

The more robust economy is expected to support greater demand for air travel, including those passengers who may not have considered air travel before. As a result, all carriers are modelled to increase service, while LCC and ULCC carriers are modeled to stimulate demand and ultimately take a greater share of passengers. Demand growth due to the more robust economic environment will contribute to additional domestic and international O&D passengers. **Exhibit 3.10-6** depicts the change in legacy carrier and LCC/ULCC shares.

EXHIBIT 3.10-6 SHARE OF PASSENGERS CARRIED BY LEGACY AND ULTRA LOW-COST CARRIERS



NOTE: LCC – Low-Cost Carrier; ULCC – Ultra Low-Cost Carrier
SOURCES: U.S. DOT T-100; Ricondo & Associates, Inc. (analysis), March 2022.

Additional international nonstop service was modelled, supported by a surging local economy and provided by both existing and new entrant carriers. In particular, US and Latin American LCCs and ULCCs will support short-haul growth, while long-haul service will be provided by a combination of legacy carriers and LCCs. The additional international passengers are expected to be comprised of a combination of existing international O&D passengers utilizing an international segment from the Airport, and new international O&D passengers stimulated by new air services. The results of the high scenario forecast are summarized in **Table 3.10-6**, **Table 3.10-7**, and **Table 3.10-8.**

TABLE 3.10-6 DOMESTIC AND INTERNATIONAL ENPLANED PASSENGER FORECAST

FISCAL YEAR	BASELINE DOMESTIC ENPLANED PASSENGERS	SCENARIO DOMESTIC ENPLANED PASSENGERS	DIFFERENCE	BASELINE INTERNATIONAL ENPLANED PASSENGERS	SCENARIO INTERNATIONAL ENPLANED PASSENGERS	DIFFERENCE
Historical						
2012	8,197,638	8,197,638	0	243,499	243,499	0
2013	8,232,950	8,232,950	0	260,310	260,310	0
2014	8,381,339	8,381,339	0	292,408	292,408	0
2015	8,924,246	8,924,246	0	339,090	339,090	0
2016	9,067,888	9,067,888	0	417,991	417,991	0
2017	9,201,486	9,201,486	0	436,584	436,584	0
2018	10,035,679	10,035,679	0	483,568	483,568	0
2019	10,510,485	10,510,485	0	574,805	574,805	0
2020	6,400,465	6,400,465	0	280,598	280,598	0
2021	7,717,164	7,717,164	0	44,517	44,517	0
Forecast						
2022	10,210,000	10,210,000	0	365,000	365,000	0
2023	11,128,000	11,128,000	0	492,000	505,000	13,000
2024	11,529,000	11,820,000	291,000	606,000	639,000	33,000
2025	11,921,000	12,541,000	620,000	715,000	770,000	55,000
2026	12,218,000	13,109,000	891,000	778,000	859,000	81,000
2027	12,552,000	13,678,000	1,126,000	809,000	950,000	141,000
2032	14,292,000	15,645,000	1,353,000	968,000	1,300,000	332,000
2037	16,147,000	17,589,000	1,442,000	1,134,000	1,665,000	531,000
2042	18,117,000	19,661,000	1,544,000	1,306,000	2,041,000	735,000
Compound Annual Growth Rate						
2012 - 2019	3.6%	4.0%		13.1%	13.1%	
Recovery (2021-2023)	20.4%	20.1%		236.8%	236.8%	
Post Recovery (2023-2042)	2.6%	3.0%		5.1%	7.6%	
Full Forecast Period (2022-2042)	2.9%	3.3%		6.6%	9.0%	

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

TABLE 3.10-7 TOTAL ENPLANED PASSENGER FORECAST

FISCAL YEAR	BASELINE ENPLANED PASSENGERS	SCENARIO ENPLANED PASSENGERS	DIFFERENCE
Historical			
2012	8,441,137	8,441,137	0
2013	8,493,260	8,493,260	0
2014	8,673,747	8,673,747	0
2015	9,263,336	9,263,336	0
2016	9,485,879	9,485,879	0
2017	9,638,070	9,638,070	0
2018	10,519,247	10,519,247	0
2019	11,085,290	11,085,290	0
2020	6,681,063	6,681,063	0
2021	7,717,164	7,717,164	0
Forecast			
2022	10,575,000	10,575,000	0
2023	11,621,000	11,633,000	12,000
2024	12,135,000	12,459,000	324,000
2025	12,636,000	13,311,000	675,000
2026	12,996,000	13,968,000	972,000
2027	13,361,000	14,628,000	1,267,000
2032	15,261,000	16,945,000	1,684,000
2037	17,282,000	19,254,000	1,972,000
2042	19,423,000	21,702,000	2,279,000
Compound Annual Growth Rate			
2012 - 2019	4.0%	4.0%	
Recovery (2021-2023)	22.7%	22.7%	
Post Recovery (2023-2042)	2.7%	3.3%	
Full Forecast Period (2022-2042)	3.1%	3.6%	

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

TABLE 3.10-8 DOMESTIC AND INTERNATIONAL ENPLANED PASSENGER FORECAST

FISCAL YEAR	BASELINE DOMESTIC AIRCRAFT OPERATIONS	SCENARIO DOMESTIC AIRCRAFT OPERATIONS	DIFFERENCE	BASELINE INTERNATIONAL AIRCRAFT OPERATIONS	SCENARIO INTERNATIONAL AIRCRAFT OPERATIONS	DIFFERENCE
Historical						
2012	151,472	151,472	0	3,118	3,118	0
2013	151,510	151,510	0	3,502	3,502	0
2014	149,042	149,042	0	3,924	3,924	0
2015	155,272	155,272	0	4,814	4,814	0
2016	152,872	152,872	0	5,242	5,242	0
2017	153,464	153,464	0	6,032	6,032	0
2018	162,438	162,438	0	6,416	6,416	0
2019	166,712	166,712	0	7,310	7,310	0
2020	121,198	121,198	0	3,488	3,488	0
2021	129,746	129,746	0	1,244	1,244	0
Forecast						
2022	160,200	160,200	0	5,300	5,300	0
2023	170,000	170,000	0	7,500	7,700	200
2024	174,900	179,300	4,400	8,900	9,400	500
2025	179,800	189,200	9,400	10,500	11,300	800
2026	183,200	196,600	13,400	11,100	12,300	1,200
2027	187,200	204,000	16,800	11,500	13,500	2,000
2032	207,300	226,900	19,600	13,200	17,700	4,500
2037	228,000	248,400	20,400	14,800	21,700	6,900
2042	249,600	270,900	21,300	16,400	25,600	9,200
Compound Annual Growth Rate						
2012 - 2019	3.6%	3.6%		12.9%	12.9%	
Recovery (2021-2023)	14.5%	14.5%		145.5%	148.8%	
Post Recovery (2023-2042)	2.0%	2.5%		4.2%	6.5%	
Full Forecast Period (2022-2042)	2.2%	2.7%		5.8%	8.2%	

SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

3.10.4 CARGO GROWTH SCENARIO

The alternative cargo demand scenario models additional cargo demand resulting in increased cargo aircraft operations, including limited long-haul cargo service. Each of these factors were modelled independent of the other. This scenario assumes the same, better-than-baseline forecast of socioeconomic activity as presented earlier in Exhibit 3.10-3. Cargo demand is forecast to grow as a result. Additional service offered by Amazon Air was modelled to serve demand in and around the Tampa Bay Region. Finally, limited long-haul service was included, which is assumed to serve industries that typically ship goods by air, specifically the defense and biomedical industries which currently have a presence in the Tampa Bay Region. The results of the cargo tonnage forecast, and cargo aircraft operations forecast are presented in **Table 3.10-9** and **Table 3.10-10**, respectively. The incremental impacts of each of these elements on cargo tonnage and cargo aircraft operations are presented in **Exhibit 3.10-6** and **Exhibit 3.10-7**, respectively.

TABLE 3.10-9 TOTAL CARGO TONNAGE FORECAST

FISCAL YEAR	BASELINE CARGO TONNAGE	SCENARIO CARGO TONNAGE	DIFFERENCE
Historical			
2012	88,838	88,838	0
2013	92,777	92,777	0
2014	96,967	96,967	0
2015	104,955	104,955	0
2016	129,677	129,677	0
2017	149,515	149,515	0
2018	214,913	214,913	0
2019	235,854	235,854	0
2020	258,552	258,552	0
2021	229,971	229,971	0
Forecast			
2022	238,000	238,000	0
2023	247,000	247,000	0
2024	255,000	263,000	8,000
2025	263,000	278,000	15,000
2026	272,000	292,000	20,000
2027	280,000	318,000	38,000
2032	321,000	370,000	49,000
2037	362,000	418,000	56,000
2042	402,000	465,000	63,000
Compound Annual Growth Rate			
2012 - 2019	15.0%	15.0%	
Recovery (2021-2023)	3.6%	3.6%	
Post Recovery (2023-2042)	2.6%	3.4%	
Full Forecast Period (2022-2042)	2.7%	3.4%	

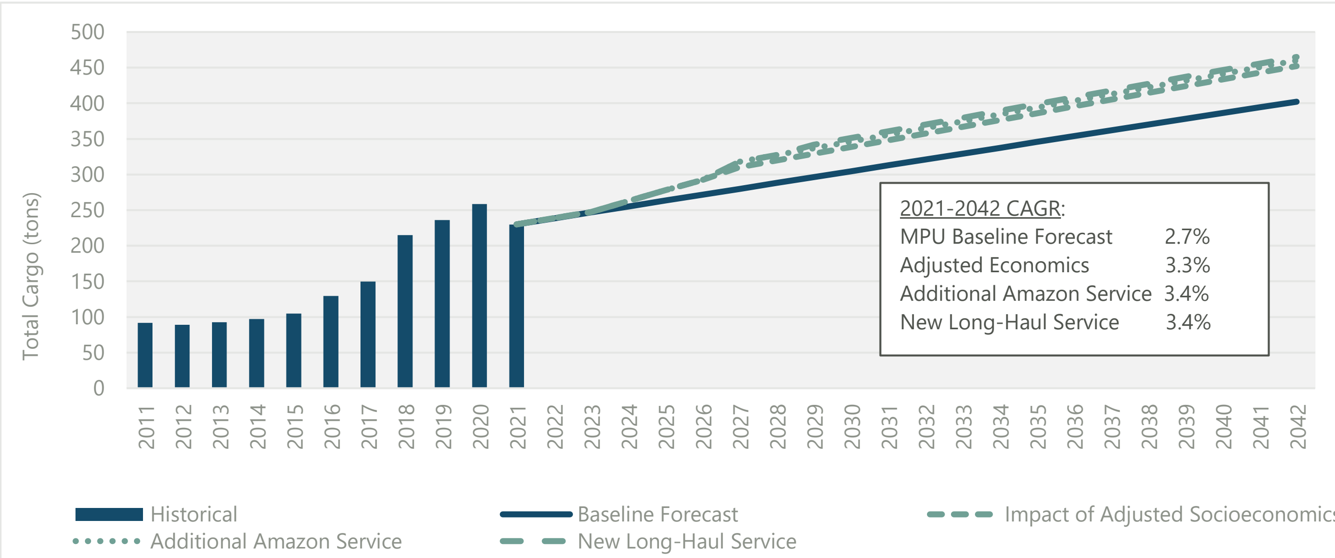
SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

TABLE 3.10-10 CARGO AIRCRAFT FORECAST

FISCAL YEAR	BASELINE CARGO OPERATIONS	SCENARIO CARGO OPERATIONS	DIFFERENCE
Historical			
2012	1,588	1,588	0
2013	1,777	1,777	0
2014	1,901	1,901	0
2015	2,017	2,017	0
2016	2,860	2,860	0
2017	4,126	4,126	0
2018	7,748	7,748	0
2019	8,520	8,520	0
2020	8,996	8,996	0
2021	8,400	8,400	0
Forecast			
2022	8,600	8,600	0
2023	8,900	8,900	0
2024	9,100	9,400	300
2025	9,400	9,900	500
2026	9,600	10,300	700
2027	9,800	11,600	1,800
2032	10,900	12,900	2,000
2037	11,900	14,100	2,200
2042	12,900	15,200	2,300
Compound Annual Growth Rate			
2012 - 2019	27.1%	27.1%	
Recovery (2021-2023)	2.9%	2.9%	
Post Recovery (2023-2042)	2.0%	2.9%	
Full Forecast Period (2022-2042)	2.0%	2.9%	

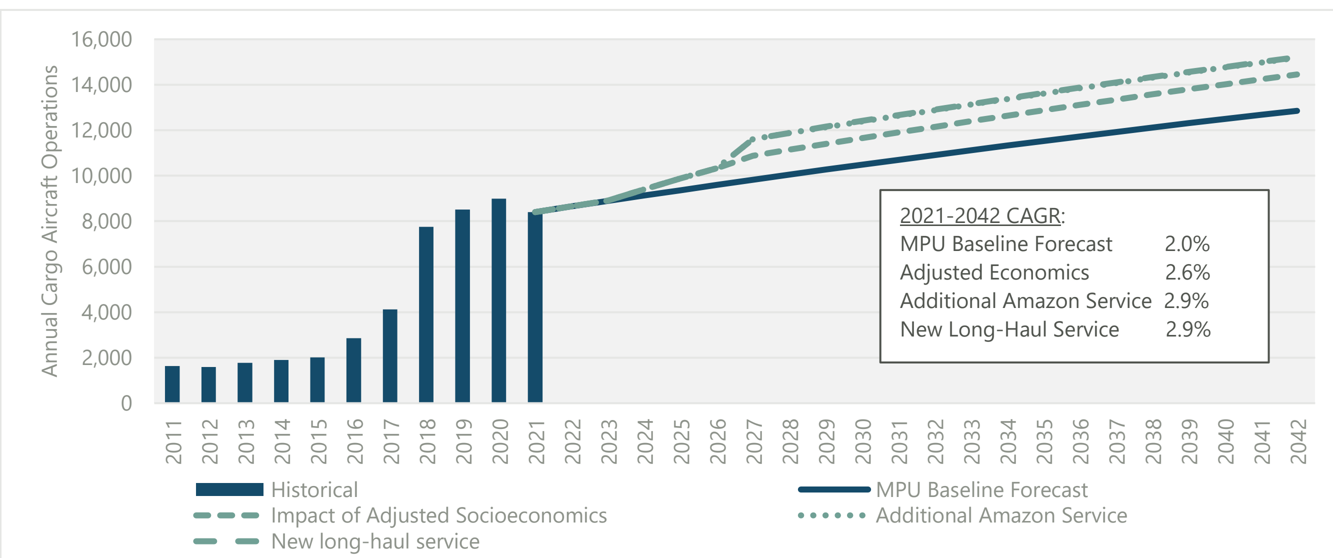
SOURCES: Hillsborough County Aviation Authority, January 2022; U.S. Department of Transportation T-100, January 2022 (Historical); Ricondo & Associates, Inc., January 2022 (Forecast).

EXHIBIT 3.10-6 CARGO DEMAND FORECAST ELEMENTS



NOTE: CAGR – Compound Annual Growth Rate. CAGRs are cumulative and reflect the total activity CAGR with the element.
SOURCES: Hillsborough County Aviation Authority (historical); Ricondo & Associates, Inc. (forecast), March 2022.

EXHIBIT 3.10-7 CARGO AIRCRAFT OPERATIONS FORECAST ELEMENTS



NOTE: CAGR – Compound Annual Growth Rate. CAGRs are cumulative and reflect the total activity CAGR with the element.
SOURCES: Hillsborough County Aviation Authority (historical); Ricondo & Associates, Inc. (forecast), March 2022.

CHAPTER 4

Tampa International Airport

2022-2042 MASTER PLAN UPDATE

Chapter 4: Demand/Capacity and Facility Requirements

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4. DEMAND/CAPACITY AND FACILITY REQUIREMENTS

This chapter describes the demand associated with current and forecast aviation activity at the Airport and compares it to the estimated capacity of each Airport system or function. Numerous factors affect how efficiently a certain level of activity (i.e., demand) can be accommodated within a specific system or facility (i.e., capacity), and the acceptable level of service (LOS) or convenience varies by user, facility, and airport sponsor.

The purpose of the comparative analyses presented herein is to determine the relationship between demand and capacity, as well as provide general assessments of the ability of existing Airport facilities to accommodate current and forecast activity. The demand level at which facility development will be implemented reflects an HCAA policy matter. Providing an expanded or new facility before it is needed may not be financially prudent, while deferring development or improvements may cause unnecessary or undesirable congestion, delay, and opportunity costs.

The methodologies used to determine future facility requirements are in accordance with industry standards; planning factors were adjusted as appropriate to reflect actual Airport-use characteristics. Planning experience at, and knowledge of, other airports was also used to assess the relationship between demand and capacity, and data presented in previous MPU chapters were used in the demand/capacity analysis and calculation of facility requirements.

This chapter documents the demand and capacity analyses by functional system. Capacity deficiencies were identified and future facility requirements for the Airport were quantified, with each Airport system assessed separately.

4.1 PLANNING ACTIVITY LEVELS

As discussed in Chapter 3, forecasts of aviation activity at the Airport depend on several factors outside the Authority's control. These factors could have a material effect on the timing of various Airport components, especially in the longer term. Therefore, to provide a plan that can accommodate the dynamic nature of aviation activity, this MPU is based on demand-level milestones, generally referred to as Planning Activity Levels (PALs), which represent short-term and long-term increments of growth at the Airport.

The use of PALs will enable the Authority to develop facility plans based on actual demand rather than the estimated timing associated with the activity forecasts. PALs represent demand levels, not necessarily specific years, which can be used as benchmarks for planning, designing, or constructing Airport improvements. In some instances, a forecast year of occurrence may be associated with a PAL for general planning purposes, but the timeline alone would not trigger development.

The demand forecasts for this MPU are organized into four levels: a baseline of existing demand (2022) and three PALs that represent short-term and long-term growth at the Airport. **Table 4.1-1** presents the PALs for the Airport, defined by the forecast number of total passengers and aircraft operations: PAL 1 (FY 2032), PAL 2 (FY 2037), and PAL 3 (FY 2042).

TABLE 4.1-1: PLANNING ACTIVITY LEVELS

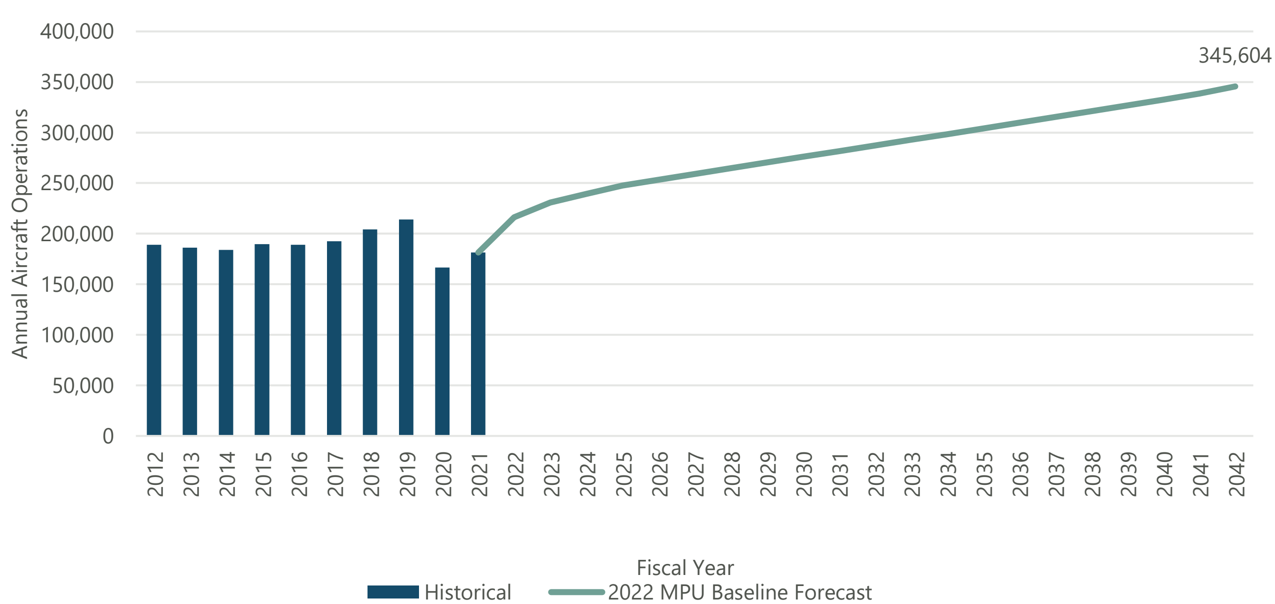
PLANNING ACTIVITY LEVEL	TOTAL PASSENGERS (IN MILLIONS)	TOTAL AIRCRAFT OPERATIONS	TOTAL TONNAGE
Baseline (2022)	15.4	181,364	229,971
PAL 1 (FY 2032)	30.5	288,100	321,000
PAL 2 (FY 2037)	34.6	316,300	362,000
PAL 3 (FY 2042)	38.8	345,600	402,000

NOTE:
PAL – Planning Activity Level
SOURCES: Hillsborough County Aviation Authority, January 2022; US Department of Transportation, T-100, January 2022; US Department of Transportation, Federal Aviation Administration, Operations Network (OPSNET), January 2022 (historical); US Department of Transportation, Federal Aviation Administration, *2020 Terminal Area Forecast*, May 2021; Ricondo & Associates, Inc., January 2022 (forecast).

4.2 AIRFIELD DEMAND/CAPACITY ANALYSIS

An airfield demand/capacity analysis was conducted to assess the capability of the existing facilities at TPA to accommodate aircraft operations through the planning horizon (2042). **Exhibit 4.2-1** depicts the historical and forecast aircraft operations. Hourly runway capacity estimates were identified for the critical airfield operating configurations and relationships between forecast peak hour, typical busy day, and annual activity profiles used to estimate the Airport's annual capacity. These annual capacity estimates were compared to the aircraft operations forecasts to determine the need for and timing of any airfield capacity enhancements that may be required during the planning period (2022 through 2042).

EXHIBIT 4.2-1: HISTORICAL AND FORECAST AIRCRAFT OPERATIONS



NOTE: MPU – Master Plan Update
SOURCES: Hillsborough County Aviation Authority, January 2022; US Department of Transportation, T-100, January 2022; US Department of Transportation, Federal Aviation Administration, Operations Network (OPSNET), January 2022 (historical); US Department of Transportation, Federal Aviation Administration, *2020 Terminal Area Forecast*, May 2021; Ricondo & Associates, Inc., January 2022 (forecast).

This analysis also considered potential improvements, such as the removal of the Informal Runway Use Program (IRUP) and the construction of a closely spaced third parallel runway on the west side of the airfield. These improvements were included to quantify the associated capacity benefits and inform the Authority's decision-making process on any future airfield development.

Details pertaining to the methodology and results of this analysis are presented in the following subsections.

4.2.1 FACTORS AFFECTING AIRFIELD CAPACITY

Airfield capacity, also referred to as throughput, is defined as the maximum number of aircraft operations that can be accommodated on an airfield during a specific period without incurring an unacceptable level of delay. The capacity of an airfield, including the runways and associated exit taxiways, is not constant over time. A variety of factors can affect airfield capacity at an airport, including the following:

- airfield layout
- percentage of time the airport experiences poor weather conditions (i.e., low cloud ceilings and/or low visibility)
- aircraft fleet mix
- frequency of touch-and-go operations
- airfield operating configuration (runway use restrictions)
- existing airfield demand/capacity and delay relationships
- hourly airfield capacity

The following subsections discuss these factors, along with any assumptions that were specific to the airfield capacity analysis for TPA.

4.2.1.1 AIRFIELD LAYOUT

The number and orientation of runways, the locations of runway intersections, and the lateral separation between parallel runways are primary factors affecting airfield capacity. The number and locations of runway exits, as well as the types of exits (high speed [oblique angle], 90 degrees, etc.), also affect airfield capacity.

Aircraft operations on intersecting runways are typically considered "dependent" operations. Aircraft in-trail separation, or spacing, must be increased to allow adequate time for aircraft operations on intersecting runways to be conducted safely. There is one runway intersection at TPA, but the dependencies can be minimized with the use of other airfield configurations that do not result in intersecting operations. For the purposes of this analysis and because of its limited use, Runway 10-28 was not considered in any of the modeled airfield configurations.

When an airfield configuration includes parallel runways, the lateral spacing between these runways affects airfield capacity. The separation between the centerlines of Runways 1L-19R and 1R-19L at TPA is 4,300 feet. Parallel runways with a lateral centerline-to-centerline separation of 3,500 feet or more can operate as independent runways in all conditions. This separation allows aircraft to take off on or land on each runway simultaneously.

Airfield capacity is also affected by the amount of time an aircraft occupies a runway. Runway occupancy time (ROT) for arriving aircraft is affected by the number, type, and location of runway exits, as well as aircraft performance. Typically, lighter aircraft require shorter runway distances to land and, therefore, have a lower ROT. However, if a runway exit is not available once the aircraft has decelerated to a speed that allows for safe maneuvering off the runway, airfield capacity is reduced because that aircraft must remain on the runway until it reaches an exit, thereby increasing the ROT.

Obliquely angled exit taxiways, when properly located along a runway, are more effective at reducing ROTs than 90-degree exit taxiways. These angled exit taxiways are aligned at an oblique angle relative to the runway centerline, typically between 30 and 45 degrees. This configuration allows landing aircraft to exit at a higher speed, and therefore more quickly, compared to perpendicular exit taxiways, resulting in lower ROT and increased airfield capacity. Runway 1L-19R is configured with an adequate number of exit taxiways that are properly spaced and obliquely angled, while Runway 1R-19L could benefit from the addition of obliquely angled exit taxiways.

4.2.1.2 WEATHER CONDITIONS

Airfield capacity can vary significantly based on the weather conditions at an airport. Prevailing winds (direction and speed) dictate which runways can be used for aircraft that are landing and taking off. Aircraft typically land and take off into the wind and can accommodate a limited amount of crosswind and tailwind. If the maximum crosswind or tailwind for a runway is exceeded, then the aircraft may not operate safely on that runway. Therefore, wind conditions may prevent the use of a higher-capacity runway operating configuration, thereby increasing aircraft delays.

Other meteorological conditions affecting airfield capacity include cloud ceiling height and visibility. Low cloud ceilings and poor visibility require increased spacing between aircraft in the surrounding airspace. These conditions may also restrict the use of certain runways by requiring arriving flights to use ILSs. VFR governs the procedures used to conduct aircraft operations in VMC, while IFR governs the procedures used to conduct aircraft operations in IMC. **Table 4.2-1** summarizes the criteria for VMC and IMC.

TABLE 4.2-1: CRITERIA FOR VISUAL AND INSTRUMENT METEOROLOGICAL CONDITIONS

CLASSIFICATION	WEATHER CONDITIONS		
	VISIBILITY		CLOUD CEILING
VMC	Greater than or equal to 3 statute miles	and	Greater than or equal to 1,000 feet above ground level
IMC	Less than 3 statute miles	and/or	Less than 1,000 feet above ground level

NOTES:
VMC – Visual Meteorological Conditions
IMC – Instrument Meteorological Conditions
SOURCE: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5060-5, Change 2, *Airport Capacity and Delay*, December 1995.

4.2.1.3 AIRCRAFT FLEET MIX

The fleet mix operating at an airport is an important factor in determining airfield capacity. As the diversity of approach speeds and aircraft weights increases, airfield capacity decreases, because of the increased in-trail separation required to avoid wake vortices that cause turbulence. Although more prevalent during departures than arrivals, wake vortices are considered a significant safety hazard during any airborne operation. Heavier aircraft produce more severe wake vortices than lighter aircraft.

To alleviate the risk of wake vortices to the in-trail (following) aircraft, aircraft are spaced according to the difference in their airspeeds and weights. Because light aircraft are more susceptible to the impacts of wake vortices than heavy aircraft, they are typically required to wait up to 2 minutes before operating on a runway when trailing a heavy aircraft, diminishing airfield capacity. The greater the size and weight differential of the aircraft fleet using a specific runway, the greater the separation required between successive aircraft operations on that runway.

FAA AC 150/5060-5, Change 2, *Airport Capacity and Delay*, uses a "mix index" to account for aircraft fleet composition. The mix index is represented as a percentage, reflecting the share of large aircraft in the fleet mix. To establish the mix index, aircraft are assigned to one of five categories based on the maximum takeoff weight (MTOW). Based on the number of operations in each classification, a percentage is established to quantify the share of total aircraft operations at an airport by aircraft type that result in wake turbulence hazards. **Table 4.2-2** summarizes the aircraft classifications for establishing the aircraft mix index.

TABLE 4.2-2: AIRCRAFT CLASSIFICATIONS FOR ESTABLISHING AIRCRAFT MIX INDEX

AIRCRAFT CLASSIFICATION	MTOW (POUNDS)	REPRESENTATIVE AIRCRAFT
Small	12,500 or less	Piper P23, Cessna C-180, Cessna C-207, and King Air
Small+	12,501 to 41,000	Learjet 25, Cessna Citation, and Grumman G-1
Large	41,001 to 225,000	Gulfstream IV, Bombardier Dash 8, Boeing 737, and Airbus 320
B757	225,001 to 300,000	Boeing 757-200/300
Heavy	300,001 or more	Boeing 767, DC-10, Boeing 747-8, and Airbus A380

NOTES:
MTOW – Maximum Takeoff Weight
1 The Boeing 757 does not fit either the Large or Heavy aircraft classification and has been identified as a separate category from a weight and wake turbulence perspective.
SOURCE: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5060-5, Change 2, *Airport Capacity and Delay*, December 1995.

4.2.1.4 TOUCH-AND-GO OPERATIONS

Touch-and-go operations are defined as operations by a single aircraft that lands and departs without stopping or exiting the runway. Pilots conducting touch-and-go operations usually stay in the airport traffic pattern. Airfield capacity increases as the number of touch-and-go operations increases, because aircraft land and take off without incurring significant ROT. A touch-and-go operation is counted as two operations: one arrival and one departure. However, continuous touch-and-go operations reduce the availability of the runway for other non-training operations and may impede aircraft operations on adjacent or intersecting runways. Although touch-and-go operations occur at TPA, it was assumed that there would be no touch-and-go operations during the peak hour.

4.2.1.5 AIRFIELD OPERATING CONFIGURATION

As discussed, an airfield layout can accommodate numerous operating configurations. Weather is a primary factor in dictating which operating configuration is used, but other factors influencing the airfield configuration include the lengths of available departure and arrival runways, the proximity of obstructions (structures and terrain), the proximity of other airports, and airspace constraints and interactions.

Aircraft performance characteristics may restrict aircraft operations on a runway. For departures, the runway length must equal or exceed the minimum specified runway length for each departing aircraft. These requirements include the runway length needed for the takeoff ground roll, the length needed to clear an obstruction of a specified height—typically 35 feet above ground level—and the aircraft’s accelerate-stop distance. If the available runway length is insufficient to accommodate an aircraft, then the aircraft must either depart from another runway that provides adequate departure length or the aircraft’s payload must be reduced. Similarly, the landing distance available on the runway must exceed the landing distance requirements prescribed for the aircraft. Otherwise, the aircraft will be required to land on a longer runway.

Aircraft departures may also be restricted by the presence of obstacles on and around the airfield. These restrictions are based on the climb performance of the aircraft and the location of obstacles relative to the departure route of the aircraft. Potential obstructions to aircraft during takeoff and the initial departure climb are of particular importance. Aircraft operations conducted under 14 CFR Part 121, *Operating Requirements: Domestic, Flag, and*

Supplemental Operations, or 14 CFR Part 135, *Operating Requirements: Commuter and On-Demand Operations and Rules Governing Persons on Board Such Aircraft*, require an airport obstacle analysis prior to departure. If an obstacle is identified that would not allow the departing aircraft to meet the FAA minimum obstacle clearance requirements, the departure will not be permitted. As such, the presence of these obstacles would restrict the use of the runway, limiting the airfield's available operating configurations.

Runway use may also be predicated on regional ATCT procedures at nearby airports. The presence of neighboring airports often requires the shared use of navigational facilities and approach/departure fixes. This requires strict coordination between ATCT facilities, potentially restricting the capacity of the overall regional airspace system. In some instances, specific operating configurations at one airport may take precedence over operations at the other airport, which could restrict the use of certain operating configurations at the airport that has lower priority.

There are no obstacle constraints or proximity constraints associated with other airports that influence airfield operating configurations at TPA.

4.2.2 AIRFIELD DEMAND/CAPACITY

The estimated capacity of the airfield is presented in terms of hourly capacity and annual service volume (ASV) for the planning horizon (2022 through 2042).

For each runway use configuration, hourly capacities were established for operations during both VMC and IMC. Historical weather and runway use data, obtained from the FAA, were used to determine how often each configuration has been used. A weighted hourly capacity was then established, based on the occurrence rate of each runway use configuration / weather condition and the respective hourly capacity. The weighted hourly capacity formed the basis of the airfield's ASV calculation.

ASV represents the estimated annual number of aircraft operations an airport can efficiently accommodate, considering hourly, daily, and monthly operational patterns. The formula for calculating ASV contains three variables: weighted hourly capacity (C_W), the ratio of annual demand to average daily demand in the peak month (D), and the ratio of average daily demand to average peak-hour demand during the peak month (H). These variables are multiplied (C_W x D x H) to obtain the ASV for an airport.

4.2.3 HOURLY AIRFIELD CAPACITY

When hourly demand approaches hourly capacity, aircraft delays grow at an increasing rate. These delays consist of extended arrival traffic patterns and departure queue delays during VMC or holding patterns and flow control delays during IMC. Because aircraft delays are most prevalent during peak demand periods, the demand/capacity analysis compares hourly airport throughput to peak-hour demand. Peak-hour demand that equals or exceeds hourly capacity is likely to result in delays during the peak demand period. The rate at which an airfield can "recover" from peak period delays depend on the operational demand profile throughout the day.

4.2.3.1 METHODOLOGY

Hourly runway capacity estimates were developed using *runway*Simulator, which replaced the FAA Airfield Capacity Model. Outputs from *runway*Simulator represent the most efficient airfield possible and, as such, the highest potential hourly capacities for specific airfield configurations. However, these configurations do not necessarily represent current airfield operations.

The simulation incorporates several inputs, including the following:

- **Airfield Layout.** Provides runway geometry data (e.g., locations, dimensions, exits, fixes) imported from the FAA AVNIS[1] database or created manually.
- **Arrival and Departure Procedures.** Depends on the airfield layout and establishes a template for flight movements based on arrival and departure procedure assignments.
- **Aircraft Fleet Mix.** Represents the makeup of aircraft demand (derived from the forecast) generated for the capacity mode scenarios.
- **Procedure Eligibility.** Assigns specific aircraft types to individual runways via defined arrival and departure procedures.
- **Separation Rules.** Dictates the timing of operations in the simulation, as constrained by FAA rules and regulations.

To calculate the hourly throughput capacity, *runway*Simulator assumes a saturated-conditions schedule, represented by a continuous arrival and departure stream in proportion to the input aircraft fleet mix. Within the continuous arrival and departure stream, aircraft are always waiting to land and take off (i.e., a continuous demand for service with no slack periods). These hourly capacity estimates only account for the airspace constraints that impact the final approach spacing to the runways, dependent runway operations, and the taxiways that serve as runway exits. The estimates do not account for any other airspace or ground constraints. Further, *runway*Simulator does not provide an estimate of average aircraft delay.

The resulting hourly capacity estimates provide the basis for establishing the Airport's annual capacity, which can be compared to the aircraft operations forecast to determine whether demand at the baseline (2022) or any of the PALs (2032, 2037, 2042) would exceed the existing airfield capacity, triggering the need to consider measures that would increase airfield capacity.

4.2.3.2 AIRFIELD OPERATING CONFIGURATIONS AND PROCEDURES

To estimate the Airport's hourly capacity, various airfield configurations were considered, including an existing and closely spaced third parallel runway airfield configuration (consistent with previous MPU). Each configuration also included the potential elimination of the IRUP that currently limits the use of Runway 1R-19L.

The airfield configurations were modeled for north flow and south flow in both VMC and IMC, as depicted on **Exhibit 4.2-2** and **Exhibit 4.2-3**. The north and south flow configurations represent an optimum airfield configuration and are the most efficient regarding runway throughput.

4.2.3.3 AIRCRAFT FLEET MIX ASSUMPTIONS

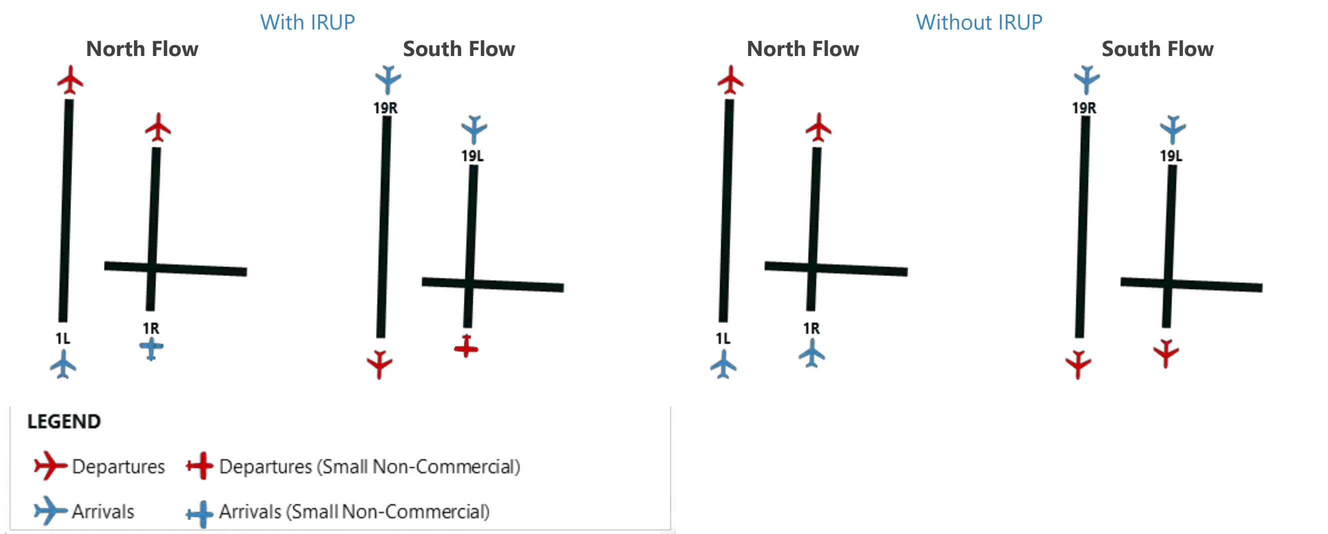
The peak-hour VMC and IMC aircraft fleet mixes were derived from the design day flight schedule (DDFS). Throughout the planning horizon, the aircraft fleet mix remained constant, with only minor fluctuations, as presented on **Exhibit 4.2-4**. The 2022 (baseline) aircraft fleet mix was considered the most demanding with a larger share of Boeing 757 and heavy aircraft. As a result, the 2022 (baseline) aircraft fleet mix was used to determine the airfield hourly capacities for the planning horizon (2022 through 2042).

To establish a usable aircraft fleet mix for the simulation, the DDFS aircraft types were mapped to the *runway*Simulator aircraft classifications. These aircraft classifications generally correspond with the mix-index aircraft

[1] According to FAA Order 8240.52, Aeronautical Data Management, "AVNIS is the main database that stores all of FAA's data relating to airport and facility surveys and pertinent flight inspection reference data. It is from this database that the facility data sheets are developed."

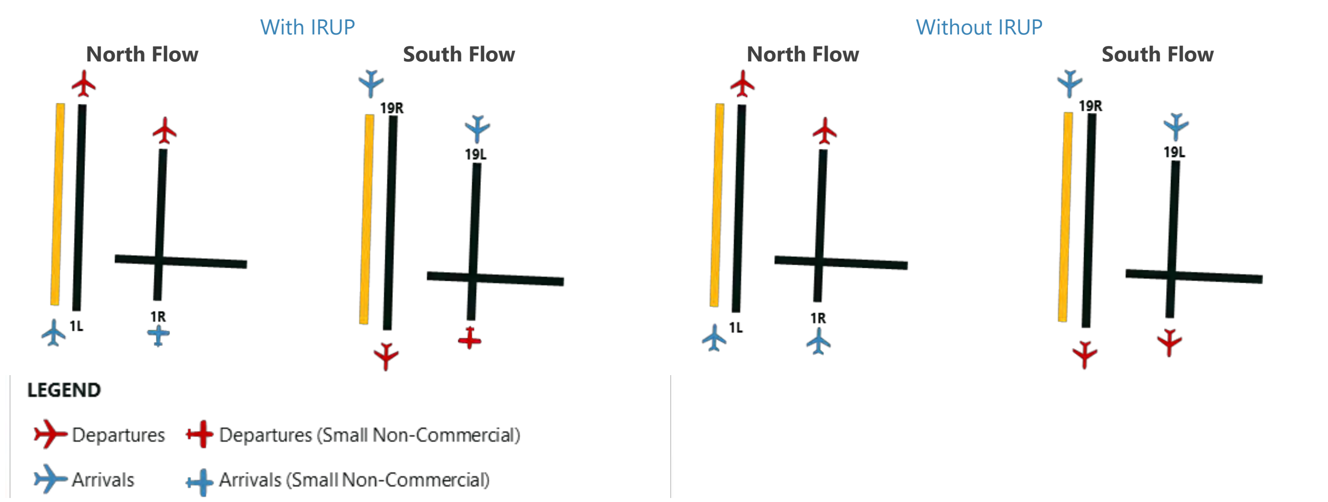
classifications identified in FAA AC 150/5060-5. **Exhibit 4.2-5** presents the resulting modeled VMC and IMC fleet mixes.

EXHIBIT 4.2-2: EXISTING MODELED AIRFIELD CONFIGURATIONS



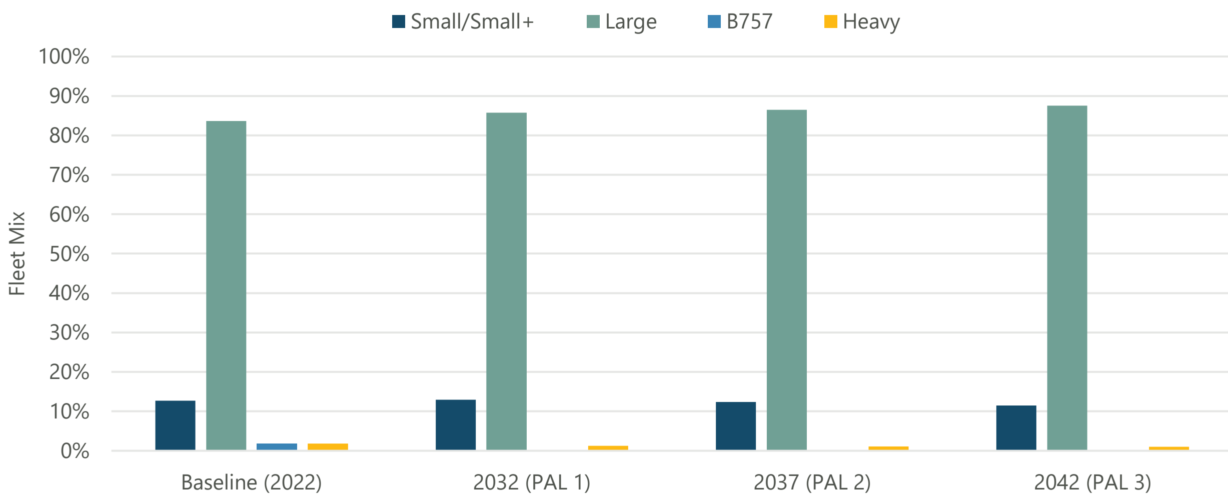
NOTES:
IRUP – Informal Runway Use Program
1 The IRUP configuration assumes small non-commercial aircraft could use Runway 1R for arrivals in north flow and Runway 19L for departures in south flow. Without the IRUP configuration, it is assumed that there are no runway restrictions for commercial aircraft.
SOURCE: Ricondo & Associates, Inc., May 2022.

EXHIBIT 4.2-3: THIRD PARALLEL RUNWAY MODELED AIRFIELD CONFIGURATIONS



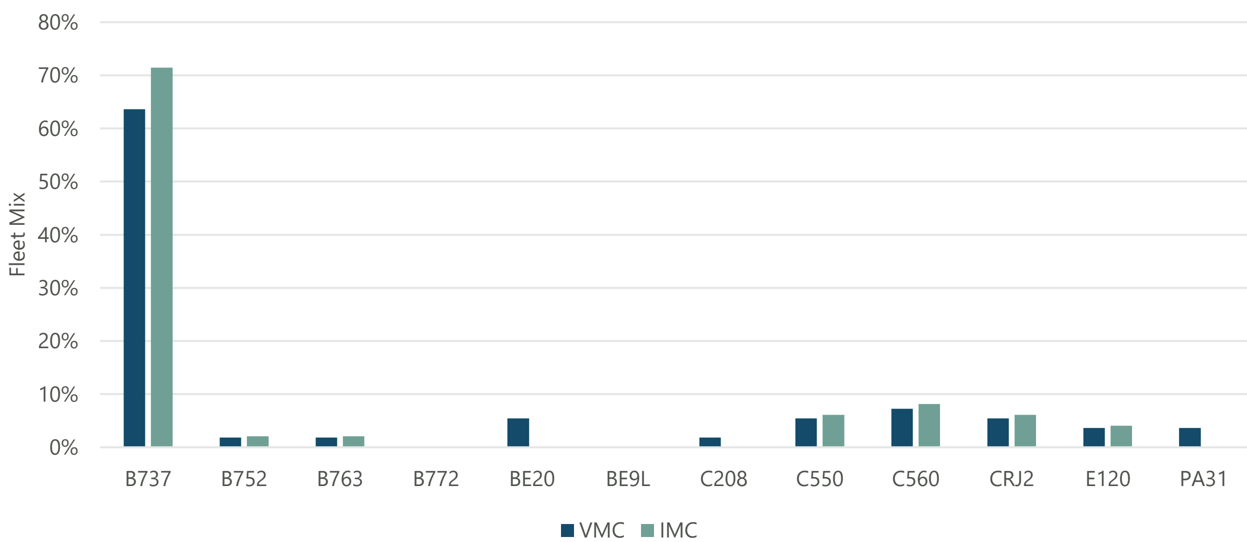
NOTES:
IRUP – Informal Runway Use Program
1 The IRUP configuration assumes small non-commercial aircraft could use Runway 1R for arrivals in north flow and Runway 19L for departures in south flow. Without the IRUP configuration, it is assumed that there are no runway restrictions for commercial aircraft.
2 The closely spaced parallel runway assumes a lateral separation of 700 feet centerline to centerline, allowing independent arrivals and departures under visual meteorological conditions and dependent arrivals and departures under instrument meteorological conditions.
SOURCE: Ricondo & Associates, Inc., May 2022.

EXHIBIT 4.2-4: PROJECTED AIRCRAFT FLEET MIX



NOTE:
PAL – Planning Activity Level
SOURCE: Ricondo & Associates, Inc., May 2022.

EXHIBIT 4.2-5: MODELED VISUAL AND INSTRUMENT METEOROLOGICAL CONDITIONS FLEET MIXES



NOTES:
VMC – Visual Meteorological Conditions
IMC – Instrument Meteorological Conditions
1 Aircraft types reflect the available *runway*Simulator mappings based on the design day flight schedule.
2 The IMC fleet mix assumes no general aviation propeller aircraft operations.
SOURCE: Ricondo & Associates, Inc., May 2022.

4.2.3.4 HOURLY CAPACITY ESTIMATES

Table 4.2-3 summarizes the hourly capacity estimates for VMC and IMC for the existing and third parallel runway airfield operating configurations. These hourly capacity estimates assumed a mix of 50 percent arrivals and 50 percent departures.

TABLE 4.2-3: ESTIMATED HOURLY CAPACITIES SUMMARY FOR VISUAL AND INSTRUMENT METEOROLOGICAL CONDITIONS

			HOURLY CAPACITY			
AIRFIELD CONFIGURATION		OCCURRENCE	BASELINE (FY 2022)	PAL 1 (FY 2032)	PAL 2 (FY 2037)	PAL 3 (FY 2042)
Existing Airfield with IRUP[1]						
VMC	North Flow	49.4%	118	118	118	118
	South Flow	42.7%	107	107	107	107
IMC	North Flow	3.9%	93	93	93	93
	South Flow	4.0%	97	97	97	97
Existing Airfield without IRUP[2]						
VMC	North Flow	49.4%	137	137	137	137
	South Flow	42.7%	137	137	137	137
IMC	North Flow	3.9%	113	113	113	113
	South Flow	4.0%	114	114	114	114
Existing Airfield + Third Parallel Runway with IRUP[3]						
VMC	North Flow	49.4%	123	123	123	123
	South Flow	42.7%	126	126	126	126
IMC	North Flow	3.9%	88	88	88	88
	South Flow	4.0%	111	111	111	111
Existing Airfield + Third Parallel Runway without IRUP[4]						
VMC	North Flow	49.4%	157	157	157	157
	South Flow	42.7%	157	157	157	157
IMC	North Flow	3.9%	135	135	135	135
	South Flow	4.0%	134	134	134	134

NOTES:
IRUP – Informal Runway Use Program
VMC – Visual Meteorological Conditions
IMC – Instrument Meteorological Conditions
PAL – Planning Activity Level

1 Assumes the application of the existing Informal Runway Use Program with a single arrival runway in north flow and a single departure runway in south flow. However, this configuration assumes small aircraft (12,500 pounds or less) could use Runway 1R for arrivals in north flow and Runway 19L for departures in south flows.
2 Assumes no runway use restrictions, allowing dual arrival runways and dual departure runways in both north flow and south flow.
3 Assumes the application of the existing Informal Runway Use Program with a third parallel runway. The same conditions would apply to Runway 1R-19L regarding small aircraft arrivals and departures.
4 Assumes no runway use restrictions, allowing dual arrival runways and dual departure runways in both north flow and south flow. This configuration would provide only a mix mode on Runway 1R-19L.

SOURCE: Ricondo & Associates, Inc., May 2022 (*runway*Simulator, Version 1.3.0).

As shown in Table 4.2-3, the existing airfield hourly capacities are lower than those with a third parallel runway. The difference in the hourly capacities is influenced by the configuration of the west airfield, where the existing configuration provides a mixed-mode runway configuration, and the third parallel runway configuration provides two single-mode runway configurations. The elimination of the IRUP also provides increased capacities in both configurations by allowing dual arrivals and departures in north and south flows.

4.2.3.5 HOURLY DEMAND/CAPACITY COMPARISONS

The peak-hour demand for PAL 3 (2042) is 96 total operations per hour. This peak demand is below the PAL 3 VMC airfield capacity estimates for the existing airfield configuration with IRUP, ranging between 107 and 118 operations per hour, as shown in Table 4.2-3.

4.2.4 ANNUAL SERVICE VOLUME

The peak-hour airfield capacity estimates provide the basis for establishing the ASV of the existing and third parallel runway airfield operating configurations. The ASV for these varying configurations was then compared to the annual aircraft operations forecast for the planning horizon (2022 through 2042). As demand approaches and exceeds the airfield ASV, aircraft delays increase exponentially. To minimize these delays, the FAA recommends that planning for additional airfield capacity should begin when the airfield's annual demand reaches 60 percent to 75 percent of its ASV.

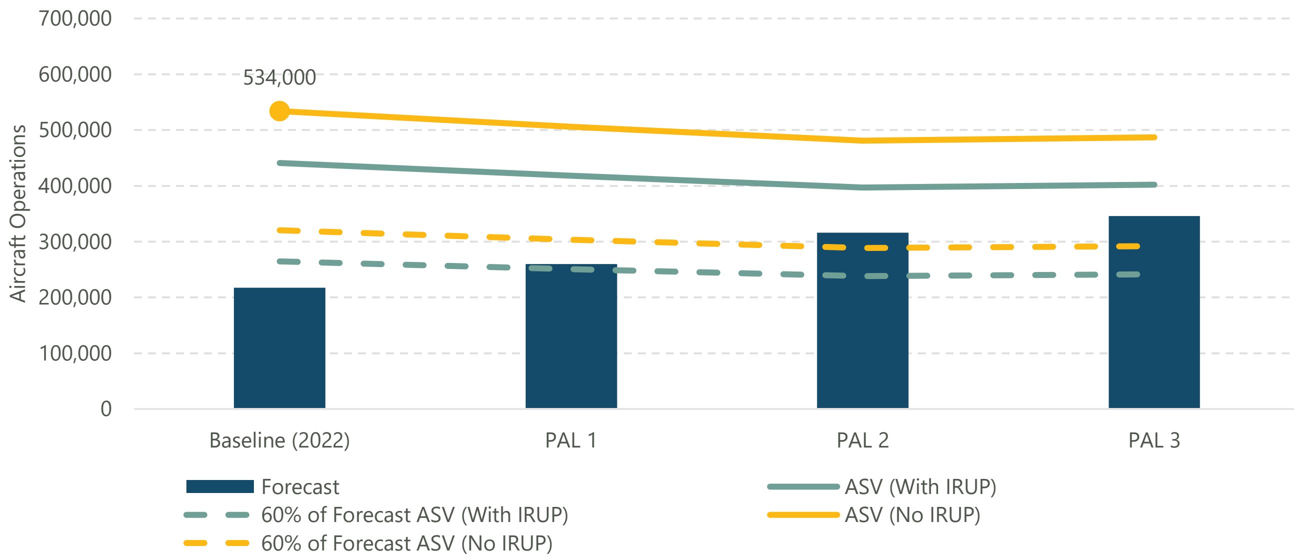
Table 4.2-4, **Exhibit 4.2-6**, and **Exhibit 4.2-7** compare the ASV for the different airfield configurations to the operational demand for 2022, as well as the forecast demand through 2042. The table also provides the annual demand for total aircraft operations as a percentage of the ASV.

TABLE 4.2-4: COMPARISON OF ANNUAL DEMAND AND ANNUAL SERVICE VOLUME

	BASELINE (FY 2022)	PAL 1 (FY 2032)	PAL 2 (FY 2037)	PAL 3 (FY 2042)
Aircraft Operations	217,100	288,100	316,300	345,700
Existing Airfield with IRUP				
ASV	441,000	418,000	397,000	402,000
Percent of ASV	49%	69%	80%	86%
Existing Airfield without IRUP				
ASV	534,000	506,000	481,000	487,000
Percent of ASV	41%	57%	66%	71%
Third Parallel Runway with IRUP				
ASV	484,000	459,000	436,000	442,000
Percent of ASV	45%	63%	73%	78%
Third Parallel Runway without IRUP				
ASV	614,000	582,000	553,000	560,000
Percent of ASV	35%	50%	57%	62%

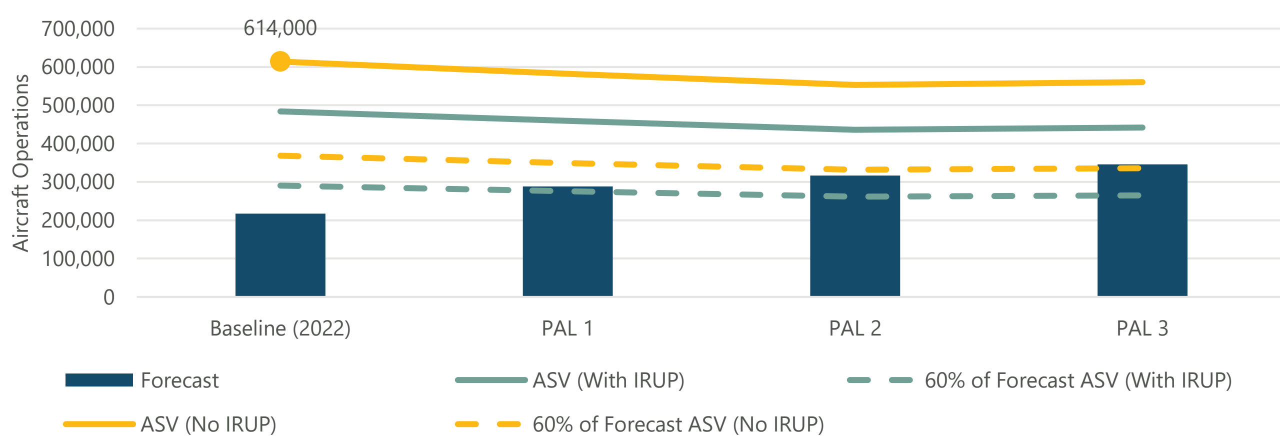
NOTES:
ASV – Annual Service Volume
IRUP – Informal Runway Use Program
PAL – Planning Activity Level
1 Assumes the application of the existing Informal Runway Use Program with a single arrival runway in north flow and a single departure runway in south flow. However, this configuration assumes small aircraft (12,500 pounds or less) could use Runway 1R for arrivals in north flow and Runway 19L for departures in south flow.
2 Assumes no runway use restrictions, allowing dual arrival runways and dual departure runways in both north flow and south flow.
3 Assumes the application of the existing Informal Runway Use Program with a third parallel runway. The same conditions would apply to Runway 1R-19L regarding small aircraft arrivals and departures.
4 Assumes no runway use restrictions, allowing dual arrival runways and dual departure runways in both north flow and south flow. This configuration would provide only a mix mode on Runway 1R-19L.
SOURCES: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5060-5, Change 2, *Airport Capacity and Delay*, December 1995; Ricondo & Associates, Inc., May 2022.

EXHIBIT 4.2-6: COMPARISON OF ANNUAL DEMAND AND ANNUAL SERVICE VOLUME – EXISTING AIRFIELD CONFIGURATION



NOTES: ASV – Annual Service Volume IRUP – Informal Runway Use Program
1 Current Federal Aviation Administration guidance recommends that capacity planning start when activity reaches 60 to 75 percent of an airport's airfield capacity.
2 Changes in the provided ASV calculations can be attributed to changes in the peaking characteristics (i.e., D and H factors), while peak-hour capacities remain constant throughout the planning horizon.
SOURCES: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5060-5, Change 2, *Airport Capacity and Delay*, December 1995; Ricondo & Associates, Inc., May 2022.

EXHIBIT 4.2-7: COMPARISON OF ANNUAL DEMAND AND ANNUAL SERVICE VOLUME – THIRD PARALLEL RUNWAY CONFIGURATION



NOTES: ASV – Annual Service Volume IRUP – Informal Runway Use Program
1 Current Federal Aviation Administration guidance recommends that capacity planning start when activity reaches 60 to 75 percent of an airport's airfield capacity.
2 Changes in the provided ASV calculations can be attributed to changes in the peaking characteristics (i.e., D and H factors), while peak-hour capacities remain constant throughout the planning horizon.
SOURCES: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5060-5, Change 2, *Airport Capacity and Delay*, December 1995; Ricondo & Associates, Inc., May 2022.

As shown, the annual demand in 2022 was approximately 49 percent of the ASV, indicating the existing TPA airfield with the IRUP provides adequate capacity for the baseline (2022). By PAL 1 (FY 2032), the annual demand would exceed the FAA threshold of 60 percent of the calculated ASV for the existing airfield. Even with the elimination of the IRUP, the annual demand would still exceed 60 percent of the calculated ASV by PAL 2 (FY 2037). As a result, planning for additional airfield capacity would be necessary as early as PAL 1 (FY 2032) based on the annual demand forecast.

4.2.5 AIRFIELD DEMAND/CAPACITY CONCLUSIONS

The airfield demand/capacity analysis determined that planning for additional airfield capacity would be necessary as early as PAL 1 (2032). Maintaining the existing airfield and eliminating the IRUP would enhance the capacity; however, planning for additional capacity as annual demand approaches 60 to 75 percent of the calculated ASV would still be required. The implementation of the third parallel runway and elimination of the IRUP would provide adequate capacity to accommodate the projected aircraft demand at TPA through the MPU planning horizon and beyond.

The configuration of the third parallel runway is discussed in Chapter 5. The timing for the construction of the third runway will need to be monitored; if the number of annual operations, peaking characteristics, and/or the fleet mix serving the Airport should deviate from those associated with the baseline forecast, then the capacity of the TPA airfield may need to be reassessed to confirm the requirement for additional capacity.

4.3 AIRFIELD COMPLIANCE REVIEW

A review was conducted of the airfield's compliance with current and pending FAA airfield design criteria. This included a comprehensive review of taxiway pavement geometries to identify potential deficiencies and nonconformance with current and proposed airfield design standards.

4.3.1 CRITICAL AIRCRAFT DETERMINATION

FAA AC 150/5300-13B, *Airport Design*, defines the critical aircraft as: "the most demanding aircraft type, or grouping of aircraft with similar physical and operational characteristics, that make regular use of an airport. Regular use is 500 annual operations, excluding touch-and-go operations. The critical aircraft determines the applicable design standards for facilities on the airport including individual runways, taxiways, etc."

The critical aircraft for an airport dictates the applicable airfield design standards. These design standards are predicated on the aircraft wingspan, tail height, approach speeds, and landing gear configuration. Therefore, the FAA established classifications for each aircraft characteristic:

- AAC – This is a grouping of aircraft based on a reference landing speed, if specified, or if the reference landing speed is not specified, 1.3 times the stall speed at the maximum certificated landing weight. The AAC influences the design standards for the associated runway(s) and dictates runway length and width, RSA, runway object free area (ROFA), obstacle free zones (OFZs), runway protection zones (RPZs), and the lateral separation between the runway to parallel taxiways and aircraft parking aprons.
- ADG – This is a classification of aircraft based on wingspan and tail height. When the aircraft wingspan and tail height are categorized in different groups, the higher group is used. Like the AAC, the ADG influences the design standards for the associated runway(s), as well as taxiways and taxilanes. For taxiways and taxilanes, the ADG is the basis for establishing the RSA, ROFA, and lateral separation to parallel taxiways/taxilanes and fixed or movable objects.

- Taxiway Design Group (TDG) – This is a classification of aircraft based on the main gear width and cockpit to main gear distance. The TDG dictates airfield pavement geometry, particularly for taxiway/taxilane pavement width, fillet design, and pavement shoulders.

4.3.1.1 RUNWAY 1L-19R AND RUNWAY 1R-19L

Based on current and scheduled operations at the Airport, the existing critical aircraft is the Boeing 777-200, an AAC D, ADG V, and TDG 5 aircraft. Based on the forecasts and the anticipated future fleet mix of aircraft operating at the Airport, the future critical aircraft will be in the AAC D, ADG V, and TDG 5 categories and include aircraft such as the Airbus A350-900 or Boeing 787-9.

4.3.1.2 RUNWAY 10-28

The ALP associated with the 2012 MPU 2016 Addendum identifies the critical aircraft for Runway 10-28 as the Boeing 757-200/300, an AAC D, ADG IV, and TDG 5 aircraft. To establish the current critical aircraft types for this runway, the actual aircraft operational data were obtained from the HCAA Casper airport noise monitoring system. Based on this information, it was determined the critical aircraft is within the AAC C, ADG II, and TDG 3 categories. However, based on the forecasts of aviation activity, Runway 10-28 should be configured to serve AAC D, ADG III and TDG 3 aircraft, such as the Boeing 737 Max, Airbus A321 Neo, or Gulfstream 500/550.

4.3.1.3 CRITICAL AIRCRAFT SUMMARY

Table 4.3-1 summarizes the existing and ultimate critical aircraft for each of the runways at TPA.

TABLE 4.3-1: CRITICAL AIRCRAFT SUMMARY

	AIRCRAFT	AIRCRAFT APPROACH CATEGORY (AAC)	AIRPLANE DESIGN GROUP (ADG)	TAXIWAY DESIGN GROUP (TDG)
Existing[1]				
Runway 1L-19R	Boeing 777-200	D	V	5
Runway 1R-19L	Boeing 777-200	D	V	5
Runway 10-28	ATR-42-600, Hawker 800	C	II	3
Future				
Runway 1L-19R	Airbus A350-900, Boeing 787-9	D	V	5
Runway 1R-19L	Airbus A350-900, Boeing 787-9	D	V	5
Runway 10-28	Boeing 737 MAX, Airbus A321 Neo, Gulfstream 500/550	D	III	3

NOTE:

1 This is based on data collected from the Casper noise monitoring system for the period October 2020 to September 2021.

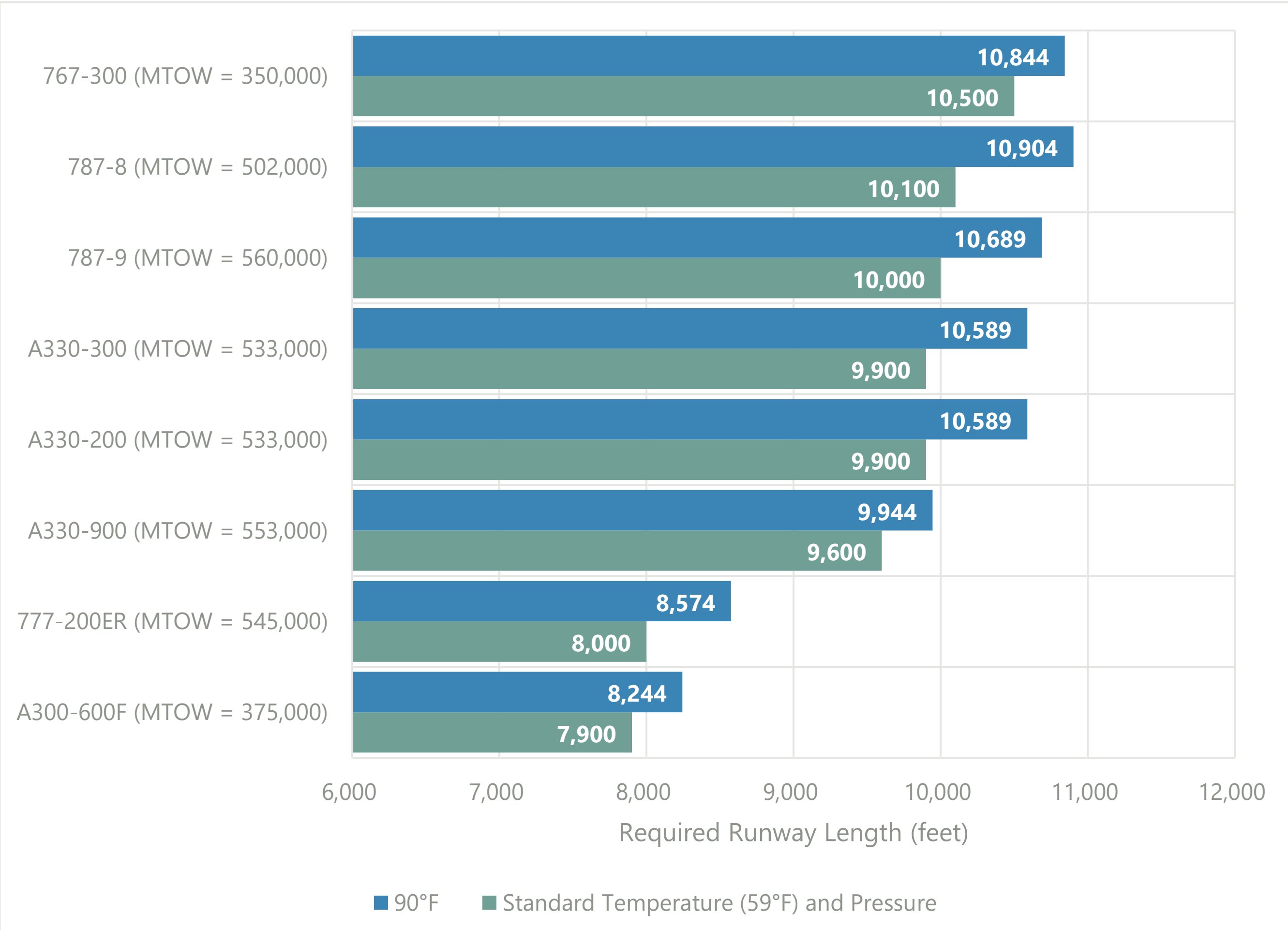
SOURCES: Hillsborough County Aviation Authority, November 2021 (Casper data); Ricondo & Associates, Inc., 2022 (aviation activity forecasts).

4.3.2 RUNWAY LENGTH

An analysis was conducted to determine the takeoff runway length requirements of the most demanding aircraft types that may operate at the Airport during the planning period. Aircraft performance data from aircraft manufacturers and methodologies presented in FAA AC 150/5325-4B, *Runway Length Requirements for Airport Design*, were used to determine takeoff runway length requirements. **Exhibit 4.3-1** presents the results of this analysis.

The existing lengths of Runways 1L-19R (11,002 feet) and 1R-19L (8,300 feet) are sufficient to meet the runway length requirements for all of the analyzed aircraft at 90 degrees Fahrenheit. While no runway extension is required to allow existing and future aircraft to fly non-stop to their destinations , the extension of Runway 1L will be required to facilitate the movement of aircraft between the parallel runways and the north terminal complex. This extension is discussed in Chapter 5.

EXHIBIT 4.3-1: TAKEOFF RUNWAY LENGTH REQUIREMENTS AT MAXIMUM TAKEOFF WEIGHT



NOTES:
MTOW – Maximum Takeoff Weight
1 Takeoff runway length requirements were based on a temperature of 90 degrees Fahrenheit. Runway gradient and factors associated with obstacle clearance were not considered as part of this analysis.
2 The engine types of each aircraft requiring the longest runway lengths are assumed for the analysis.
3 Aircraft types that require longer runways may still operate on TPA runways with payload restrictions.
SOURCES: Airbus and Boeing *Airplane Characteristics for Airport Planning* manuals.

4.3.3 DECLARED DISTANCES

Declared distances can be applied to mitigate obstructions, nonstandard RSAs and ROFAs, and incompatible land uses within the arrival or departure RPZs. At TPA, Runway 10 has a displaced threshold to mitigate obstructions on the approach, including the APM rail structure, which reduces the landing distance available (LDA) by 498 feet. The Runway 28 accelerate-stop distance available (ASDA) and LDA are also reduced by 498 feet because the available RSA beyond the Runway 10 end is only 502 feet long instead of the required 1,000 feet (see Section 4.3.9). Similarly, the Runway 1L ASDA and LDA are also reduced by 200 feet because the available RSA beyond the Runway 19R end is only 800 feet. **Table 4.3-2** summarizes the declared distances associated with the existing runways. These declared distances are anticipated to remain in place throughout the planning horizon.

TABLE 4.3-2: DECLARED DISTANCES

DECLARED DISTANCE	RUNWAY 1L	RUNWAY 19R	RUNWAY 1R	RUNWAY 19L	RUNWAY 10	RUNWAY 28
Takeoff Run Available (TORA)	11,002′	11,002′	8,300′	8,300′	6,999′	6,999′
Takeoff Distance Available (TODA)	11,002′	11,002′	8,300′	8,300′	6,999′	6,999′
Accelerate-Stop Distance Available (ASDA)	10,802′	11,002′	8,300′	8,300′	6,999′	6,501′
Landing Distance Available (LDA)	10,802′	11,002′	8,300′	8,300′	6,501′	6,501′

SOURCE: US Department of Transportation, Federal Aviation Administration, Chart Supplements, July 2023 (Tampa International Airport).

4.3.4 RUNWAY WIDTH

Runways 1L-19R and 1R-19L are 150-feet wide and meet current FAA design standards for ADG V aircraft. Runway 10-28 is 150-feet wide and meets current FAA design standards for ADG IV aircraft, the critical aircraft that was identified for this runway in prior MPUs. Per FAA AC 150/5300-13B, Table G-9, “Runway Design Standards Matrix, C/D/E-III,” it also meets C-III aircraft design standards for aircraft with MTOW greater than 150,000 pounds, including the Boeing 737 MAX and Airbus A321 Neo.

4.3.5 RUNWAY PAVEMENT STRENGTH

As noted in FAA Form 5010-1, *Airport Master Record*, the stated load-bearing capacities for existing Runways 1L-19R and 1R-19L are 210,000 pounds for aircraft with dual-wheel landing gear, 358,000 pounds for aircraft with dual-tandem-wheel landing gear, and 850,000 pounds for aircraft with multiple dual-tandem landing gear. The capacities for Runway 10-28 are 200,000 pounds for aircraft with dual-wheel landing gear, 280,000 pounds for aircraft with dual-tandem-wheel landing gear, and 380,000 pounds for aircraft with multiple dual-tandem landing gear. A review of the maximum gross weight and main landing gear configuration of the existing and future critical aircraft types indicates the strength of the runways is sufficient to meet demand throughout the planning horizon.

4.3.6 RUNWAY SHOULDER WIDTH

ADG V aircraft require 35 feet of additional paved surface, adjacent to the edge of runways, to provide resistance to jet blast erosion. Runways 1L-19R and 1R-19L have 35-foot-wide shoulders and meet current FAA design standards for ADG V aircraft.

For ADG III aircraft with MTOW greater than 150,000 pounds, the recommended shoulder width is 25 feet. However, the FAA only requires stabilized shoulders consisting of turf or stabilized soil treatment (i.e., paved shoulders are not required). HCAA will need to verify whether the areas adjacent to the edge of Runway 10-28 meet the standards for turf or stabilized soil per FAA AC 150/5370-10, *Standard Specifications for Construction of Airports*, and prevent blast and water erosion.

4.3.7 RUNWAY BLAST PADS

Per FAA standards, blast pad dimensions for ADG V aircraft are 220-feet wide by 400-feet long. The Runway 1L, 1R, 19L, and 19R blast pads meet these requirements.

Blast pad dimensions for ADG III aircraft weighing more than 150,000 pounds are 200-feet wide by 200-feet long. The Runway 10 blast pad meets these requirements, but the Runway 28 blast pad is only 150-feet wide by 150-feet long. To meet FAA requirements, the Runway 28 blast pad will need to be widened and extended by 50 feet.

4.3.8 RUNWAY-TO-TAXIWAY SEPARATION DISTANCES

The FAA design standards for runway-to-taxiway separation distances ensure aircraft can safely operate on parallel taxiways without encroaching into the RSA, OFZ, RPZ, or NAVAID critical areas. The design standard for ADG V aircraft is 400 feet for the distance between the runway centerline and the parallel taxiway centerline, provided that the runway approach visibility minima are not less than 0.5 statute miles. For ADG V runways with visibility minima below 0.5 statute miles, AC 150/5300-13B, *Airport Design*, recommends a minimum distance of 500 feet between the centerlines of the runway and associated parallel taxiway.

Three of the six runway ends (Runways 1L, 19R, and 19L) at the Airport provide visibility minima below 0.5 statute miles. Runway 1R's approach visibility minimums exceed 0.5 statute miles. However, because the opposite runway ends (19L) offer CAT I and CAT II approaches, the recommended separation distance between the centerline of the runway and the parallel taxiways is also 500 feet. The parallel runways only have a separation distance of 400 feet between their centerlines and the associated parallel taxiways, except for Taxiway E, which is located 535 feet east of the Runway 1R-19L centerline. With an ADG V (e.g., Boeing 747) aircraft on approach, the inner-transitional OFZ would not be penetrated by a Boeing 747 taxiing on Taxiway W, Taxiway C, or Taxiway D and, as such, the nonstandard separation would not trigger any operational restrictions and not impact aircraft operations. Therefore, a 400-foot separation distance is recommended between the parallel runway centerlines and the associated parallel taxiways.

The design standard for ADG III aircraft is 400 feet for the distance between the runway centerline and the parallel taxiway centerline, provided that the runway approach visibility minima are not less than 0.5 statute miles. Runways 10 and 18 offer approach visibility minima exceeding 1 statute mile. The separation distances between Runway 10-28 and parallel Taxiways S and N are 423 feet and 450 feet, respectively, and exceed the FAA requirements.

4.3.9 AIRFIELD SAFETY CRITERIA

The FAA design standards for the various airfield safety areas, as they relate to the Airport, are presented in this section. The current ALP, as well as the most recent aerial photography for the Airport, were used to determine the locations of objects that may affect air navigation.

4.3.9.1 RUNWAY SAFETY AREAS

Based on FAA design standards, the RSAs for D-V runways are required to be 500-feet wide and extend 1,000 feet beyond the runway end for departures and 600 feet prior to the landing threshold for arrivals. Three of the four runway ends associated with the parallel runways meet these criteria. However, the RSA beyond the Runway 19R end is only 800-feet long. To mitigate this 200-foot discrepancy, declared distances are in place for Runway 1L-19R. The Runway 1L LDA and ASDA equal 10,802 feet, while the TORA and the TODA equal 11,002 feet (i.e., the full runway length). The application of declared distances to mitigate for nonstandard safety areas beyond the runway end is acceptable by FAA and, as such, no improvements are required.

The RSAs for C/D-III runways are required to be 500-feet wide and extend 1,000 feet beyond the runway end for departures and 600 feet prior to the landing threshold for arrivals. Runway 28 meets these criteria. However, the RSA beyond the Runway 10 end is only 502-feet long. To mitigate this 498-foot discrepancy, declared distances are in place. The Runway 28 LDA and ASDA equal 6,501 feet, while the TORA and the TODA equal 6,999 feet (i.e., the full runway length). No improvements are required.

4.3.9.2 RUNWAY OBJECT FREE AREAS

For runways serving AAC C and D aircraft, ROFAs must be 800-feet wide (i.e., 400 feet on either side of the runway centerline) and extend 1,000 feet beyond the end of the runway or 1,000 feet beyond the end of the stopway, if a stopway is provided.

The ROFA lengths for the existing runways coincide with the RSAs. Thus, similar to the RSAs, the ROFAs associated with Runway 1L-19R only extend 800-feet beyond the Runway 19R end. However, this discrepancy is also mitigated by the application of declared distances, as previously noted. The ROFAs associated with the other runway ends extend 1,000 feet beyond the ends of the runways. No changes, except those that may be dictated by future runway development, should be required through the planning horizon.

4.3.9.3 OBSTACLE FREE ZONES

The required runway OFZ for runways serving aircraft more than 12,500 pounds is 400-feet wide and extends 200 feet beyond each end of the runway. The OFZs for existing Runways 1L-19R and 1R-19L and Runway 10-28 meet current FAA standards. Currently, the only objects within the runway OFZs are Precision Approach Path Indicators (PAPI) required to be located there because of their function.

4.3.9.4 RUNWAY PROTECTION ZONES

The length and width of the RPZs are contingent on the size of the aircraft operating on the runway, as well as the type of approach (e.g., visual, instrument) and the visibility minimums available. As a result, the criteria for the RPZ vary for each runway end. **Table 4.3-3** presents the RPZ dimensions for each runway end.

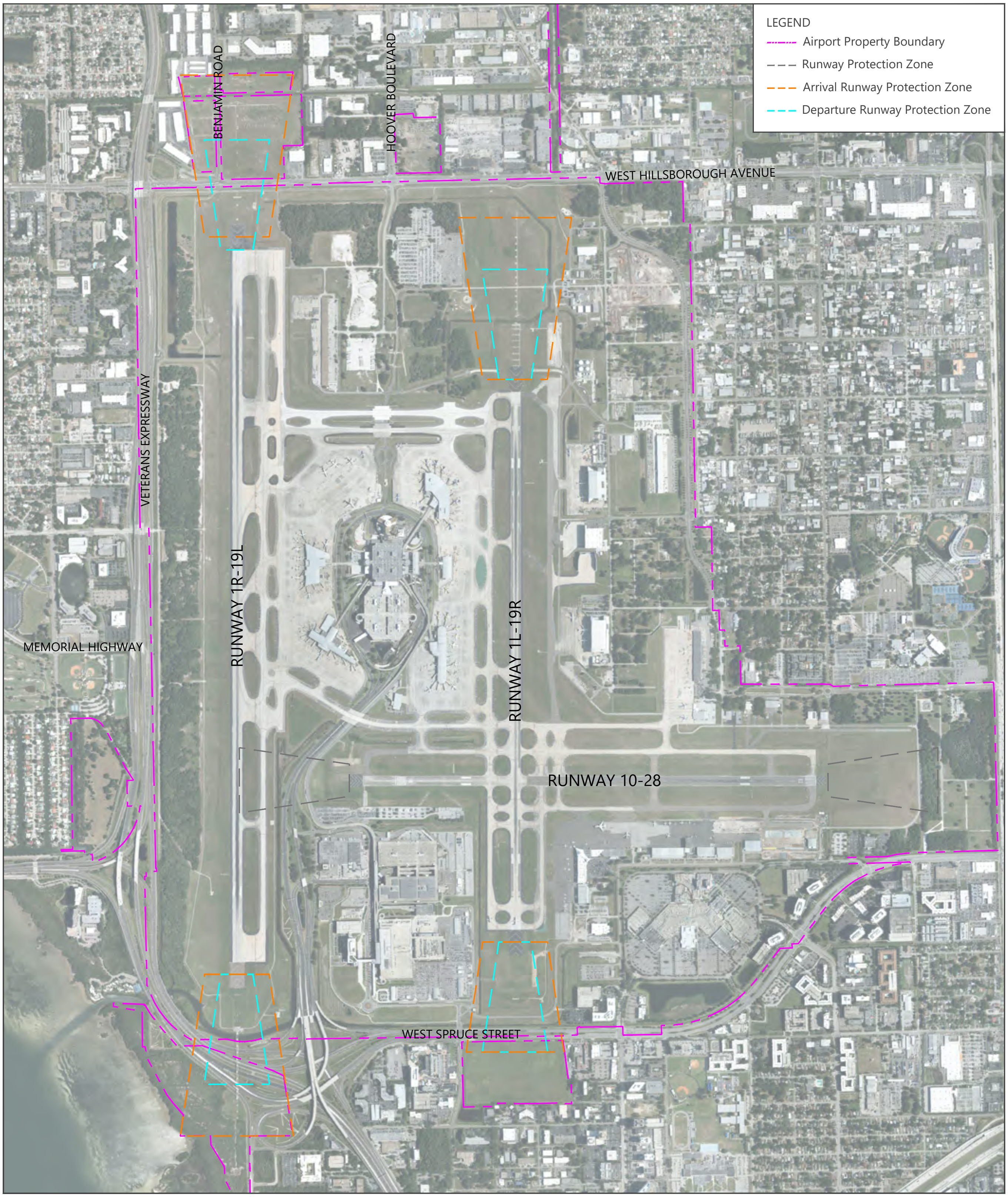
As shown on **Exhibit 4.3-2**, except for the rights-of-way associated with West Hillsborough Avenue, Benjamin Road, Veterans Expressway, Memorial Highway, and West Spruce Street, the existing RPZs are located on land owned by HCAA.

To ensure the RPZs associated with the third parallel runway remain free of incompatible land uses, HCAA will need to acquire land parcels north and south of the Airport. Future incompatible land uses within those RPZs will include warehouses and, possibly, roadways. Future land acquisition requirements are discussed in Chapter 5.

TABLE 4.3-3: RUNWAY PROTECTION ZONE DIMENSIONS

DESCRIPTION	RUNWAY 1L	RUNWAY 19R	RUNWAY 1R	RUNWAY 19L	RUNWAY 10	RUNWAY 28
Visibility Minimums	Lower than 0.75 statute miles	Lower than 0.75 statute miles	Not lower than 0.75 statute miles	Lower than 0.75 statute miles	Not lower than 1.0 statute mile	Not lower than 1.0 statute mile
Approach RPZ						
Length (feet)	2,500	2,500	1,700	2,500	1,700	1,700
Inner Width (feet)	1,000	1,000	1,000	1,000	500	500
Outer Width (feet)	1,750	1,750	1,510	1,750	1,010	1,010
Acres	78.91	78.91	48.98	78.91	29.47	29.47
Departure RPZ						
Length (feet)	1,700	1,700	1,700	1,700	1,700	1,700
Inner Width (feet)	500	500	500	500	500	500
Outer Width (feet)	1,010	1,010	1,010	1,010	1,010	1,010
Acres	29.47	29.47	29.47	29.47	29.47	29.47

NOTE: RPZ – Runway Protection Zone
SOURCE: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13B, *Airport Design*, July 2023.



SOURCES: Martinez Geospatial, Inc., May 2022 (aerial photography); Federal Aviation Administration (FAA), *Advisory Circular 150/5300-13B Airport Design*, March 2022.

EXHIBIT 4.3-2

EXISTING RUNWAY PROTECTION ZONES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\4.3-2 Existing RPZ.dwgLayout: 8.5x11P Plotted: May 15, 2024, 03:20PM

4.3.10 AIRFIELD COMPLIANCE SUMMARY

Table 4.3-4 lists the dimensions associated with several airfield elements and the associated airfield safety criteria, the associated standards per FAA AC 150/5300-13B, and whether the standards are met. Items noted in red do not meet current FAA standards. As previously noted, these items include the Runway 10-28 shoulders, the Runway 28 blast pad length and width, and the runway-to-taxiway separation distances. While the RSA and ROFA lengths are also noted as noncompliant, these are mitigated by the application of declared distances. Chapter 5 includes recommendations to address these nonstandard elements.

TABLE 4.3-4: AIRFIELD COMPLIANCE SUMMARY

	RUNWAY 1L (D-V)			RUNWAY 19R (D-V)			RUNWAY 1R (D-V)			RUNWAY 19L (D-V)			RUNWAY 10 (D-III)			RUNWAY 28 (D-III)		
DESCRIPTION	EX.	STD.	COM.	EX.	STD.	COM.	EX.	STD.	COM.	EX.	STD.	COM.	EX.	STD.	COM.	EX.	STD.	COM.
Runway Width	150′	150′	Yes	150′	150′	Yes	150′	150′	Yes	150′	150′	Yes	150′	150′ [1]	Yes	150′	150′ [1]	Yes
Runway Shoulder Width	35′	35′	Yes	35′	35′	Yes	35′	35′	Yes	35′	35′	Yes	0′	25′ [12]	No	0′	25′ [1,2]	No
Runway Blast Pad Width	220′	220′	Yes	220′	220′	Yes	220′	220′	Yes	220′	220′	Yes	200′	200′ [1]	Yes	150′	200′ [1]	No
Runway Blast Pad Length	400′	400′	Yes	400′	400′	Yes	400′	400′	Yes	400′	400′	Yes	200′	200′	Yes	150′	200′	No
RSA Width	500′	500′	Yes	500′	500′	Yes	500′	500′	Yes	500′	500′	Yes	500′	500′	Yes	500′	500′	Yes
RSA Length Prior to Landing Threshold	600′	600′	Yes	600′	600′	Yes	600′	600′	Yes	600′	600′	Yes	600′	600′	Yes	600′	600′	Yes
RSA Length beyond Physical Runway End	1,000′	1,000′	Yes	800′	1,000′	No	1,000′	1,000′	Yes	1,000′	1,000′	Yes	1,000′	1,000′	Yes	1,000′	1,000′	Yes
ROFA Width	800′	800′	Yes	800′	800′	Yes	800′	800′	Yes	800′	800′	Yes	800′	800′	Yes	800′	800′	Yes
ROFA Length Prior to Landing Threshold	600′	600′	Yes	600′	600′	Yes	600′	600′	Yes	600′	600′	Yes	600′	600′	Yes	600′	600′	Yes
ROFA Length beyond Physical Runway End	1,000′	1,000′	Yes	800′	1,000′	No	1,000′	1,000′	Yes	1,000′	1,000′	Yes	1,000′	1,000′	Yes	1,000′	1,000′	Yes
Approach RPZ Length	1,700′	1,700′	Yes	1,700′	1,700′	Yes	1,700′	1,700′	Yes	1,700′	1,700′	Yes	1,700′	1,700′	Yes	1,700′	1,700′	Yes
Approach RPZ Inner Width	500′	500′	Yes	500′	500′	Yes	500′	500′	Yes	500′	500′	Yes	500′	500′	Yes	500′	500′	Yes
Approach RPZ Outer Width	1,010′	1,010′	Yes	1,010′	1,010′	Yes	1,010′	1,010′	Yes	1,010′	1,010′	Yes	1,010′	1,010′	Yes	1,010′	1,010′	Yes
Departure RPZ Length	2,500′	2,500′	Yes	2,500′	2,500′	Yes	2,500′	2,500′	Yes	2,500′	2,500′	Yes	1,700′	1,700′	Yes	1,700′	1,700′	Yes
Departure RPZ Inner Width	1,000′	1,000′	Yes	1,000′	1,000′	Yes	1,000′	1,000′	Yes	1,000′	1,000′	Yes	500′	500′	Yes	500′	500′	Yes
Departure RPZ Outer Width	1,750′	1,750′	Yes	1,750′	1,750′	Yes	1,750′	1,750′	Yes	1,750′	1,750′	Yes	1,010′	1,010′	Yes	1,010′	1,010′	Yes
Runway Centerline to Holdline	280′	280′	Yes	280′	280′	Yes	280′	280′	Yes	280′	280′	Yes	280′	280′	Yes	280′	280′	Yes
Runway Centerline to Taxiway/Taxilane Centerline	400′	500′	No	400′	500′	No	400′	500′	No	400′ to 535′	500′	No	423′ to 450′	400′	Yes	423′ to 450′	400′	Yes

NOTES:
Ex. – Existing
Std. – Standard per FAA AC 150/5300-13B
Com. – Compliance
RSA – Runway Safety Area
ROFA – Runway Object Free Area
RPZ – Runway Protection Zone
1 For aircraft weighing more than 150,000 pounds.
2 The Federal Aviation Administration recommends stabilized shoulders consisting of turf shoulders or stabilizing soil treatments for taxiways serving a critical aircraft of Airplane Design Group (ADG) I, II, or III.
SOURCE: US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5300-13B, *Airport Design*, July 2023.

4.3.11 TAXIWAYS

FAA design standards for taxiway widths are 75 feet for TDG 5 and TDG 6 aircraft. All existing taxiways are at least 75-feet wide, except for Taxiway F, Taxiway Q and Taxiway R, which are only 50-feet wide, and Taxiway T, which is only 40-feet wide. Taxiways F, Q and R, which connect Taxiways D and S with the GA ramp via F1, F2, R2, and R3, meet TDG 3 and TDG 4 requirements. Considering these taxiways only accommodate GA aircraft, the widening of these taxiways is not necessary. However, Taxiway T would need to be widened by 10 feet to meet TDG 3 requirements. This taxiway is also located too close to the GA facilities north of Runway 10-28 and would need to be relocated south to meet FAA OFA requirements for ADG III aircraft. The relocation of the taxiway is discussed in Chapter 5.

TDG 5 standards also require paved taxiway shoulder widths of 30 feet. The existing TDG 5 taxiway system at the Airport meets the FAA taxiway shoulder requirements, with the width of all taxiway shoulders being a minimum of 30 feet.

Taxiways E, J (east of Runway 1R-19L), and N are currently designed to accommodate ADG IV aircraft. To allow for the movement of ADG V TDG 5 aircraft to the existing and future cargo facilities, however, it is recommended that these taxiways be improved to meet ADG V requirements. These improvements would include the construction of paved shoulders along Taxiway E north of Taxiway J, and along Taxiways J and N between Runway 1R-19L and Taxiway K.

TDG 3 standards require stabilized (turf or stabilized soil treatment) taxiway shoulder widths of 20 feet. Further investigations and/or surveys (beyond the scope of this MPU) would need to be completed to confirm the areas adjacent to Taxiways F and Q meet the FAA requirements for stabilized shoulders.

4.3.11.1 NONCOMPLIANT TAXIWAY GEOMETRY

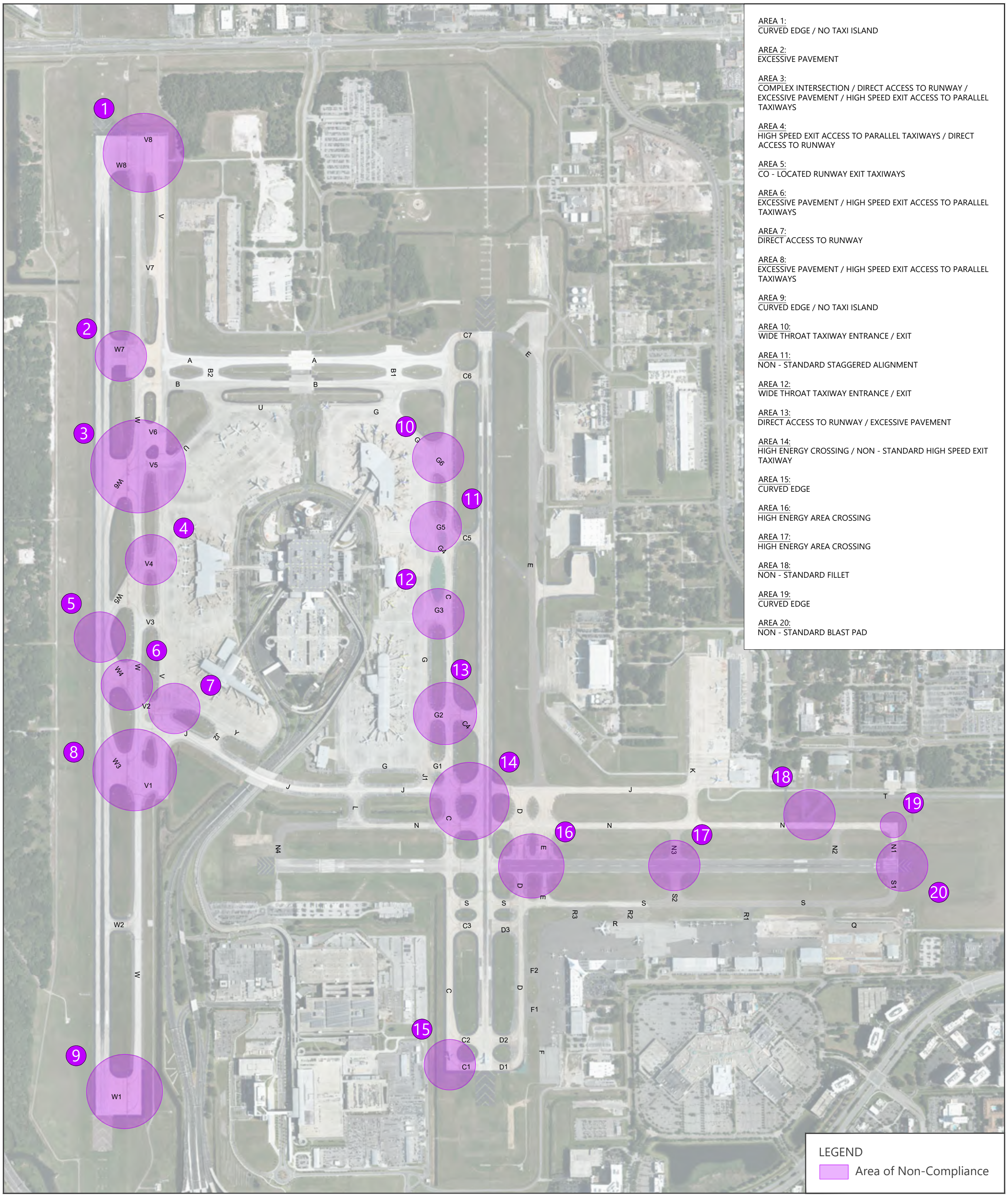
An assessment was conducted of taxiway geometry principles and dimension standards, based on guidance set forth in FAA AC 150/5300-13B, *Airport Design*. As depicted on **Exhibit 4.3-3**, 20 areas of noncompliance were identified. The following is a list of the areas of noncompliance by runway:

Runway 1L-19R

- Area 1 – nonstandard bypass taxiways and noncompliance taxiway geometry
- Area 2 – areas of excess pavement at runway-taxiway interface
- Area 3 – areas of excess pavement at runway-taxiway interface and complex intersection/nonstandard geometry
- Area 4 – high-speed exit access to parallel taxiways
- Area 5 – co-located high-speed taxiways
- Area 7 – direct access from apron to runway
- Area 8 – high-speed exit access to parallel taxiways
- Area 9 – nonstandard bypass taxiways and noncompliant taxiway geometry

Runway 1R-19L

- Areas 10, 11, 12 – noncompliant taxiway geometry
- Area 13 – direct access from apron to runway and wide expanse of pavement at apron-taxiway interface
- Area 14 – high-energy runway crossing and noncompliant taxiway geometry
- Area 15 – noncompliant taxiway geometry



SOURCES: Martinez Geospatial, Inc., May 2022 (aerial photography); Federal Aviation Administration (FAA), *Advisory Circular 150/5300-13B Airport Design*, March 2022.

EXHIBIT 4.3-3

RUNWAY/TAXIWAY GEOMETRY
AREA OF NON-COMPLIANCE

NORTH 0 1,600 ft

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.3-2 RWY-TXWY GEOMETRY – AREAS OF NON-COMPLIANCE.dwgLayout: EX 4.3-1 (2) Plotted: May 15, 2024, 03:21PM

Runway 10-28

- Area 16 – high-energy runway crossing
- Area 17 – high-energy runway crossing
- Area 18 – nonstandard taxiway fillet and turn design
- Area 19 – noncompliant taxiway geometry
- Area 20 – nonstandard blast pad

Chapter 5 discusses recommended taxiway improvements to enhance the airfield's capacity and aircraft flow.

4.3.11.2 TAXIWAY DESIGN GROUP 6 ROUTES

While most aircraft that operate and will operate at the Airport are TDG 3 and TDG 5, HCAA staff indicated the need to protect for TDG 6 routes that would allow for the movement of aircraft such as the Airbus A350-1000, Boeing 777-300, and Boeing 787-10. **Exhibit 4.3-4** illustrates the proposed TDG 6 routes in both north flow and south flow. Chapter 5 discusses the taxiway improvement required to account for the movement of TDG 6 aircraft. These improvements mainly consist of additional full-strength pavement fillets at various taxiway intersections to accommodate the longer aircraft wheelbase associated with TDG 6 aircraft.

4.3.12 RUNWAY INSTRUMENTATION AND LIGHTING

Instrumentation, lighting, and other NAVAIDs assist pilots in maneuvering aircraft with high levels of safety and efficiency in various weather conditions. The following subsections review the existing lighting and approach instrumentation aids at the Airport and identify requirements for future facilities.

4.3.12.1 LIGHTING

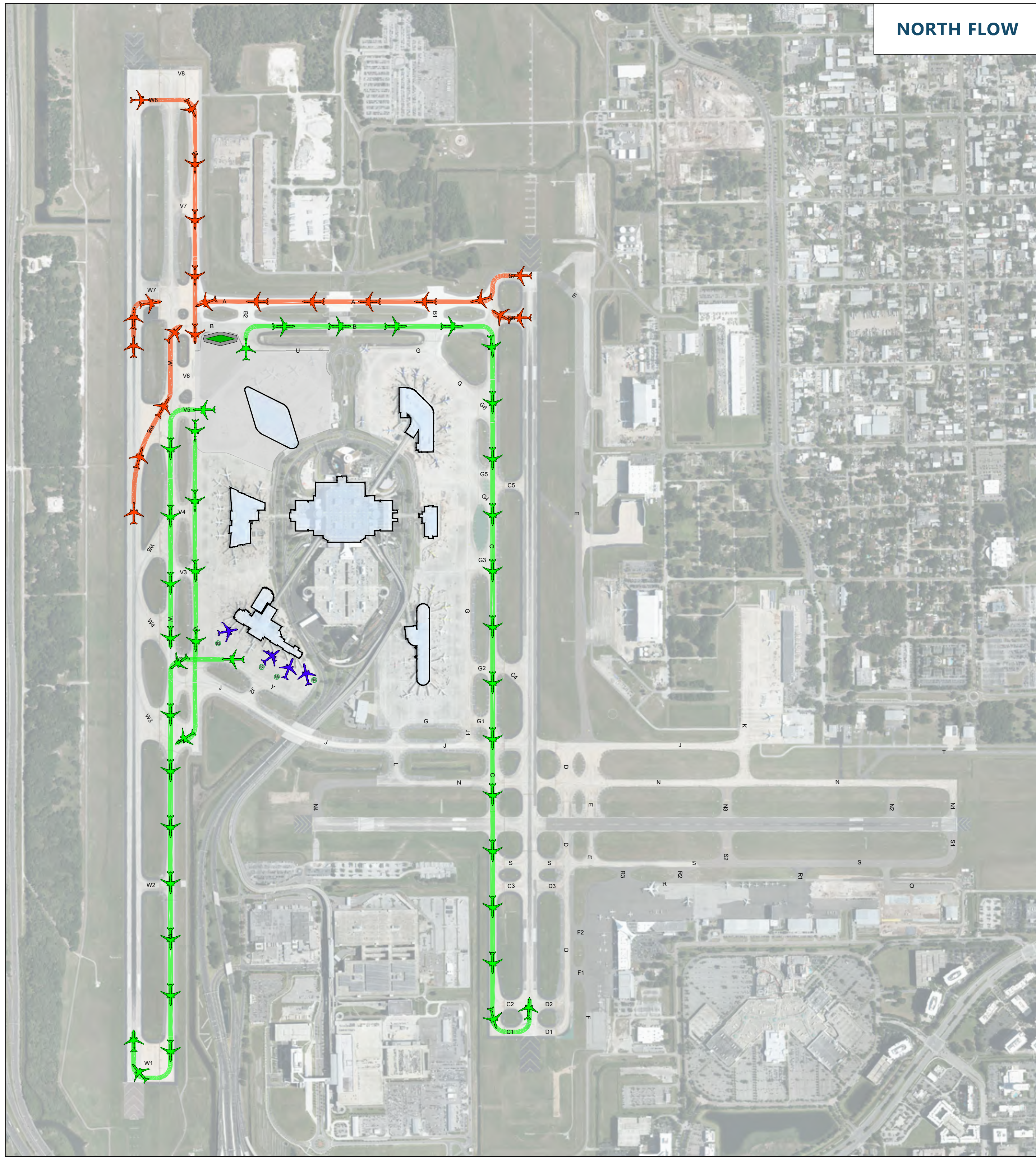
Table 4.3-5 summarizes the lighting aids associated with each runway end. Although Runways 1R, 10, and 28 do not have approach lighting, these runways are equipped with visual lighting aids (PAPI). Runway 1R is also equipped with runway end identifier lights (REILs). All runways have HIRLs, and the primary runways (1L-19R and 1R-19L) have centerline lights. Runways 1L and 19L have touchdown zone lighting, allowing aircraft to land under low visibility conditions (CAT II approaches). The existing runway lighting system is adequate, and no improvements are recommended. The third parallel runway should be equipped with a MALSR and PAPI to allow for vertically guided approaches with visibility minimums as low as 1,400 feet.

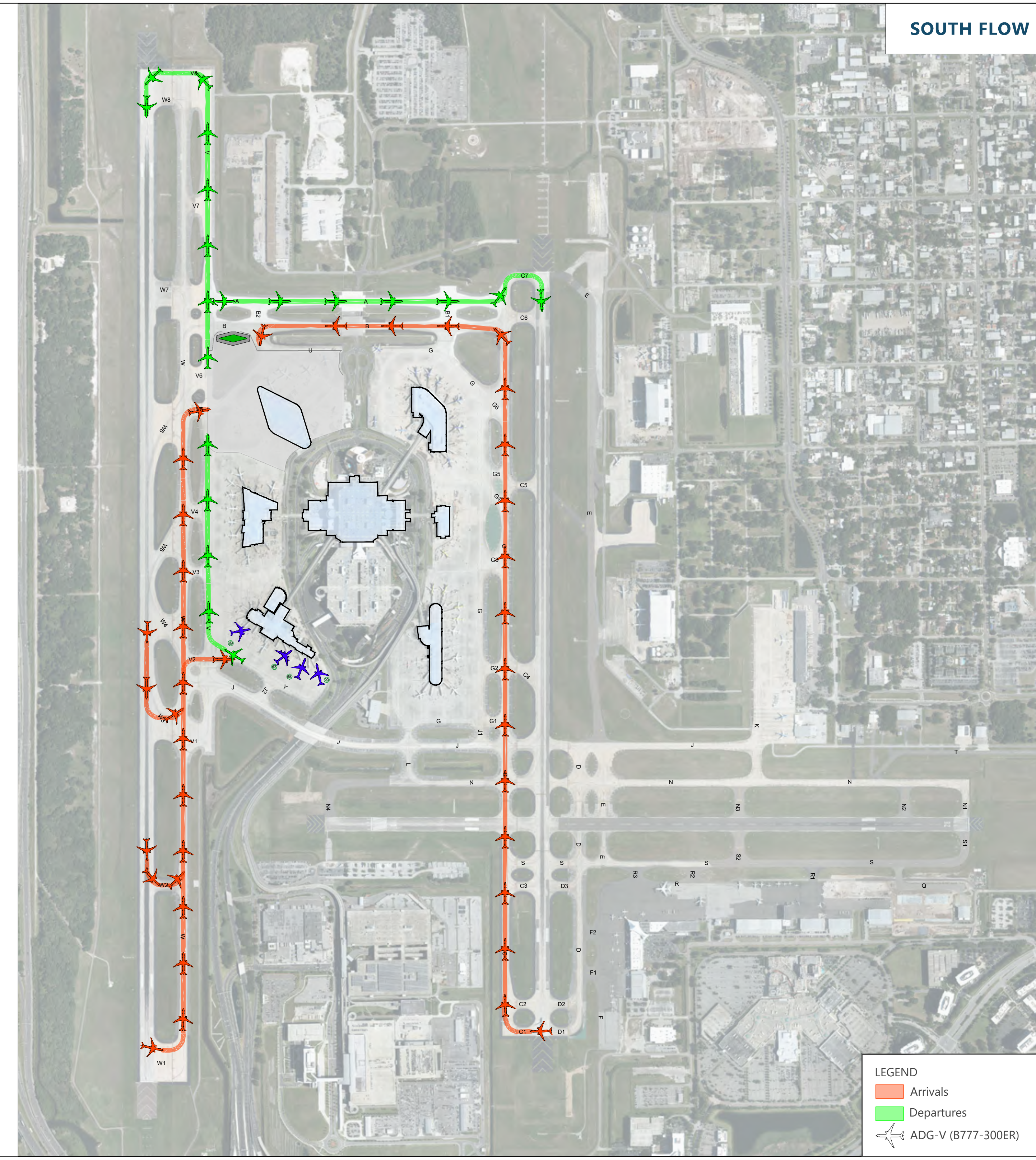
TABLE 4.3-5: EXISTING RUNWAY LIGHTING AIDS

RUNWAY	RUNWAY EDGE LIGHTS	CENTERLINE LIGHTS	TOUCHDOWN ZONE LIGHTS	RUNWAY END IDENTIFIER LIGHTS	APPROACH LIGHTING SYSTEM	VISUAL LIGHTING AIDS
Runway 1L	HIRL	Yes	Yes	No	ALSF-2	PAPI
Runway 19R	HIRL	Yes	No	No	MALSR	PAPI
Runway 1R	HIRL	Yes	No	Yes	-	PAPI
Runway 19L	HIRL	Yes	Yes	No	ALSF-2	PAPI
Runway 10	HIRL	No	No	No	-	PAPI
Runway 28	HIRL	No	No	No	-	PAPI

NOTES: HIRL – High Intensity Runway Light; MALSR – Medium Intensity Approach Lighting System; PAPI – Precision Approach Path Indicator; ALSF – Approach Lighting System with Sequenced Flashing Lights

SOURCES: US Department of Transportation, Federal Aviation Administration, *Southeast US Terminal Procedures*, September 2023; US Department of Transportation, Federal Aviation administration, Form 5010-1, *Airport Master Record*, September 7, 2023.





SOURCES: Martinez Geospatial, Inc., May 2022 (aerial photography); Federal Aviation Administration (FAA), *Advisory Circular 150/5300-13B Airport Design*, March 2022.

NORTH

0 1,500 ft

EXHIBIT 4.3-4

PROPOSED TAXIWAY DESIGN GROUP 6 ROUTES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.3-3 Proposed TDG 6 Route.dwgLayout: Ex 4.3-2 Plotted: May 15, 2024, 03:23PM

4.3.12.2 APPROACH AND INSTRUMENTATION

As noted in Chapter 2, TPA offers ILS approaches to Runways 1L, 19R, and 19L; a localizer (LOC) approach to Runway 1R; and area navigation (RNAV) Global Positioning System (GPS) non-precision approaches to each runway end. No changes are anticipated throughout the planning horizon. Approaches to the third parallel runway would likely be enabled by a wide area augmentation system (WAAS) receiver that will allow for LOC performance with vertical guidance (LPV) procedure, providing similar LOS as the Category I ILS approach. Provision for an ILS is not deemed necessary.

4.3.12.3 DISTANCE MEASURING EQUIPMENT

As noted in Chapter 2, there are three distance measuring equipment (DME) systems at the Airport that are associated with the Runway 1L, 19R, and 1R LOC/ILS approaches, transmitting distance information over the LOC frequencies. No additional DME ground stations are anticipated to be required at the Airport.

4.3.12.4 ROTATING BEACON AND REMOTE TRANSMITTER/RECEIVER

The rotating beacon and FAA remote transmitter receiver (RTR), which are located west of Runway 1L-19R, will need to be relocated once construction of the third parallel runway starts. However, this relocation is not anticipated to occur during the MPU planning horizon. Future studies will be required during the Runway 1L-19R advanced planning or design phase to identify potential locations for the relocated rotating beacon and RTR.

4.3.12.5 AUTOMATED SURFACE OBSERVING SYSTEM AND LOW-LEVEL WIND SHEAR ALERT SYSTEM

As noted in Chapter 2 of the MPU, TPA is equipped with an automated surface observing system (ASOS), located east of the Runway 1L approach end, and two low-level wind shear alert system (LLWAS) anemometers. The LLWAS located north of SkyCenter One may need to be relocated once the construction of SkyCenter Two starts. At the time of the writing of this chapter, discussions were still ongoing with the FAA regarding an alternate location for this LLWAS.

4.4 AIRCRAFT GATE REQUIREMENTS

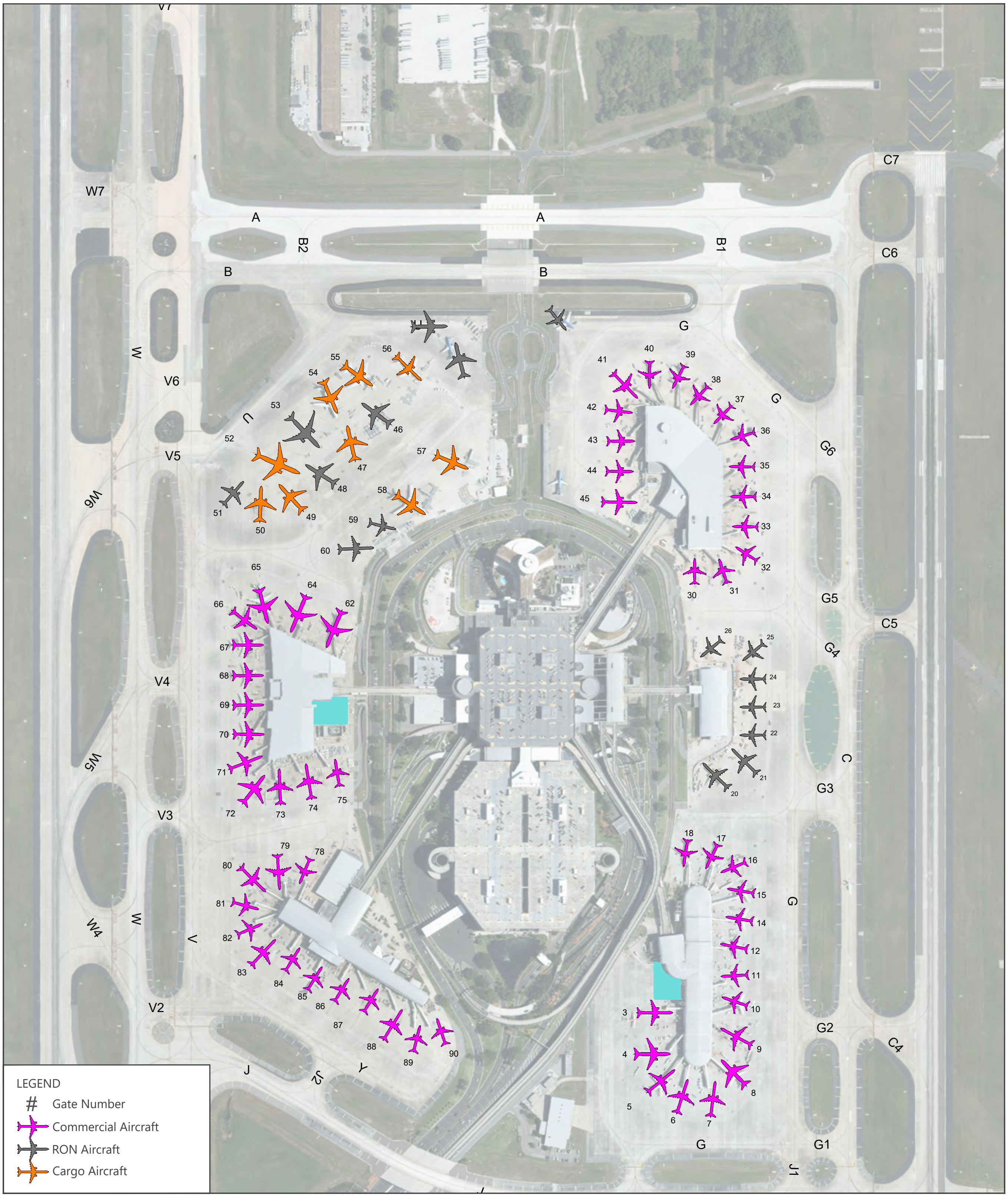
Aircraft parking positions consist of aircraft gates and pavement areas (hardstands) for short-term parking of RON aircraft or to temporarily park aircraft between flights, if necessary. Aircraft gates are aircraft parking positions equipped with PBBs designed for the embarkation and disembarkation of passengers onto and off aircraft. For this analysis, the embarkation and disembarkation of passengers onto and off aircraft can only occur at aircraft parking positions equipped with a PBB.

The gating analysis was performed to determine the number of gates and hardstands required to accommodate the flight activity listed in the DDFS that correlates to the baseline (2022) and PAL 1 (2032), PAL 2 (2037), and PAL 3 (2042). Additionally, the MPU confirmed the timing for the new Airside D facility, as the HCAA had suspended its procurement of design and construction services for the facility at the onset of the pandemic. To determine the timing for the new Airside D gates, an additional short-term activity forecast for a 27.5 million annual passengers (MAP) activity level was created. This level of activity is forecast to be attained by 2028. Construction of Airside D will displace the 8 hardstand passenger airline aircraft positions at the Airside D site and provide 16 additional (narrowbody equivalent) aircraft gates. The design and construction services for Airside D were awarded summer 2023, and beneficial occupancy is scheduled for fall 2028. HCAA has approved construction of new pavement north of Taxiway A, referred to as the North Hardstand, which will accommodate 13 parking positions.

As shown in Chapter 2, there are 58 aircraft gate positions (in narrowbody configuration), representing narrowbody, widebody, and jumbo aircraft parking positions. **Exhibit 4.4-1** shows there are currently 72 aircraft parking positions located within the terminal complex, including 16 hardstand positions and 58 aircraft gate positions, representing narrowbody, widebody, and jumbo aircraft parking positions. The locations of aircraft hardstands are as follows:

- Airside A bag sortation building apron: 7 positions
- Airside C apron: 1 position
- Former Airside D apron: 17 parking positions, of which 8 positions are allocated for RON commercial passenger aircraft

Exhibit 4.4-2 shows that, after construction of Airside D and the North Hardstand, the total number of aircraft parking positions would increase to 93 positions: 72 aircraft gate positions and 21 hardstands.

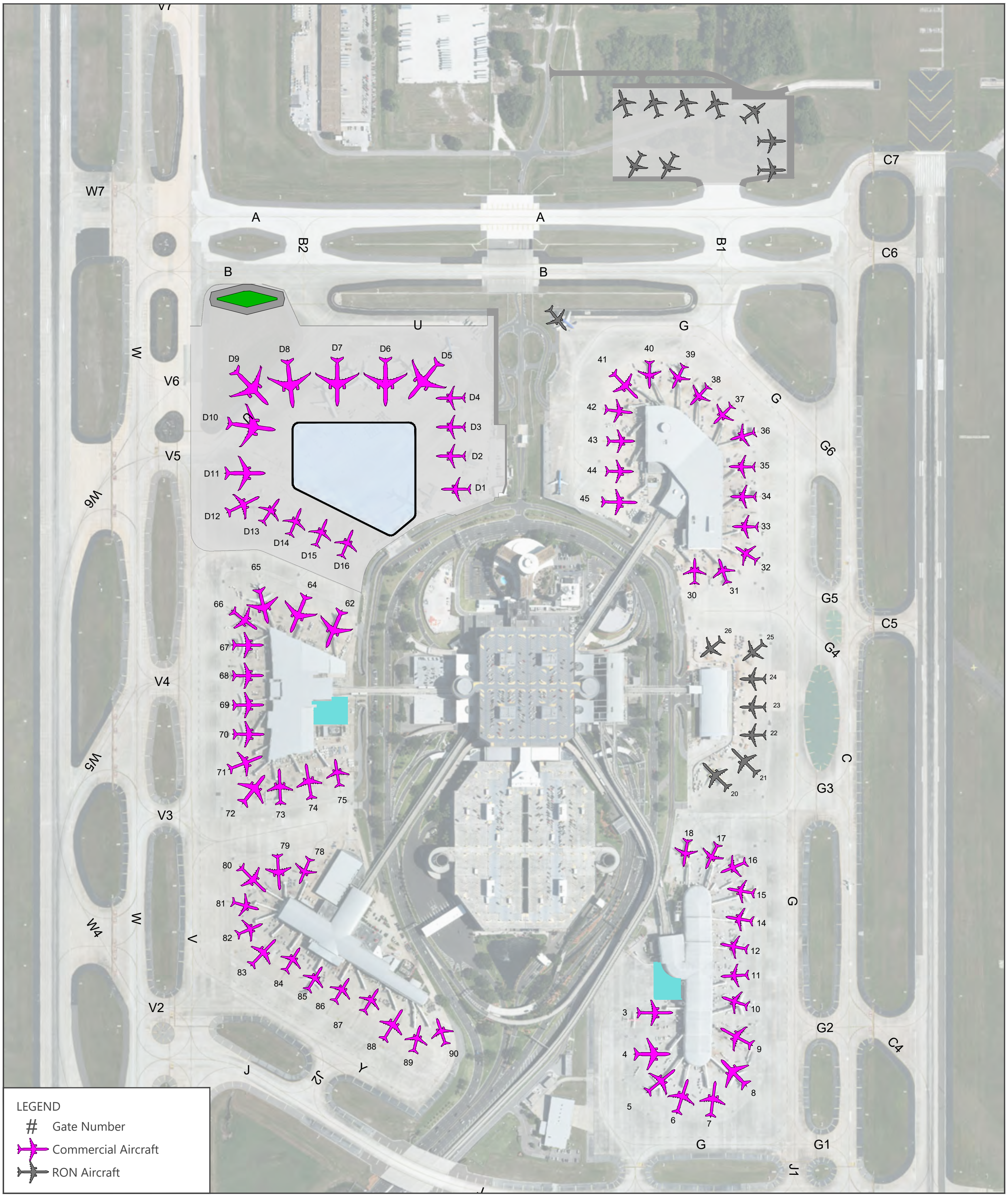


SOURCES: Martinez Geospatial, Inc., May 2022 (aerial photography);
Federal Aviation Administration (FAA), *Advisory Circular 150/5300-13B Airport Design*, March 2022.

EXHIBIT 4.4-1

AIRCRAFT PARKING POSITION
WITHOUT AIRSIDE D

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4-4 Aircraft Parking Position.dwgLayout: EX 4.4-1 Plotted: May 15, 2024, 03:24PM



SOURCES: Martinez Geospatial, Inc., May 2022 (aerial photography);
Federal Aviation Administration (FAA), *Advisory Circular 150/5300-13B Airport Design*, March 2022.

NORTH 0 700 ft

EXHIBIT 4.4-2

AIRCRAFT PARKING POSITION
WITH AIRSIDE D AND NORTH HARDSTAND

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4-4 Aircraft Parking Position.dwgLayout: EX 4.4-2 Plotted: Sep 24, 2024, 02:01PM

4.4.1 METHODOLOGY FOR AIRCRAFT PARKING REQUIREMENTS ANALYSIS

The methodology employed to generate aircraft parking requirements used the forecasts of future aviation activity and DDFSs developed to represent the operational profile of activity on a peak month average day (PMAD), as shown in **Table 4.4-1**.

TABLE 4.4-1: DESIGN DAY FLIGHT SCHEDULE

	GATE TEST (FY 2028)	PAL 1 (FY 2032)	PAL 2 (FY 2037)	PAL 3 (FY 2042)
Million Annual Passengers	27.5	30.5	34.6	38.8
Annual Passenger Airline Operations	203,000	220,500	242,800	266,000
PMAD[1] Total Airline Operations	664	726	807	885
PMAD Domestic[2] Operations	618	668	735	805
PMAD International Operations	46	58	72	80

NOTES:
FY – Fiscal Year
PAL – Planning Activity Level
PMAD – Peak Month Average Day
1 PMAD schedules are representative of an average day in March (representative of the peak month) for each corresponding demand level.
2 The domestic category includes flights to or from international airports with US Customs and Border Protection Preclearance facilities.
SOURCE: Ricondo & Associates, Inc., January 2022.

The analysis of gate requirements used Comprehensive Airport Simulation Technology (CAST) modeling software, which is designed to define requirements based on appropriate gating configurations and operational characteristics. CAST assigns aircraft gates iteratively by (1) flight origin (typically domestic or international); (2) aircraft size (apron capacity); (3) gate availability based on defined operational buffer times between flight departures and flight arrivals; and (4) airline gate assignments. The model analyzes each DDFS and assigns specific flights to specific gates, ensuring the candidate flights/aircraft can be accommodated on the assigned gates. Flights that cannot be accommodated are identified as unassigned/ungated, reflecting a requirement of an additional gate(s) or operational changes to allow the accommodation of the flight(s). Manual iterations and specific assumptions are applied to reassign flights as necessary to increase or decrease gate utilization and to reflect the unique physical and operational environment at the Airport.

4.4.1.1 METHODOLOGY FOR ANALYZING AIRCRAFT GATE REQUIREMENTS

The analysis of gate requirements maintained current preferential-use gate assignments; however, gates that were required to accommodate unassigned/ungated aircraft, and remote parking positions for tow-on/-off operations, were treated as common-use/shared positions to maximize utilization and reduce remote parking demand. Several gates at each airside were identified as "non-HCAA preassigned gates." These gates represent shared or common-use gates that were assigned only a limited number of flights to preserve sufficient capacity to accommodate flight delays caused by weather or technical issues or other off-schedule activity. The number of HCAA gates that are not preassigned per each airside are as follows:

- Airsides A, C, and D: 2 gates each airside
- Airsides E and F: 1 gate each airside

The following assumptions were also included in the analysis of aircraft gate requirements:

- Widebody aircraft are prioritized.
- For flights within the same airlines, the minimum planned time between consecutive flights on the gate is 15 minutes for all airlines.
- Aircraft are only towed off a gate if doing so will result in a reduction in the total number of active gates required and if the aircraft is in a staging capacity (i.e., no loading or unloading of passengers is occurring). Towing aircraft off and towing aircraft on the gate is 45 minutes.
- Domestic aircraft operations between different airlines must remain at the gate a minimum of 30 minutes before being towed to a remote parking position and must be returned to the gate a minimum of 30 minutes before flight departure.
- Aircraft arriving from a foreign origin (non-Precleared international arrival) must deplane at a CBP sterile gate and remain for a minimum of 1 hour before being towed to a remote parking position.
- Aircraft departing to a foreign destination (international departure) must arrive at the departure gate a minimum of 1 hour when being towed from a remote parking position.
- For planning purposes, no gate will accommodate more than 10 turns per day.[2]

4.4.1.2 METHODOLOGY FOR ANALYZING REMAIN OVERNIGHT AIRCRAFT PARKING REQUIREMENTS

Short-term RON demand is a primary driver of hardstand parking demand (along with irregular operations commonly experienced at TPA during the day). RON demand was estimated based on the baseline aviation activity forecasts that were developed as part of the MPU and the forecasts of daily aircraft operations. A review of the March and April 2022 flight schedules and actual counts for RON parking demand by HCAA staff in March and April 2022 indicate that RON parking position requirements represent between 12 and 13 percent of total daily operations. In consultation with HCAA, future RON aircraft parking position requirements were defined assuming the share of RON parking comprises 12 percent of the total airline operations of the PMAD.

4.4.2 AIRCRAFT PARKING REQUIREMENTS

The gating analysis determined the number of aircraft parking positions required to accommodate the 2028 (Gate Test) and PAL 1 through PAL 3 DDFSs (refer to **Appendix E** for the DDFSs). The number of gates required to meet demand is a primary driver for the terminal requirements in the secure airside portions of the facility. **Tables 4.4-2** through **Table 4.4-4** summarize the gate and RON aircraft parking requirements for the Airport with and without new gates provided by construction of Airside D. Gate and RON positions represent narrowbody (ADG III) equivalent aircraft parking positions. RON requirements only account for commercial passenger aircraft parking.

[2] A turn represents the number of times an aircraft arrives and subsequently departs or is towed to or from a gate.

4.4.2.1 AIRCRAFT GATE REQUIREMENTS WITHOUT AIRSIDE D

Table 4.4-2 summarizes the deficit in aircraft parking positions over the course of the planning horizon if the additional aircraft parking positions that would result from construction of Airside D do not occur.

- The shortfall in aircraft gate positions worsens from a shortfall of 8 gate positions at 27.5 MAP to a shortfall of 26 gate positions by 38.8 MAP (PAL 3).

4.4.2.2 AIRCRAFT GATE REQUIREMENTS WITH AIRSIDE D

Table 4.4-3 summarizes the surplus or deficit in aircraft parking positions over the course of the planning horizon after completion of Airside D.

- The opening of Airside D will increase total aircraft gate positions to 72 parking positions. This is sufficient to meet the requirements for total aircraft parking positions until PAL 2.

TABLE 4.4-2: AIRCRAFT GATE REQUIREMENTS WITHOUT AIRSIDE D

		AIRCRAFT PARKING REQUIREMENTS[1,2]				AIRCRAFT PARKING SURPLUS/(DEFICIT)[1,2]			
AIRSIDE	INVENTORY[1,4]	GATE TEST (2028) 27.5 MAP	PAL 1 (2032) 30.5 MAP	PAL 2 (2037) 34.6 MAP	PAL 3 (2042) 38.8 MAP	GATE TEST (2028) 27.5 MAP	PAL 1 (2032) 30.5 MAP	PAL 2 (2037) 34.6 MAP	PAL 3 (2042) 38.8 MAP
Gate Positions									
Airside A[3]	14	17	18	18	21	(-3)	(-4)	(-4)	(-7)
Airside C	16	15	18	18	20	(-1)	(-2)	(-2)	(-4)
Airside E	13	15	16	19	20	(-2)	(-3)	(-6)	(-7)
Airside F	13	**64**	17	20	21	(-2)	(-4)	(-7)	(-8)
Total	**56**	**64**	**69**	**75**	**82**	**(-8)**	**(-13)**	**(-19)**	**(-26)**

NOTES:
FY – Fiscal Year
MAP – Million Annual Passengers
PAL – Planning Activity Level
1 This refers to a narrowbody equivalent aircraft position.
2 Includes the Hillsborough County Aviation Authority's non-preassigned gates.
3 A1 and A3 are not counted as aircraft parking positions.
4 Excludes hardstands at the Airside A sortation building (7), Airside C apron parking position #27 (1), and Airside D apron (8).
SOURCE: Ricondo & Associates, Inc., July 2022.

TABLE 4.4-3: AIRCRAFT GATE REQUIREMENTS WITH AIRSIDE D

		AIRCRAFT PARKING REQUIREMENTS[1,2]				AIRCRAFT PARKING SURPLUS/(DEFICIT)[1,2]			
AIRSIDE	INVENTORY[1,4]	GATE TEST (2028) 27.5 MAP	PAL 1 (2032) 30.5 MAP	PAL 2 (2037) 34.6 MAP	PAL 3 (2042) 38.8 MAP	GATE TEST (2028) 27.5 MAP	PAL 1 (2032) 30.5 MAP	PAL 2 (2037) 34.6 MAP	PAL 3 (2042) 38.8 MAP
Gate Positions									
Airside A[3]	14	17	14	14	16	(-3)	0	0	(-2)
Airside C	16	17	16	16	18	(-1)	0	0	(-2)
Airside D	16		16[5]	16[5]	16[5]		0	0	0
Airside E	13	15	13	13	13	(-2)	0	0	0
Airside F	13	15	13	13	13	(-2)	0	0	0
Total	**72**	**64**	**72**	**72**	**76**	**(-8)**	**0**	**0**	**(-4)**

NOTES:
FY – Fiscal Year
MAP – Million Annual Passengers
PAL – Planning Activity Level
1 This refers to a narrowbody equivalent aircraft position.
2 Includes the Hillsborough County Aviation Authority's non-preassigned gates.
3 A1 and A3 are not counted as aircraft parking positions.
4 Excludes hardstands at the Airside A sortation building (7), Airside C apron parking position #27 (1), and North Hardstand (8).
5 Widebody aircraft gate requirements: FY 2028 – 5; PAL 1 – 6; PAL 2 – 6; PAL 3 – 7.
SOURCE: Ricondo & Associates, Inc., July 2022.

As shown in **Table 4.4-4**, PMAD RON aircraft parking demand is forecast to increase from 67 in 2022 to 106 by PAL 3 (2042). By PAL 3, there will be a cumulative need for 182 aircraft parking positions, specifically 13 additional hardstand positions and 4 additional gate positions.

TABLE 4.4-4: REMAIN OVERNIGHT AIRCRAFT PARKING REQUIREMENTS

	2022	2023	2024	2028	PAL 1 2032	PAL 2 2037	PAL 3 2042
Peak Month Average Day Operations	556	580	597	664	726	807	885
RON Aircraft Parking Positions[1]	67	70	72	80	88	97	106

NOTES:
1. RON demand would be served by a combination of aircraft gates and hardstand positions.
FY – Fiscal Year
PAL – Planning Activity Level
RON – Remain Overnight
SOURCES: Ricondo & Associates, Inc., June 2022; Hillsborough County Aviation Authority, May 2022.

4.5 PASSENGER TERMINALS

Gap analyses of the passenger terminal facilities, which consist of the Main Terminal and the airsides, were conducted to assess the timing of facility improvements that would be needed to accommodate increasing Airport activity, while maintaining the desired LOS throughout the MPU planning horizon. The gap analysis identifies deficiencies or surpluses, which then informs the exploration of alternative concepts to accommodate forecast passenger terminal requirements. Passenger terminal requirements described in this section are based on beneficial occupancy of Airside D by PAL 1.

4.5.1 METHODOLOGY

Terminal facility needs were derived from analysis of the DDFS that correlates to a specific PAL. A DDFS is a forecast of the commercial airline flight schedule representative of the average weekday in the peak month (AWDPM) associated with a specific PAL. The DDFS provides information on a flight-by-flight basis for time of aircraft arrival or departure, operating airline, aircraft type, domestic/international designation, points of origin and destination (airport codes), seat capacity, load factor, and originating/terminating passenger percentages. **Table 4.5-1** and **Table 4.5-2** summarize the diurnal (daily) and peak-hour activity, respectively, at each PAL, as derived from analysis of the corresponding DDFS. Peak-hour activity represents the hour in the day that has the greatest passenger activity. Peak-hour demand is generated by three types of passengers: departing, arriving-domestic, and arriving-international passengers.

TABLE 4.5-1: DESIGN DAY FLIGHT SCHEDULE – DIURNAL ACTIVITY SUMMARY

	PAL 1 2032	PAL 2 (FY 2037)	PAL 3 (FY 2042)
Departures			
Aircraft Operations	363	404	443
Seats	62,625	70,575	78,326
Enplaned Passengers	57,088	65,115	73,466
Originating Passengers	55,089	62,808	70,717
Arrivals			
Aircraft Operations	363	403	442
Seats	62,443	70,326	78,054
Deplaned Passengers	57,864	65,818	74,116
Terminating Passengers	55,922	63,618	71,677

NOTES:
FY – Fiscal Year
PAL – Planning Activity Level
MAP – Million Annual Passengers
SOURCE: Ricondo & Associates, Inc., January 2022.

TABLE 4.5-2: DESIGN DAY FLIGHT SCHEDULE – PEAK-HOUR ACTIVITY SUMMARY

	PAL 1 FY 2032	PAL 2 FY 2037	PAL 3 (2042)
Departures			
Aircraft Operations	33	38	42
Seats	5,396	6,626	7,197
Enplaned Passengers	5,034	6,182	6,816
Originating Passengers	4,945	6,031	6,612
Arrivals			
Domestic and Preclearance			
Aircraft Operations	35	36	43
Seats	6,138	6,350	7,574
Deplaned Passengers	5,660	5,924	7,173
Terminating Passengers	5,487	5,746	6,944
International			
Aircraft Operations	5	8	8
Seats	1,119	1,640	1,705
Deplaned Passengers	1,032	1,530	1,584
Terminating Passengers	1,008	1,481	1,524

NOTES:
FY – Fiscal Year
PAL – Planning Activity Level
MAP – Million Annual Passengers
SOURCE: Ricondo & Associates, Inc., January 2022.

The International Air Transport Association's (IATA) LOS framework described in the *Airport Development Reference Manual* (ADRM), Version 12, was used to assess the passenger experience within existing terminal facilities as demand increased through successive PALs. The following describes the LOS categories used in the gap analysis:

- "Optimum" (formerly IATA LOS B and LOS C) describes stable flow conditions, with acceptable or minimal delays and good or high levels of comfort.
- "Suboptimum" (formerly IATA LOS E) represents conditions with unstable passenger flows, unacceptable processing delays, and inadequate levels of comfort.
- "Under-Provided" (formerly IATA LOS F) represents conditions that are unacceptable, where passengers experience crossflows, system breakdowns, and unacceptable processing delays and levels of comfort.

For the gap analysis, an optimal LOS represents the absence of any gaps, either shortfalls or deficiencies, in the availability of equipment and operating spaces necessary to facilitate smooth passenger transactions and baggage handling functions. Additionally, it represents having an adequate amount of space to accommodate passengers, commercial programs, and tenant support functions. Conversely, facility shortcomings, described as suboptimal and under-provided, respectively, indicate a progressive degradation in the LOS experienced by passengers and limitations on airlines' ability to operate in their preferred manner.

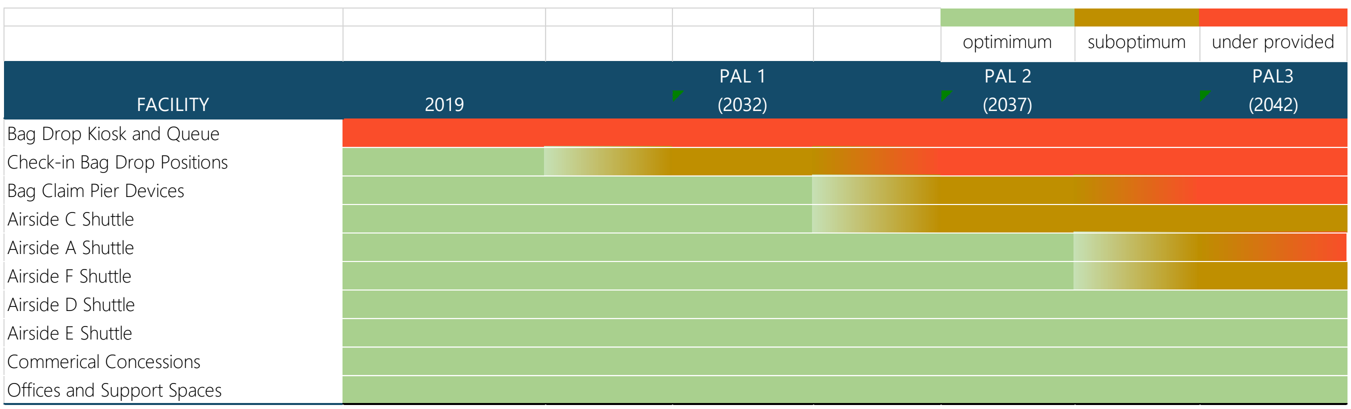
Computer modeling and static modeling were used to determine requirements for discrete processors, such as airline check-in, SSCPs, baggage handling and screening, baggage claim, restrooms, and passenger holding (waiting) spaces. Area requirements for other support functions, including airline offices, administration offices, circulation, and building systems, were derived using proportional relationships to overall space requirements.

Indicative allocations of airline locations were designated to both the Red and Blue Sides of the Main Terminal, as well as to the five airsides (including Airside D). These allocations are not listed in the MPU due to concurrent discussions between the Authority and the airlines.

4.5.2 MAIN TERMINAL FACILITY GAP ANALYSIS

Exhibit 4.5-1 illustrates the passenger LOS at specific facilities in the Main Terminal as activity levels increase from 2019 to PAL 3 (2042). The following subsections summarily discuss the results from the gap analysis regarding facilities that significantly affect passenger LOS and airline operational capabilities.

EXHIBIT 4.5-1: MAIN TERMINAL LEVELS OF SERVICE



NOTES:
FY – Fiscal Year
MAP – Million Annual Passengers
PAL – Planning Activity Level
SOURCE: Ricondo & Associates, Inc., January 2022.

4.5.2.1 AIRLINE CHECK-IN

Airline check-in consists of check-in counters, specifically where airlines accept custody of passengers' checked bags, and space in front of the check-in counters that accommodates self-service kiosks and passenger queuing areas. Calculations for future PAL check-in requirements applied the Authority's rules for assigning check-in counters. Check-in counters were assigned to each airline on either a preferred-use or per-use basis. Per-use, often referred to as shared or common-use, counters are assigned to an airline 4 hours prior to a flight's scheduled time of departure for a period of 210 minutes. Several airlines assigned preferred-use counters are allowed to "flex" into adjacent unassigned counters to accommodate peak-hour demand from check-in passengers. Future requirements for check-in counters used the ratio of peak-hour passenger demand at check-in to the number of counters that were assigned to an airline in FY 2022. The passenger LOS within airline check-in at TPA is categorized as suboptimum due to space constraints, which results in congestion and the airlines' inability to install self-service kiosks. At PAL 2, LOS declines to under-provided as check-in counter requirements increase from 182 positions to 221 positions. PAL 3 check-in requirements total 265 positions. The following are the critical issues affecting airline check-in facilities:

- The overall depth of the check-in counters is 41 feet, including 31 feet located in front of the check-in counters. The overall depth is recommended to be 50 feet to accommodate self-service kiosks and passenger queue. The shallow depth constrains the installation of self-service kiosks, which is critical to reducing the time passengers wait in queues and reducing airline staffing levels.

- General circulation corridor widths vary between 15 feet, 4 inches and 18 feet, 9 inches. The recommended width of general circulation corridors is 20 feet to 25 feet, depending on column layouts and the amount of crossflow passenger circulation.
- The layout of the outbound BHS conveyors physically limits the airside that can be served to specific check-in counter locations. The Authority's goal is to modernize the outbound BHS to be able to service all the airsides from any check-in counter location.

4.5.2.2 DOMESTIC BAG CLAIM

Domestic bag claim consists of the flat-plate baggage equipment (claim device) used to deliver checked baggage for passenger retrieval, the space adjacent to claim devices (retrieval area) where passengers wait for bags and retrieve their bags, and perimeter general circulation corridors. The passenger LOS within the domestic bag claim is categorized as optimum until PAL 2. At PAL 2, the number of domestic bag claim devices located on the Red and Blue Sides of the Main Terminal would need to increase from 7 devices to 8 devices on each side. By PAL 3, the Blue Side domestic bag claim would need to have 9 devices, or 2 additional devices more than it currently has. Importantly, this is based on airlines delivering the first checked bag under 20 minutes after flight arrival. The following are the critical issues affecting domestic bag claim:

- Each side of the Main Terminal has 7 claim devices that provide between 130 lineal feet to 150 lineal feet of presentation. This provides sufficient presentation length to support a 175-seat aircraft (e.g., Boeing 737-800). Additionally, the Blue and Red Sides both have a bag claim with one 160-lineal-foot and one 250-lineal-foot claim device to serve larger aircraft or multiple flight arrivals. New devices added at PAL 2 and PAL 3 should provide 250 feet of presentation length to simultaneously support two 737-800 aircraft. Additional planning criteria used to calculate domestic bag claim requirements include the following:
  - Percentage of passengers claiming bags: 52 percent
  - Flights at claim cannot be split between different claim devices
  - Passenger arrival times at claim device based on passengers deplaning aircraft at 18 passengers per minute followed by 10-minutes of transit time from gate to domestic bag claim
- The number of claim devices that will be required at PAL 2 and PAL 3 is critically dependent on the speed that airlines deliver bags to bag claim. For example, if the airlines' first bag delivery occurs 20 minutes to 25 minutes after flight arrival, then claim device units at PAL 2 increase on the Blue Side from 1 additional claim device to 4 additional claim devices.

4.5.2.3 SHUTTLES BETWEEN MAIN TERMINAL AND AIRSIDE FACILITIES

Table 4.5-3 summarizes the future demand for the APM shuttles used to transport passengers between the Main Terminal and the airsides. Table 4.5-3 also lists the train capacity for each system and the headway. Headway represents the time in seconds between trains arriving at a station. LOS is categorized as optimum when passengers can board the next shuttle. A suboptimum category is assigned when shuttle capacity is exceeded, resulting in some passengers having to board a subsequent train. An under-provided category is assigned when some passengers cannot board a subsequent train. The center platform of the Airside A APM station is the only platform that would experience an under-provided LOS at PAL 3 during the peak period. The peak demand occurs in the direction from the airside to the terminal at all airsides.

TABLE 4.5-3: AIRSIDE AUTOMATED PEOPLE MOVER PASSENGER DEMAND

	TRAIN HEADWAY (SECONDS)	TRAIN CAPACITY (PASSENGERS)	PASSENGER DEMAND AT STATION		
			PAL 1 (2032)	PAL 2 (2037)	PAL 3 2042)
AIRSIDE A	111	107	90	100	150[2]
AIRSIDE C	101	107	100	120[1]	125[1]
AIRSIDE D	120	120	90	100	115
AIRSIDE E	90	107	70	80	90
AIRSIDE F	92	107	90	110[1]	120[1]

NOTES:
1 passengers able to board next train (suboptimum)
2 passengers unable to board next train (under-provided)
FY – Fiscal Year
MAP – Million Annual Passengers
PAL – Planning Activity Level
SOURCE: Ricondo & Associates, Inc., January 2022.

4.5.2.4 COMMERCIAL CONCESSIONS PROGRAM

Commercial concessions programs are almost entirely located on the Transfer Level. The Transfer Level has undergone the most significant amount of expansion and modernization of all the Main Terminal levels. Following the recommendations from the 2012 MPU, the overall size of the Transfer Level was enlarged, and the areas allocated to the commercial concessions program increased to 59,530 square feet. The benchmarks and methodology from the Transportation Research Board's (TRB) Airport Cooperative Research Program (ACRP) Report 54, *Resource Manual for Airport In-Terminal Concessions*, were used to calculate the future Transfer Level concessions space requirements. Specifically, the report uses a methodology that only correlates space per 1,000 annual enplaned passengers (AEP), rather than other methodologies for correlating financial metrics. **Table 4.5-4** summarizes the calculations for the future Main Terminal commercial concessions space, including the applicable space ratio for total Airport commercial concessions per 1,000 AEP and the percentage of the total Airport commercial concessions that has been allocated to the Transfer Level. The following ACRP Report 54 ratios and factors were modified to account for the prevalence of passengers disembarking from cruise ships or ending stays at theme parks:

- Total Airport concessions space ratios listed in ACRP Report 54 were increased by 15 percent. Due to the standalone configuration of the airsides and lack of any post-security connections between airsides, this ratio and extended total Airport concessions space was only used to calculate the Transfer Level concessions space requirements.
- 30 percent, or twice the percentage listed in ACRP Report 54, of the total TPA commercial concessions was allocated to the Transfer Level, which is located pre-security.

Table 4.5-4 shows an existing surplus of space that will reduce from 25,540 square feet to 13,350 square feet by PAL 3.

TABLE 4.5-4: TRANSFER LEVEL COMMERCIAL CONCESSIONS SPACE

	EXISTING PROGRAM	(2019)	PAL 1 (2032)	PAL 2 (2037)	PAL 3 (2042)
Airport AEP Level		11,100,000	15,250,000	17,300,000	19,400,000
Total Airport Concessions Space Ratio[1] (sq ft per 1,000 AEP)		10.2	7.9	7.9	7.9
Total Airport Concessions[2] (sq ft)		113,610	121,010	137,280	153,940
Subtotal Pre-Security[3] Concessions (sq ft)	59,530	34,080	36,300	41,180	46,180
Surplus/(**Deficit**)		25,540	23,230	18,350	13,350

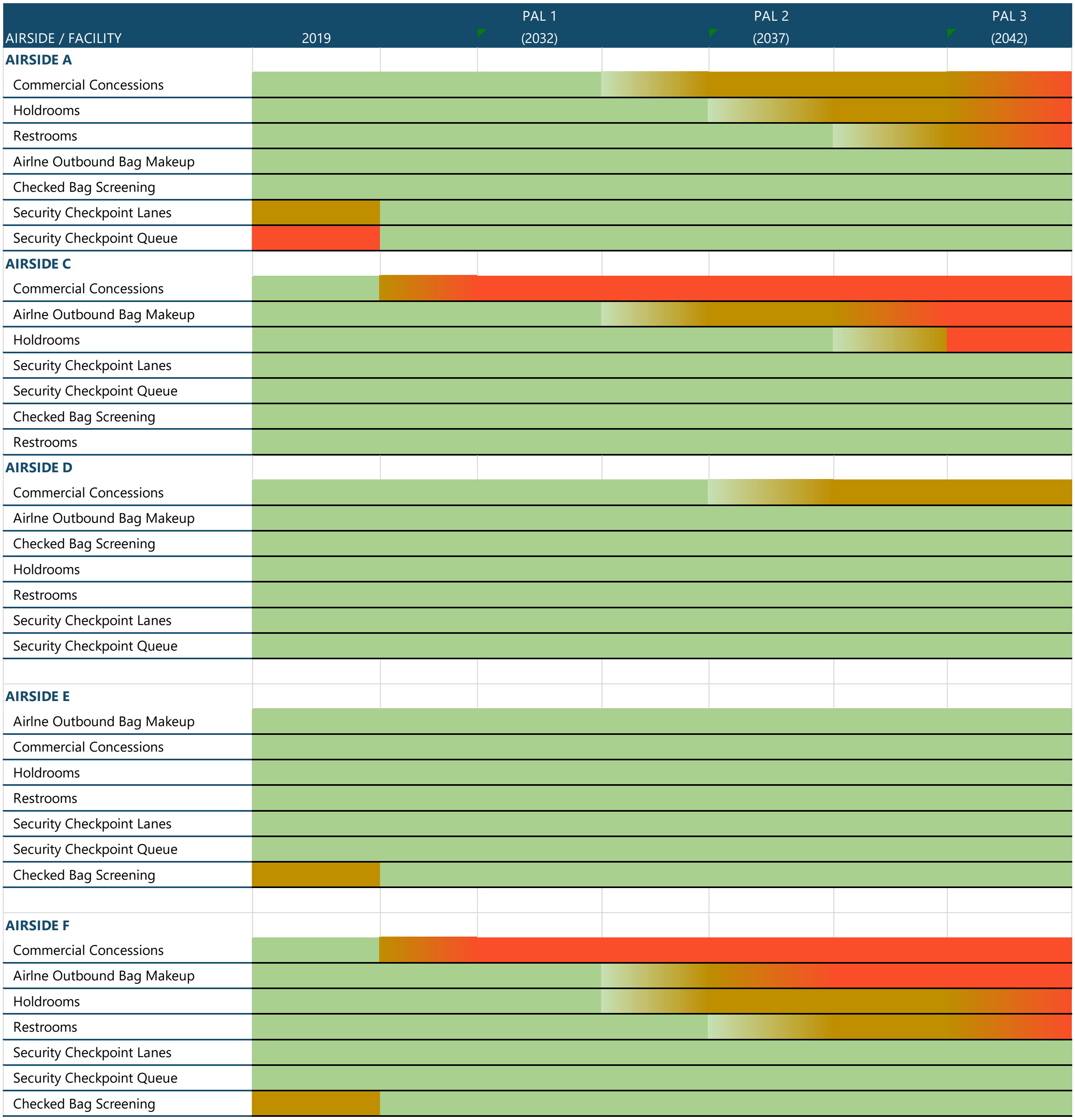
NOTES:
AEP – Annual Enplaned Passengers
FY – Fiscal Year
MAP – Million Annual Passengers
PAL – Planning Activity Level
Numbers may be rounded.
1 According to Airport Cooperative Research Program (ACRP), Report 54, Figure 5-4.
2 Total area is based on calculations of each airside, terminal, and limited basis for calculations for pre-security concessions.
3 30 percent of the total supportable concessions area as recommended in ACRP Report 54, Table 5-10.
4 Existing program square footage is based on an inventory conducted January 2022. As of May 2024, the existing concession spaces are as follows: Main Terminal – 38,201 SF, Airside A – 22,875 SF, Airside C – 25,930 SF, Airside E – 20,401 SF, Airside F – 26,121 SF.
SOURCES: Ricondo & Associates, Inc., January 2022; Airport Cooperative Research Program (ACRP), Report 54 - Resource Manual for Airport In-Terminal Concessions, Transportation Research Board, 2011

4.5.3 AIRSIDE FACILITIES GAP ANALYSIS

Exhibit 4.5-2 illustrates the passenger LOS at different airside facilities as activity levels increase from the baseline (FY 2022) to PAL 3 (FY 2042). The following summarily describes the airside facilities where LOS is categorized as under-provided:

- The Airside A facilities reach unacceptable LOS because of the airlines' operational growth, which exceeds Airside A's gate inventory, and the prevalence of a larger narrowbody aircraft, such as Airbus 321 aircraft configured for more than 200 seats. This growth creates the unacceptable LOS shown for commercial concessions, holdrooms, and restrooms. Improvements to other critical facilities, specifically the relocation of checked bag screening and airline outbound bag makeup to an adjacent standalone baggage building, referred to as the Airside A Bag Sortation Building, and a building addition to Airside A that expands the security checkpoint will maintain an optimum LOS for these functions through PAL 3. The categorization of the Airside A concessions space as under-provided by PAL 3 reflects AEP increasing from 2.7 million AEP in FY 2019 to 3.9 million AEP by PAL 3. The corresponding ratio of existing concessions space per 1,000 AEP decreases from 8.8 square feet to 6.1 square feet. The ACRP Report 54 benchmark for this ratio is 10.4 square feet.
- Airside C is shown to reach suboptimum and under-provided LOS for the following critical facilities:
  - The categorization of the Airside C concessions space as under-provided by PAL 1 reflects AEP increasing from 3.1 million AEP in FY 2019 to 4.5 million AEP by PAL 1. The corresponding ratio of existing concessions space per 1,000 AEP decreases from 7.8 square feet to 5.4 square feet. ACRP Report 54 benchmark for this ratio is 9.6 square feet.
  - By PAL 2, the required number of bag cart staging positions reaches 81 cart positions, which is based on 21 departing flights simultaneously loading bags (in flight makeup). The PAL 2 cart position requirement exceeds the inventory of 52 cart staging positions by 29 carts, which represents a 56 percent shortfall.

EXHIBIT 4.5-2: AIRSIDE LEVELS OF SERVICE



NOTES:
FY – Fiscal Year
MAP – Million Annual Passengers
PAL – Planning Activity Level
SOURCE: Ricondo & Associates, Inc., January 2022.

- By PAL 2, TSA advanced technology (AT) screening equipment used to screen passenger property will need to be replaced by full-size versions of TSA-certified checkpoint property screening systems (CPSSs). In addition to the replacement of existing AT screening equipment with CPSS equipment.

- Airside D shows a suboptimum categorization for concessions space by PAL 3, when the AEP reaches 4.0 million. The corresponding ratio of programmed concessions space per 1,000 AEP equates to 6.1 square feet. The ACRP Report 54 benchmark for this ratio is 9.6 square feet. Airside D was being designed at the same time as the MPU documentation, and opportunities were being evaluated to increase the area allocated to concessions space.
- Airside E shows all critical functions providing an optimum LOS from PAL 1 through PAL 3. This is mainly the result of indicative reassignment of airlines among the Airsides, which reduced AEP using Airside E from 2.6 million AEP to 1.7 million AEP at PAL 1. The AEP increases to 2.1 million by PAL 3. Additionally, the planned project to relocate a new checked baggage inspection system (CBIS) to the ramp level of Airside E and the expansion of the TSA security checkpoint will help to maintain an optimum LOS for these functions through PAL 3. It is noted that the new CBIS will reduce the inventory of bag cart staging positions from 54 cart positions to 48 cart positions, but this will meet PAL 3 requirements.
- Airside F shows multiple functions categorized as under-provided by PAL 3:
  - The categorization of the Airside F concessions space as under-provided by PAL 1 reflects the AEP increasing from 2.0 million AEP in FY 2019 to 3.2 million AEP by PAL 1. The corresponding ratio of existing concessions space per 1,000 AEP decreases from 12.4 square feet to 7.8 square feet. The ACRP Report 54 benchmark for this ratio is 12.4 square feet.
  - By PAL 2, the TSA AT screening equipment used to screen passenger property will need to be replaced by full-size versions of the CPSSs certified by the TSA. In addition to replacement of existing AT screening equipment with CPSS equipment, the checkpoint queue area will need to be increased by PAL 3 from 3,400 square feet to 4,050 square feet, representing a 19 percent increase in queue area.
  - Based on the PAL 3 fleet mix for airlines assigned to Airside A, holdroom capacity is categorized as under-provided due to a shortfall of 10,600 square feet otherwise needed to provide a minimum of 17.9 square feet of holdroom area per passenger to maintain optimum LOS.
  - The planned project to relocate a new CBIS to the apron level of Airside E will maintain an optimum LOS for these functions through PAL 3. However, this project does not increase the capacity of bag cart staging positions. By PAL 2, the required number of bag cart staging positions reaches 52 cart positions, which is based on 14 departing flights in flight makeup. The PAL 2 cart position requirement exceeds the inventory of 42 cart staging positions by 10 carts, which represents a 24 percent shortfall.

4.5.3.1 SECURITY SCREENING CHECKPOINTS

The SSCP requirements that are summarized in **Table 4.5-5** were developed in conformance with the TSA *Checkpoint Requirements and Planning Guide* (CRPG) and the following TPA-specific criteria:

- Passengers per hour per lane throughputs:
  - TSA-certified full-size CPSS: 175 passengers for non-Precheck lanes and 200 passengers for Precheck lanes
  - Full-size CPSS with remote resolution: 220 passengers for non-Precheck lanes and 240 passengers for Precheck lanes
- All CPSS-equipped checkpoints include maintaining one AT-equipped lane to screen property that cannot be screened using the CPSS, such as strollers.
  - Passengers per hour per lane throughput: 166 passengers

- Percentage of passengers that are Precheck eligible:
  - 35 percent of domestic passengers
  - 5 percent of international passengers
- Wait time and space LOS goals:
  - 5 minutes in queue for Precheck
  - 20 minutes in queue for non-Precheck
  - 10.8 square feet per passenger in queue

Table 4.5-6 shows the checkpoint queue area that are required based on simulation modeling conducted for each airside checkpoint equipped with the number of lanes shown in Table 4.5-5; all corresponding queue areas were sufficient to contain queues that build up from passengers waiting for screening, except the Airside F queue, which will need to be expanded from 3,400 square feet to 4,050 square feet.

TABLE 4.5-5: SECURITY SCREENING CHECKPOINT LANE REQUIREMENTS

		PAL 1 (2032)		PAL 2 (2037)		PAL 3 (2042)	
AIRSIDE	EXISTING LANES	PEAK-HOUR DEMAND (PASSENGERS)	LANES (EACH)	PEAK-HOUR DEMAND (PASSENGERS)	LANES (EACH)	PEAK-HOUR DEMAND (PASSENGERS)	LANES (EACH)
A	7[1/]	1,170	7[1/]	1,240	7[1/]	1,345	6[3/]
C	9[2/]	1,270	8[1/]	1,390	8[1/]	1,760	8[3/]
D	8[1/]	1,500	8[1/]	1,520	8[1/]	1,675	8[3/]
E	7[1/]	750	5[1/]	760	5[1/]	780	5[1/]
F	6[2/]	1,180	7[1/]	1,200	7[1/]	1,350	6[3/]

NOTES:
FY – Fiscal Year
PAL – Planning Activity Level
1 This includes a full-size checkpoint property screening system (CPSS) that includes one advanced technology (AT) lane.
2 This includes existing legacy AT equipment.
3 This includes a CPSS with remote resolution and one AT lane.
SOURCES: Ricondo & Associates, Inc., January 2022; Transportation Security Administration, *Checkpoint Requirements and Planning Guide*, September 30, 2021.

TABLE 4.5-6: SECURITY SCREENING CHECKPOINTS QUEUE SPACE

		PAL 1		PAL 2		PAL 3	
AIRSIDE	EXISTING QUEUE (SQ FT)	PEAK PASSENGERS IN QUEUE	AREA REQUIREMENT (SQ FT)	PEAK PASSENGERS IN QUEUE	AREA REQUIREMENT (SQ FT)	PEAK PASSENGERS IN QUEUE	AREA REQUIREMENT (SQ FT)
A	5,400	80	4,050	105	4,050	90	4,050
C	6,400	110	5,400	120	5,400	150	5,400
D	4,570	135	5,400	135	5,400	150	5,400
E	5,400	65	3,375	65	3,375	65	3,375
F	3,400	80	4,050	80	4,050	90	4,050

FY – Fiscal Year
PAL – Planning Activity Level
1 Full size checkpoint property screening system (CPSS) including one Advanced Technology (AT) Lane
2 CPSS with remote resolution including one Advanced Technology (AT) Lane
SOURCE: Ricondo & Associates, Inc., January 2022.

4.5.3.2 HOLDROOMS

The methodology used to calculate holdroom requirements is consistent with the IATA ADRM and Airport-specific criteria:

- Holdroom occupancy basis:
  - Enplaning passenger basis (load factor): 90 percent
  - Diversity factor[3]: 20 percent
- Seated/standing/queuing passenger distribution and LOS:
  - Seated passengers: 70 percent of enplaning passengers after application of diversity; 20.3 square feet per passenger
  - Standing passengers: 30 percent of enplaning passengers after application of diversity; 13.8 square feet per passenger
  - Boarding queue: 15 percent of enplaning passengers after application of diversity; 11.0 square feet per passenger
- Gate agent podiums and exit aisles:
  - 2 gate podiums (420 square feet) per narrowbody flight; 4 gate podiums (840 square feet) per widebody flight
  - Exit aisle: 350 square feet based on 35-foot-deep holdrooms

The areas allocated to seated and standing passengers are within the optimum LOS range that is prescribed by the IATA ADRM. **Table 4.5-7** lists the total holdroom space requirements for each airside and the corresponding passenger basis for the calculation. Summarily, holdrooms require no less than 17.9 square feet per enplaned passenger to be within the optimum LOS category. Holdroom requirements listed in Table 4.5-6 do not account for two additional gates and corresponding holdrooms that will be required at Airside A and Airside C by PAL 3.

TABLE 4.5-7: HOLDROOM SPACE REQUIREMENTS

AIRSIDE (PASSENGER BASIS)[1]	EXISTING SPACE	REQUIREMENT			SURPLUS OR (DEFICIT)		
		PAL 1 (2032)	PAL 2 (2037)	PAL 3 (2042)	PAL 1 (2032)	PAL 2 (2037)	PAL 3 (2042)
A (Passenger Basis)[2]		2,110	2,240	2,430			
Holdroom Space (sq ft)	40,070	44,421	47,158	50,230	(4,351)	(7,088)	(10,160)
C (Passenger Basis)[2]		1,450	1,587	2,010			
Holdroom Space (sq ft)	46,450	30,530	33,410	40,490	15,920	13,040	5,960
D (Passenger Basis)		2,713	2,750	3,030			
Holdroom Space (sq ft)	63,790	57,120	57,900	63,790	6,670	5,890	0
E (Passenger Basis)		1,135	1,150	1,180			
Holdroom Space (sq ft)	42,600	23,890	24,210	32,754	18,710	18,390	9,846
F (Passenger Basis)		1,700	1,730	1,950			
Holdroom Space (sq ft)	30,509	35,790	36,421	41,100	(5,281)	(5,912)	(10,591)

NOTES: FY – Fiscal Year MAP – Million Annual Passengers PAL – Planning Activity Level
1 The passenger basis equals the total enplaning passengers.
2 This does not consider two additional holdrooms required at PAL 3.
SOURCE: Ricondo & Associates, Inc., January 2022.

[3] Diversity accounts for passengers who chose to sit in adjacent holdrooms, clubs and commercial program areas

4.5.3.3 RESTROOMS

The methodology used to derive the number of male/female fixtures in the Airport's restrooms is based on ACRP Report 130, *Guidebook for Airport Terminal Restroom Planning and Design*. **Table 4.5-8** lists the plumbing fixture requirements and resulting restroom space surplus or deficiency. Summarily, the calculations resulted in 5 fixtures per narrowbody gate and 10 fixtures per widebody gate; 94 square feet of space was allocated to each fixture based on the proposed Airside C restroom modernization projects.

TABLE 4.5-8: RESTROOM FIXTURES AND SPACE REQUIREMENTS

	EXISTING		FIXTURES (COUNT) REQUIREMENT			SPACE (SQ FT) SURPLUS OR (DEFICIT)		
AIRSIDE	AREA (SQ FT)	FIXTURES (COUNT)	PAL 1 30.5 MAP (FY 2032)	PAL 2 34.6 MAP (FY 2037)	PAL 3 38.8 MAP (FY 2042)	PAL 1 30.5 MAP (FY 2032)	PAL 2 34.6 MAP (FY 2037)	PAL 3 38.8 MAP (FY 2042)
A	6,170	87	70	70	80	(410)	(410)	(1,350)
C	8,710	101	80	80	90	1,190	1,190	250
D	7,760	100	80	80	80	240	240	240
E	6,690	82	65	65	65	580	580	580
F	4,200	55	65	65	65	(1,910)	(1,910)	(1,910)

NOTES: FY – Fiscal Year; MAP – Million Annual Passengers; PAL – Planning Activity Level
SOURCE: Ricondo & Associates, Inc., January 2022.

4.5.3.4 AIRSIDE COMMERCIAL CONCESSIONS

The ACRP Report 54 benchmarks and methodology were used to calculate the future airside concessions space requirements. Specifically, the report uses a methodology that only correlates space per 1,000 AEP, rather than other methodologies for correlating financial metrics. **Table 4.5-9** summarizes the future commercial concessions space at each airside if current space allocated to concessions remains the same through PAL 3. The AEP value corresponding to each PAL used to calculate the ratio of space per 1,000 AEP is also shown.

4.5.3.5 CHECKED BAGGAGE INSPECTION SYSTEMS

The methodology used to calculate the number of EDSs comprising the CBIS supporting each airside is based on the TSA *Planning Guidelines and Design Standards* (PGDS), Version 8.0, for CBISs (March 2023). Planning criteria from the PGDS and Airport-specific criteria used in the calculations include the following:

- Checked bags per passenger: domestic/international: 0.66 / 1.5
- EDS machine throughput: 670 bags per hour each
- Redundancy: *n*+1, where *n* represents the number of required devices

As shown in **Table 4.5-10**, no additional EDS machines are required throughout the planning horizon.

4.5.3.6 AIRLINE OUTBOUND BAG MAKEUP

Table 4.5-11 lists the number of existing baggage cart staging positions at each airside and compares it to future cart staging positions. Criteria used in the analysis include the following:

- Carts per narrowbody aircraft:
  - 3 carts for Airbus 320 or Boeing 737-800
  - 4 carts for Airbus 321 or Boeing 737-900
  - 5 carts for aircraft having more than 200 seats
- Carts per widebody aircraft:
  - 8 for Deutsche Lufthansa/Eurowings and Edelweiss Air
  - 7 to 10 for British Airways
- Flight makeup durations:
  - 150 minutes to 30 minutes before scheduled time of departure for domestic – 100 percent carts staged
  - 180 minutes to 45 minutes before scheduled time of departure for international – 75 percent carts staged

TABLE 4.5-9: AIRSIDE COMMERCIAL CONCESSIONS SPACE

	EXISTING PROGRAM[3]	(2019)	PAL 1 (2032)	PAL 2 (2037)	PAL 3 (2042)
AIRSIDE A					
AEP Value		2,700,000	2,900,000	3,400,000	3,900,000
Concession Space Ratio[1]		8.8	8.8	8.8	8.8
Airside Concessions (sq ft)	22,870	22,870	25,640	30,060	34,480
Surplus/(Deficit) (sq ft)			(1,770)	(6,190)	(10,610)
Surplus/(Deficit) (percent of existing)			(7%)	(26%)	(44%)
AIRSIDE C					
AEP Value		3,100,000	4,500,000	5,100,00	5,700,000
Concession Space Ratio[1]		7.8	7.8	7.8	7.8
Airside Concessions (sq ft)	24,300	24,300	35,270	39,980	44,680
Surplus/(Deficit) (sq ft)			(10,970)	(15,680)	(20,380)
Surplus/(Deficit) (percent of existing)			(45%)	(65%)	(84%)
AIRSIDE D					
AEP Value			3,100,000	3,600,000	4,000,000
Concession Space Ratio[2]			10.4	10.4	9.6
Airside Concessions (sq ft)	29,500		32,240	37,440	38,400
Surplus/(Deficit) (sq ft)			(2,740)	(7,940)	(8,900)
Surplus/(Deficit) (percent of existing)			(9%)	(27%)	(30%)
AIRSIDE E					
AEP Value		2,600,000	1,700,000	1,800,000	2,100,000
Concession Space Ratio[1]		7.8	7.8	7.8	7.8
Airside Concessions (sq ft)	20,400	20,400	13,270	14,050	16,400
Surplus/(Deficit) (sq ft)			7,030	6,250	3,900
Surplus/(Deficit) (percent of existing)			35%	31%	19%
AIRSIDE F					
AEP Value		2,000,000	3,200,000	3,600,000	4,100,000
Concession Space Ratio[2]		12.0	12.4	12.4	12.0
Airside Concessions (sq ft)	24,870	24,000	39,680	44,640	49,2000
Surplus/(Deficit) (sq ft)			(14,810)	(19,770)	(24,330)
Surplus/(Deficit) (percent of existing)			(60%)	(79%)	(98%)

NOTES:
FY – Fiscal Year
MAP – Million Annual Passengers
PAL – Planning Activity Level
AEP – Annual Enplaned Passengers
Numbers may be rounded.
1 This uses the FY 2019 ratio of space per 1,000 AEP.
2 This is based on the Airport Cooperative Research Program, Report 54, Figure 5-4, space ratios.
3 Existing program square footage is based on an inventory conducted January 2022. As of May 2024, the existing concession spaces are as follows: Airside A – 22,875 SF, Airside C – 25,930 SF, Airside E – 20,401 SF, Airside F – 26,121 SF.

SOURCES: Airport Research Cooperative Program, Report 54, Resource Manual for Airport In-Terminal Concessions; Ricondo & Associates, Inc., January 2022. Hillsborough County Aviation Authority, April 2024.

TABLE 4.5-10: BAGGAGE SCREENING EQUIPMENT REQUIREMENTS

AIRSIDE	EXISTING UNITS	PAL 1 (2032)		PAL 2 (2037)		PAL 3 (2042)	
		PEAK DEMAND[2] (BAGS)	DEVICES[3] (EACH)	PEAK DEMAND[2] (BAGS)	DEVICES[3] (EACH)	PEAK DEMAND[2] (BAGS)	DEVICES[3] (EACH)
A	3	160	3	170	3	200	3
C	4	190	3	170	3	180	3
D	4[1]	300	3	280	3	320	3
E	3[1]	100	2	100	2	100	2
F	3[1]	170	3	150	3	160	3

NOTES:
FY – Fiscal Year
PAL – Planning Activity Level
1 Based on HCAA current capital program.
2 A peak 10-minute bag demand with the Transportation Security Administration's surge factor was applied.
3 This includes a redundant explosive detection system (EDS) machine (n+1).
SOURCE: Ricondo & Associates, Inc., January 2022.

TABLE 4.5-11: BAGGAGE CART STAGING POSITIONS

AIRSIDE	EXISTING CART POSITIONS	PAL 1 (2032)		PAL 2 (2037)		PAL 3 (2042)	
		FLIGHTS IN MAKEUP	PEAK CARTS	FLIGHTS IN MAKEUP	PEAK CARTS	FLIGHTS IN MAKEUP	PEAK CARTS
A	60	13	41	14	50	17	54
C	52	21	75	21	81	24	84
D	96	15	76	15	78	16	91
E	48[1]	10	31	11	41	11	43
F	42	13	49	14	52	15	57

NOTES:
FY – Fiscal Year
PAL – Planning Activity Level
1 The planned checked baggage inspection system (CBIS) reduces the Airside E cart staging positions from 52 to 48 cart positions.
2 A peak 10-minute bag demand with the Transportation Security Administration's surge factor was applied.
3 This includes a redundant explosive detection system (EDS) machine (n+1).
SOURCE: Ricondo & Associates, Inc., January 2022.

4.6 LANDSIDE FACILITIES

4.6.1 ROADWAYS AND CURBSIDES

A traffic simulation model was constructed using Vissim software, which provides a three-dimensional simulation of vehicular conditions and has built-in capabilities to properly model modes of travel and roadway characteristics unique to airports, such as the terminal curbside roadways. The study area for the simulation modeling that was completed as part of this MPU comprises George J. Bean Parkway, the terminal, curbside roads, roadways within the SkyCenter area, and the future SkyCenter commercial programs, as illustrated on **Exhibit 4.6-1**.

4.6.1.1 EXISTING TRAFFIC CONDITIONS

This section evaluates the existing traffic conditions throughout the TPA campus.

Data Collection

A comprehensive data collection effort was conducted throughout the TPA campus, including the terminal area, curbside roads, the SkyCenter area, International Plaza, and Air Cargo Road. The traffic count areas are illustrated on **Exhibit 4.6-2**.

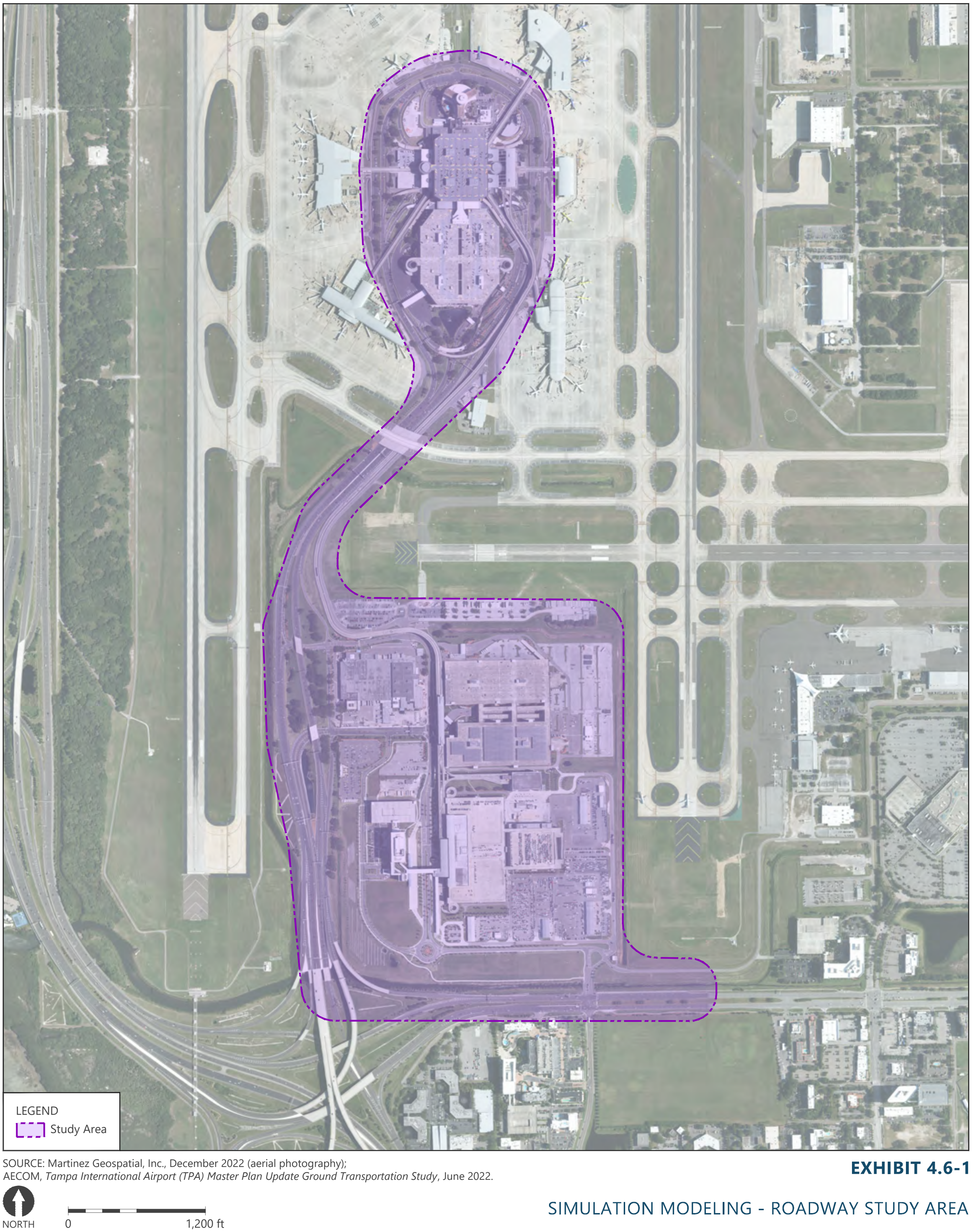
According to historical monthly TPA enplaned passengers, March was the peak month; therefore, March 2022 was selected for the traffic counts to capture the highest traffic volumes. In total, for the 7-day tube counts, 48 counts were collected over 3 weeks. The first week was from March 11 to March 17, 2022; the second week was from March 22 to March 28, 2022; and the third week was from April 1 to April 7, 2022. The collected traffic counts reflected the average day peak month (ADPM) conditions. To supplement tube counts and better understand traffic conditions, Miovision camera videos were recorded for 24 hours at 10 intersections from March 11 to March 28, 2022. According to adjacent approach counts, the peak hours of intersections varied extensively from 5:15 to 6:15 a.m. and 9:30 to10:30 p.m. Turning movement counts (TMCs) during individual peak hours were compiled for the 10 intersections. **Exhibit 4.6-3** through **Exhibit 4.6-6** illustrate the locations of approach counts and TMCs in each area.

Additionally, the HCAA obtained curbside videos that were recorded by security cameras in March 2022. Traffic was recorded at the Blue curbside roads from July 1 to July 4, 2022, to better understand the traffic congestion and queuing issue during Independence Day, one of the busiest holidays.

Multiple field reviews were conducted throughout the study period to collect posted speed limits and lane geometry information during construction, observe signal timings and traffic conditions, and verify the accuracy of tube counters.

Existing Traffic Volumes

Exhibit 4.6-3 through Exhibit 4.6-6 show the average daily traffic counts, and peak-hour volumes collected during various time periods. **Exhibit 4.6-7** shows the peak-hour TMCs for the SkyCenter area. Traffic volumes displayed on these exhibits reflect traffic conditions for the ADPM conditions. Peak hours of approach counts and TMCs vary extensively, as identified on **Table 4.6-1** and **Table 4.6-2**. For conservative purposes, traffic volumes during each individual peak hour were used for the traffic analyses to account for the worst traffic conditions.

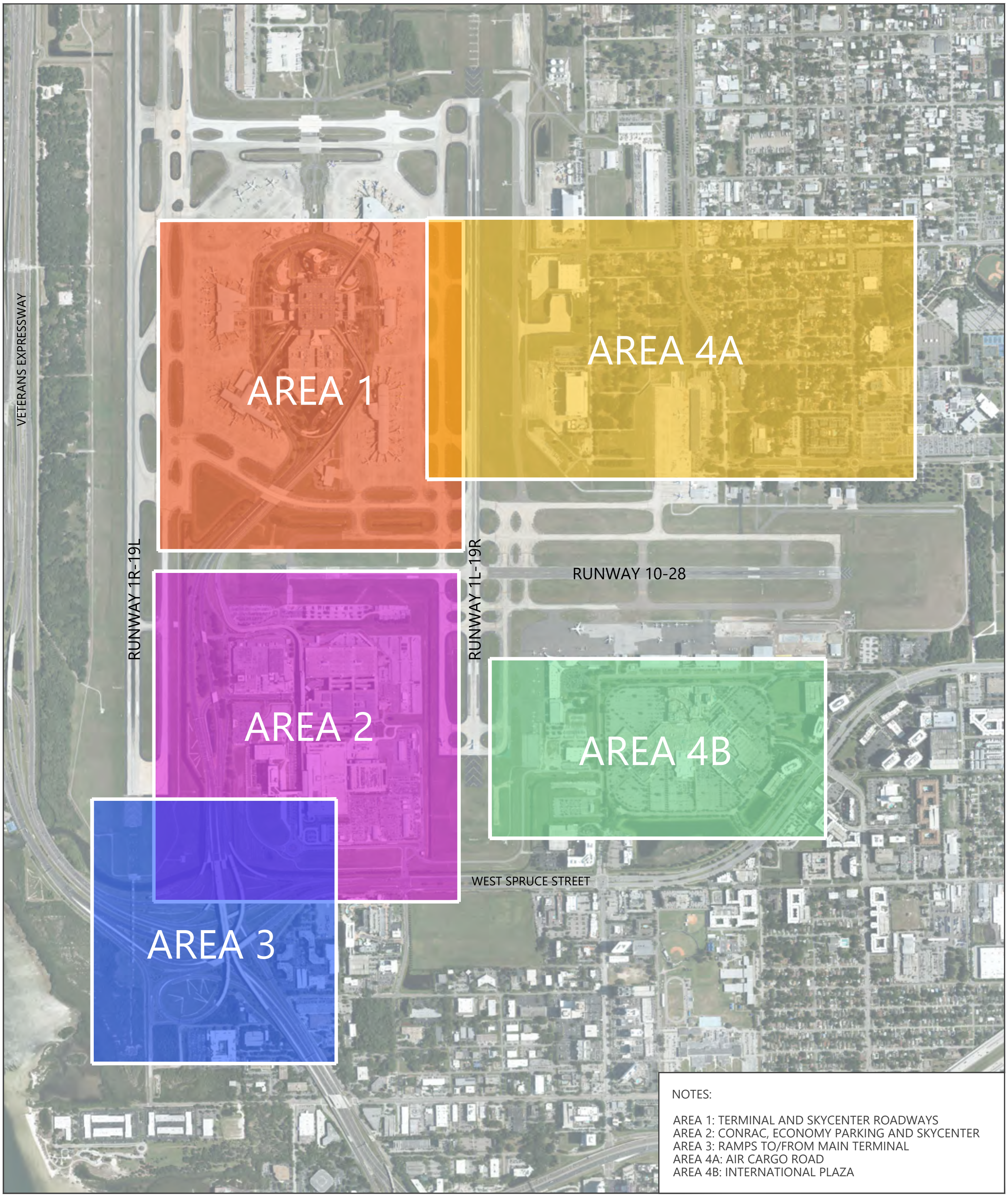


SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography);
AECOM, *Tampa International Airport (TPA) Master Plan Update Ground Transportation Study*, June 2022.

EXHIBIT 4.6-1

SIMULATION MODELING - ROADWAY STUDY AREA

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6 Traffic Count Exhibits.dwgLayout: 3 Plotted: May 15, 2024, 03:25PM



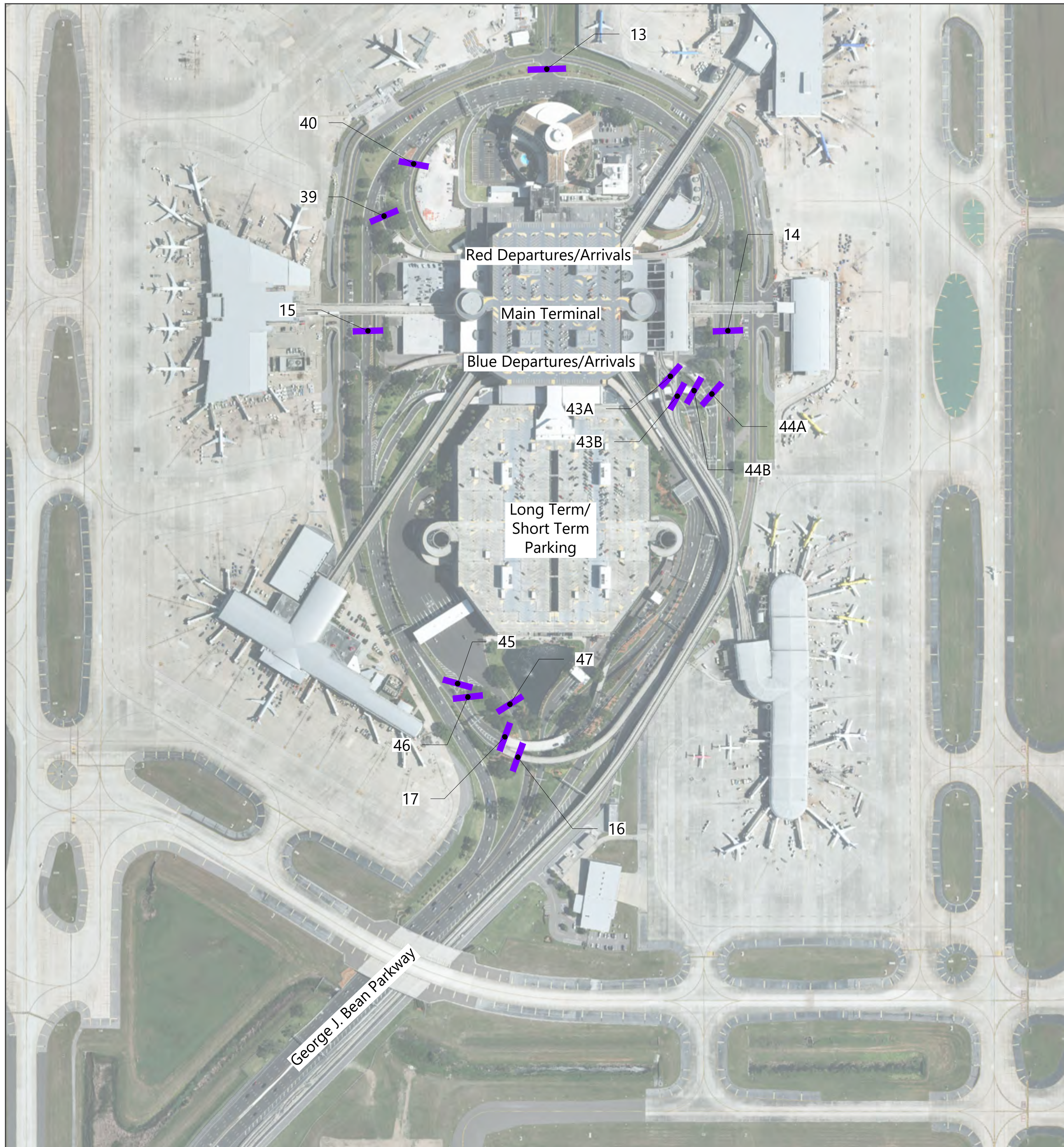
SOURCES: Martinez Geospatial, Inc., May 2022 (aerial photography); Ricondo & Associates, Inc., September 2023.

NORTH 0 1,800 ft

EXHIBIT 4.6-2

TRAFFIC COUNT AREAS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\4.6-2 Traffic Count Areas.dwgLayout: 8.5x11P Plotted: May 15, 2024, 03:26PM



Map Number	Roadway		2022 Average Daily Traffic	2022 Peak Hour Traffic Volume
13	Access Rd to Airport Service/Bessie Coleman Blvd	North of Hotel/Terminal	2,300	140
14	GB(1) NB Pkwy	North of Blue Entrance	13,400	770
15	GB SB Pkwy	South of Red Arrival and Departure Entrance	12,800	790
16	Ramp back to Red		1,800	120
17	Airport Recirculation ramp		6,300	430
39	Red Departure Entrance		5,600	440
40	Red Arrival Entrance		7,400	500
43A	Blue Arrival Full-Service Ramp		9,800	790
43B	Blue Arrival Express Ramp		2,200	180
44A	Blue Departure Full-Service Ramp		7,200	690
44B	Blue Departure Express Ramp		2,300	220
45	Short exit from Pay Parking		300	20
46	Long exit from Pay Parking to Recirculation Ramp		600	40
47	Exit Pay Parking to GB Southbound		6,200	450

NOTES:
GB : George Bean Parkway
NB: Northbound; SB: Southbound; EB: Eastbound; and WB: Westbound

LEGEND
Approach Count

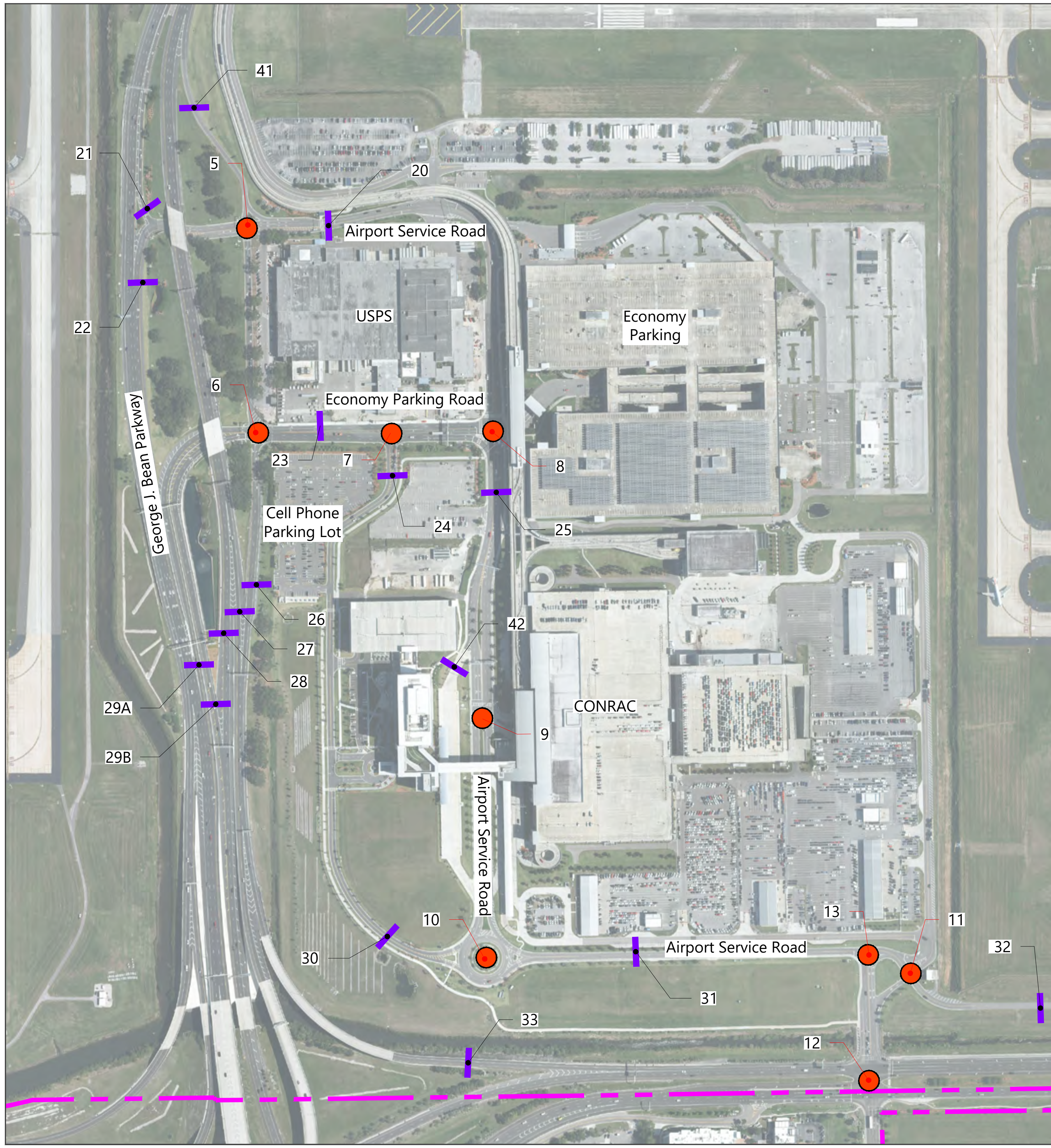
SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography); AECOM, *Tampa International Airport (TPA) Master Plan Update Ground Transportation Study*, June 2022.

EXHIBIT 4.6-3

AREA 1 - TRAFFIC COUNT LOCATIONS AND 2022 AVERAGE DAILY AND PEAK HOUR TRAFFIC VOLUMES

NORTH 0 500 ft

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6 Traffic Count Exhibitsv2.dwgLayout: 4.6-3 Plotted: May 15, 2024, 03:27PM



Map Number	Roadway		2022 Average Daily Traffic	2022 Peak Hour Traffic Volume
20	Airport Service Rd	North side of Post Office	11,500	700
21	GB SB ramp to Airport Service Rd EB		2,600	180
22	Airport Service Rd WB Ramp to GB SB		5,600	380
23	Economy Parking Rd	South side of Post Office	14,500	940
24	Cell Phone Access/Sky Center	South of Economy Parking Rd	9,000	620
25	Airport Service Rd	South of Economy Parking Rd	13,500	1,000
26	NB Bessie Coleman Blvd (one-way)	South of Economy Parking Rd	5,000	310
27	NB to terminal short-term ramp		12,700	670
28	NB George Bean Pkwy		17,400	1,150
29A	GB SB from Economy Parking WB	South of Economy Parking Rd	4,500	360
29B	GB NB to Economy Parking EB	South of Economy Parking Rd	6,700	420
30	Cell Phone Access/Sky Center	West of Roundabout	500	40
31	Airport Service Rd	East of Roundabout	4,600	340
32	Airport Service Rd	East of Obrien St	1,200	140
33	Spruce St to GB NB	From Spruce St west of Obrien St	5,900	380
41	Bessie Coleman to GB NB		4,800	350
42	SkyCenter Dropoff From of Building		500	50

NOTES:
GB : George Bean Parkway
NB: Northbound; SB: Southbound; EB: Eastbound; and WB: Westbound

LEGEND
Approach Count
Turning Movement Count
Airport Property Boundary

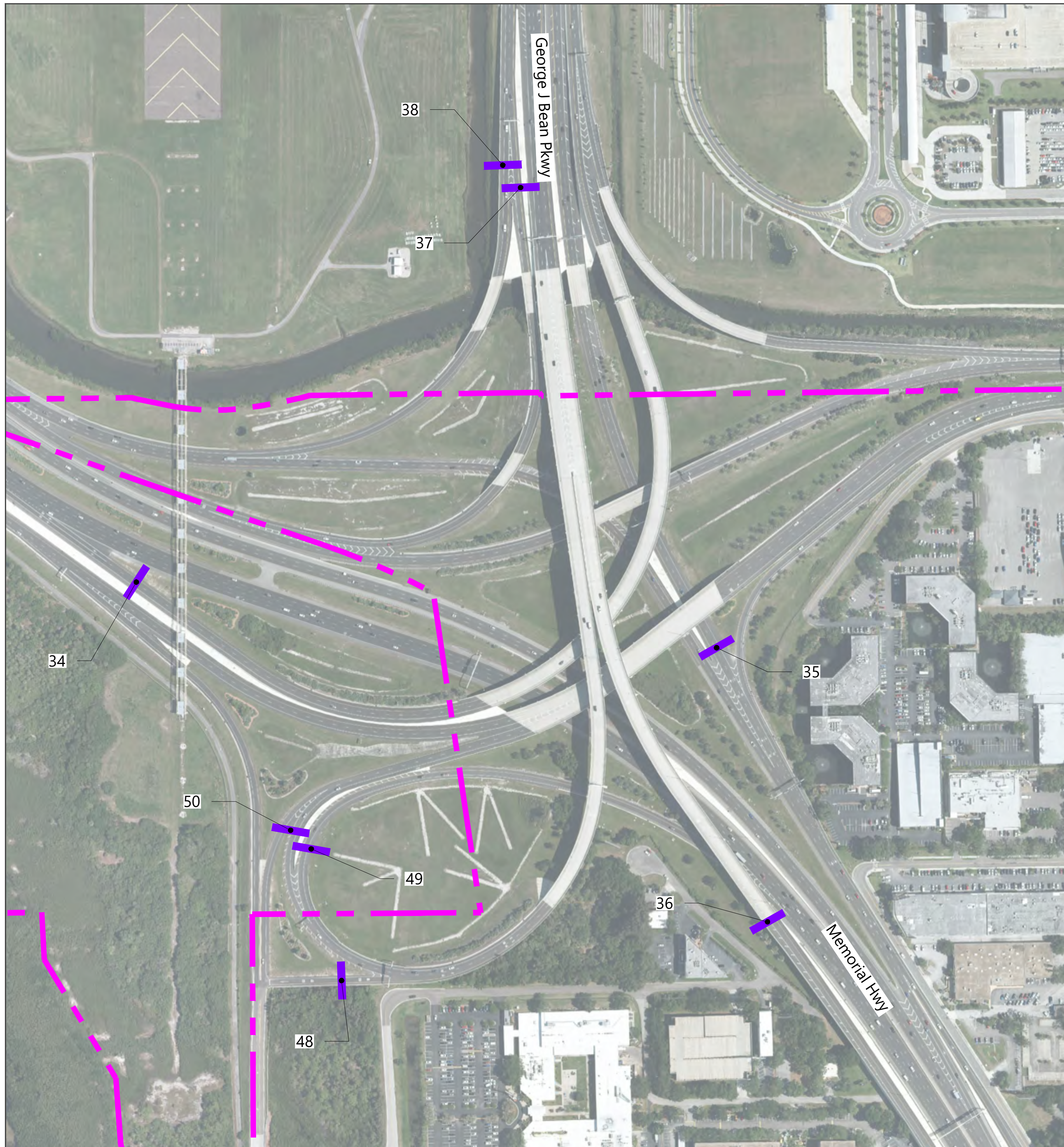
SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography); AECOM, *Tampa International Airport (TPA) Master Plan Update Ground Transportation Study*, June 2022.

NORTH 0 500 ft

EXHIBIT 4.6-4

AREA 2 - TRAFFIC COUNT LOCATIONS AND 2022 AVERAGE DAILY AND PEAK HOUR TRAFFIC VOLUMES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6 Traffic Count Exhibitsv2.dwgLayout: 4.6-4 Plotted: May 15, 2024, 03:32PM



Map Number	Roadway		2022 Average Daily Traffic	2022 Peak Hour Traffic Volume
34	GB NB Ramp from SR 60	From SR 60 EB	11,200	670
35	GB NB Ramp	To Tampa Int'l	22,800	1,480
36	GB SB Ramp to I-275 SB	To Pinellas County	10,000	640
37	GB SB exit Ramp	To North Veterans Expressway	3,400	220
38	GB SB exit Ramp	To West Courtney Campbell Causeway	8,800	560
48	GB SB Exit to Cypress St (O'Brien St) Ramp		1,100	80
49	GB SB Exit Ramp to I-275 NB		14,000	840
50	GB SB Exit Ramp to Spruce St		3,300	240

NOTES:
GB : George Bean Parkway
NB: Northbound; SB: Southbound; EB: Eastbound; and WB: Westbound

LEGEND
Approach Count
Turning Movement Count
Airport Property Boundary

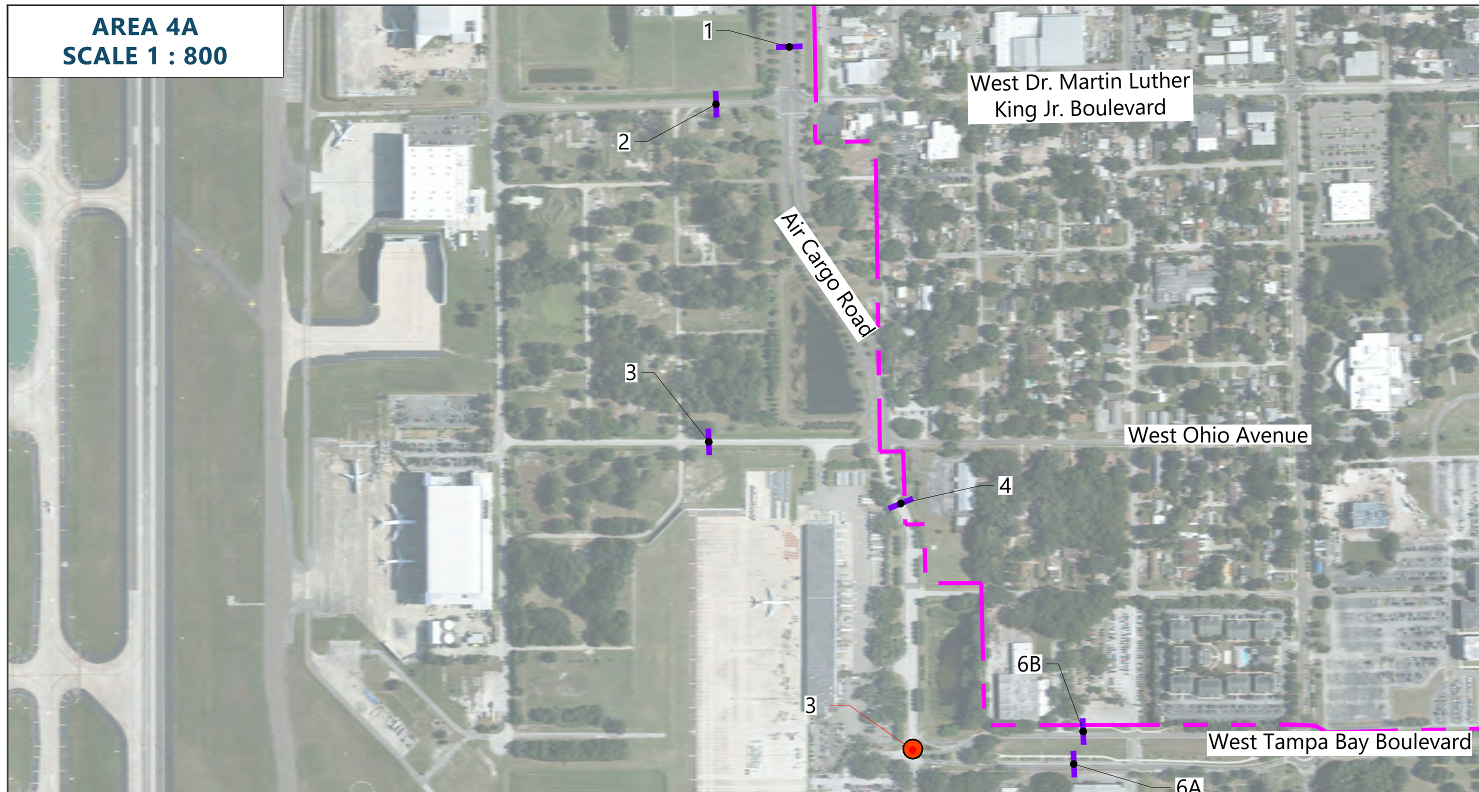
SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography); AECOM, *Tampa International Airport (TPA) Master Plan Update Ground Transportation Study*, June 2022.

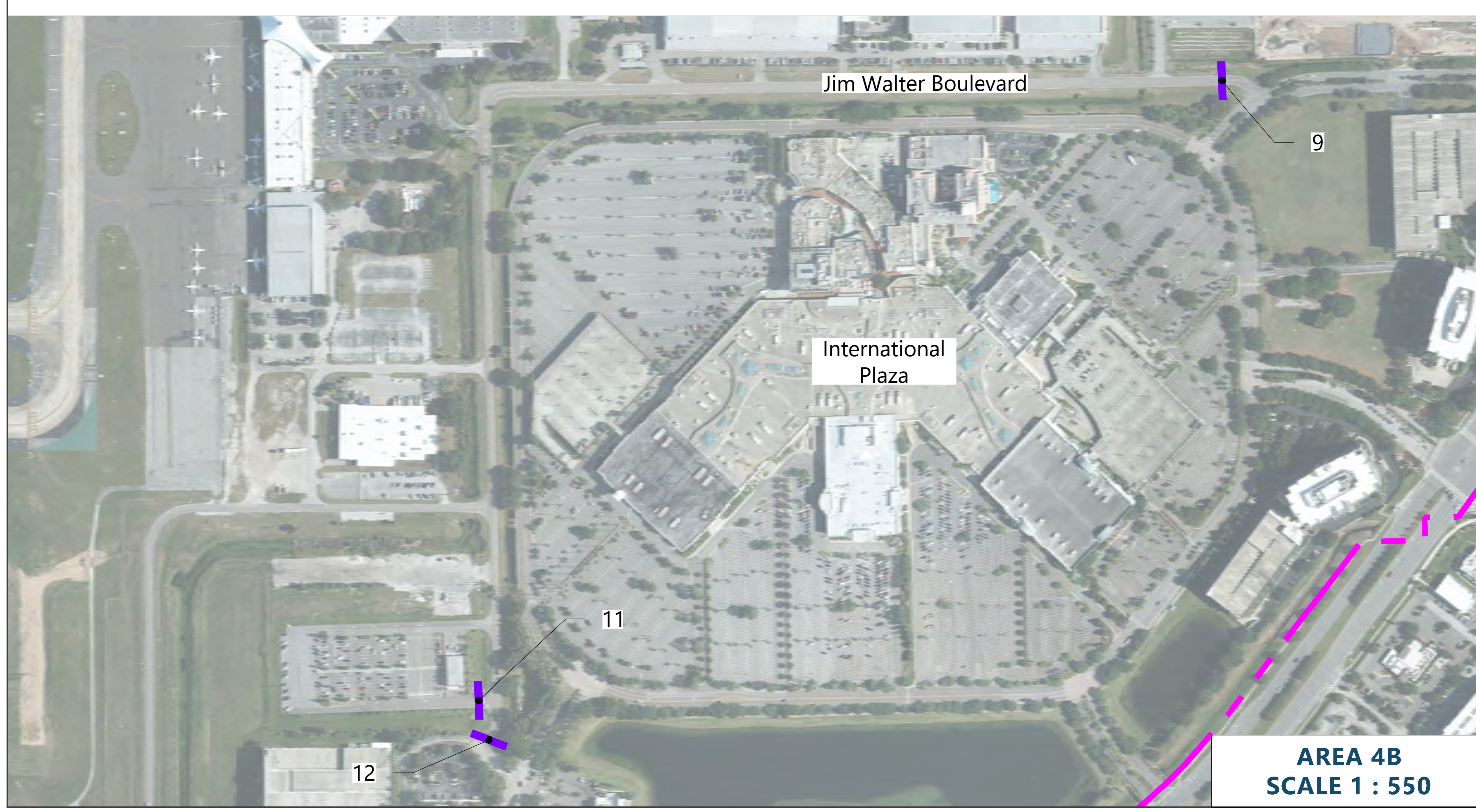
NORTH 0 400 ft

EXHIBIT 4.6-5

AREA 3 - TRAFFIC COUNT LOCATIONS AND 2022 AVERAGE DAILY AND PEAK HOUR TRAFFIC VOLUMES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6 Traffic Count Exhibitsv2.dwgLayout: 4.6-5 Plotted: May 15, 2024, 03:33PM





Map Number	Roadway		2022 Average Daily Traffic	2022 Peak Hour Traffic Volume
1	Air Cargo Rd	North of MLK	11,300	1,080
2	MLK JR Blvd	West of Air Cargo Rd	1,000	150
3	W Ohio Ave	West of Air Cargo Rd	600	140
4	Air Cargo Rd	South of W Ohio Ave	5,400	520
6A	W Tampa Bay Blvd. EB	East of Air Cargo Rd	3,300	410
6B	W Tampa Bay Blvd. WB	East of Air Cargo Rd	2,200	200
9	Jim Walter Blvd	West of Mall Driveway	1,000	100
11	Exit from Uber/Lyft Lot	West of Westshore Blvd	1,600	120
12	Westshore Blvd	North of Office Building Entrance	3,400	230

NOTES:
GB : George Bean Parkway
NB: Northbound; SB: Southbound; EB: Eastbound; and WB: Westbound

LEGEND
Approach Count
Turning Movement Count
Airport Property Boundary

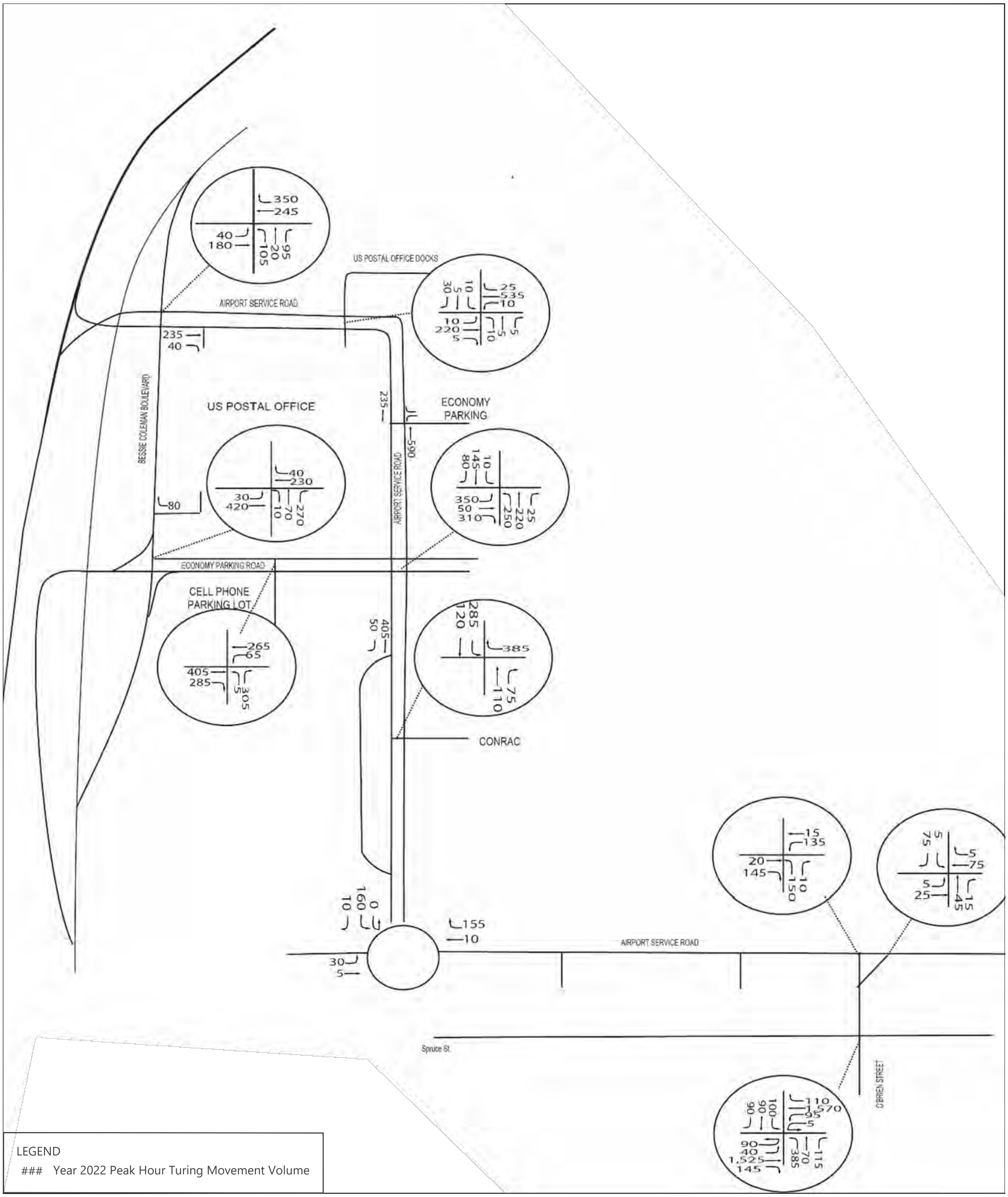
SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography); AECOM, *Tampa International Airport (TPA) Master Plan Update Ground Transportation Study*, June 2022.

NORTH 0 Not To Scale

EXHIBIT 4.6-6

AREAS 4A & 4B - TRAFFIC COUNT LOCATIONS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6 Traffic Count Exhibitsv2.dwgLayout: 4.6-6 Plotted: May 15, 2024, 03:33PM



SOURCE: AECOM, *Tampa International Airport (TPA) Master Plan Update Ground Transportation Study*, June 2022.

NORTH 0 Not To Scale

EXHIBIT 4.6-7

2022 TURNING MOVEMENT VOLUMES FOR SKYCENTER AREA

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6-6 2022 Turning Movement Volume.dwgLayout: 3 Plotted: May 15, 2024, 03:34PM

TABLE 4.6-1 (1 OF 2): SUMMARIZED APPROACH COUNTS

MAP NUMBER	ROADWAY	ROADWAY	AVERAGE DAILY TRAFFIC (VEHICLES)	PEAK HOUR	HOURLY TRAFFIC (VEHICLES)
13	Airport Access Rd to Airport Service Rd / Bessie Coleman Blvd	North of hotel/terminal	2,300	6:00 A.M.	140
14	GB Pkwy NB	North of Blue Side entrance	13,400	3:00 P.M.	770
15	GB Pkwy SB	South of Red Arrivals and Departures entrance	12,800	3:00 P.M.	790
16	Ramp back to Red Side		1,800	10:00 A.M.	120
17	Airport recirculation ramp		6,300	6:30 P.M.	430
21	GB Pkwy SB ramp to Airport Service Rd EB		2,600	9:30 A.M.	180
22	Airport Service Rd WB ramp to GB Pkwy SB		5,600	2:30 P.M.	380
29B	GB Pkwy NB to Economy Parking EB	South of Economy Parking Rd	6,700	9:00 A.M.	420
29A	GB Pkwy SB from Economy Parking WB	South of Economy Parking Rd	4,500	11:45 A.M.	360
33	Spruce St to GB Pkwy NB	From Spruce St W of Obrien St	5,900	6:00 P.M.	380
34	GB Pkwy NB ramp from State Road (SR) 60	From SR 60 EB	11,200	6:30 A.M.	670
35	GB Pkwy NB ramp	To the Airport	22,800	8:45 A.M.	1,480
36	GB Pkwy SB ramp to Interstate 275 (I-275) SB	To Pinellas County	10,000	3:00 P.M.	640
37	GB Pkwy SB exit ramp	To North Veterans Expwy	3,400	3:00 P.M.	220
38	GB Pkwy SB exit ramp	To West Courtney Campbell Causeway	8,800	3:30 P.M.	560
39	Red Departures entrance		5,600	6:45 A.M.	440
40	Red Arrivals entrance		7,400	3:30 P.M.	500
41	Bessie Coleman Blvd to GB Pkwy NB		4,800	6:45 P.M.	350
43A	Blue Arrivals full-service ramp		9,800	6:45 P.M.	790
43B	Blue Arrivals express ramp		2,200	6:30 P.M.	180
44A	Blue Departures full-service ramp		7,200	5:15 A.M.	690
44B	Blue Departures express ramp		2,300	5:15 A.M.	220
45	Short exit from pay parking		300	1:15 P.M.	20
46	Long exit from pay parking to recirculation ramp		600	6:30 P.M.	40
47	Exit pay parking to GB Pkwy SB		6,200	6:45 P.M.	450
48	GB Pkwy SB exit to Cypress St (O'Brien St) ramp		1,100	5:15 P.M.	80
49	GB Pkwy SB exit ramp to I-275 NB		14,000	6:45 P.M.	840
50	GB Pkwy SB exit ramp to Spruce St		3,300	5:00 P.M.	240
9	Jim Walter Blvd	West of mall driveway	1,000	4:00 P.M.	100
11	Exit from Uber/Lyft Lot	West of Westshore Blvd	1,600	9:30 P.M.	120
12	Westshore Blvd	North of office building entrance	3,400	6:30 P.M.	230
20	Airport Service Rd	North side of post office	11,500	3:00 P.M.	700
23	Economy Parking Rd	South side of post office	14,500	1:00 P.M.	940

TABLE 4.6-1 (2 OF 2): SUMMARIZED APPROACH COUNTS

MAP NUMBER	ROADWAY	ROADWAY	AVERAGE DAILY TRAFFIC (VEHICLES)	PEAK HOUR	HOURLY TRAFFIC (VEHICLES)
24	Cell Phone Access / SkyCenter	South of Economy Parking Rd	9,000	6:30 P.M.	620
25	Airport Service Rd	South of Economy Parking Rd	13,500	12:45 P.M.	1,000
26	Bessie Coleman Blvd NB (one-way)	South of Economy Parking Rd	5,000	3:45 P.M.	310
27	NB to terminal short-term ramp		12,700	2:30 P.M.	670
28	GB Pkwy NB		17,400	5:15 A.M.	1,150
30	Cell Phone Access / SkyCenter	West of Roundabout	500	12:00 P.M.	40
31	Airport Service Rd	East of Roundabout	4,600	11:45 A.M.	340
32	Airport Service Rd	East of Obrien St	1,200	4:00 P.M.	140
42	SkyCenter drop-off from building		500	8:00 A.M.	50
1	Air Cargo Rd	North of MLK Blvd	11,300	7:30 A.M.	1,080
2	MLK Blvd	West of Air Cargo Rd	1,000	2:45 P.M.	150
3	W Ohio Ave	West of Air Cargo Rd	600	3:00 P.M.	140
4	Air Cargo Rd	South of W Ohio Ave	5,400	7:45 A.M.	520
6A	W Tampa Bay Blvd EB	East of Air Cargo Rd	3,300	7:30 A.M.	410
6B	W Tampa Bay Blvd WB	East of Air Cargo Rd	2,200	4:30 P.M.	

NOTES: GB – George J. Bean Parkway; MLK – Dr. Martin Luther King, Jr., Boulevard; NB – Northbound; SB – Southbound; EB – Eastbound; WB – Westbound
SOURCE: AECOM, June 2022.

TABLE 4.6-2: PEAK-HOUR TURNING MOVEMENT COUNTS

MAP NUMBER	LOCATION	DATE	DAY	PEAK HOURS
TMC 3	Air Cargo Rd at W Tampa Bay Blvd	3/22/2022	Tuesday	7:30 A.M. – 9:30 A.M.
TMC 5	Bessie Coleman Blvd at Airport Service Rd	3/15/2022	Tuesday	2:30 A.M. – 4:30 PM
TMC 6	Bessie Coleman Blvd at Economy Parking Rd	3/15/2022	Tuesday	1:00 A.M. – 3:00 P.M.
TMC 7	Cell Phone Access Rd / SkyCenter Blvd	3/15/2022	Tuesday	1:00 P.M. – 3:00 P.M.
TMC 8	Airport Service Rd at Economy Parking Rd	3/15/2022	Tuesday	1:00 P.M. – 3:00 P.M.
TMC 9	Airport Service Rd at Car Rental Facility	3/22/2022	Tuesday	11:30 A.M. – 1:30 P.M.
TMC 10	Airport Service Rd at SkyCenter Blvd	3/24/2022	Thursday	10:30 A.M. – 12:30 P.M.
TMC 11	Airport Service Rd east of Obrien St – 1 of 2	3/17/2022	Thursday	4:30 P.M. – 6:30 P.M.
TMC 12	Obrien St at W Spruce St	3/17/2022	Thursday	5:30 P.M. – 7:30 P.M.
TMC 13	Airport Service Rd east of Obrien St – 2 of 2	3/17/2022	Thursday	4:30 P.M. – 6:30 P.M.

NOTE:
TMC – Turning Movement Count
SOURCE: AECOM, June 2022.

4.6.1.2 FORECAST TRAFFIC VOLUMES

Project Trip Generation and Distribution

The SkyCenter area consists of multiple commercial programs scheduled to be constructed. A detailed analysis of the SkyCenter development was documented in the *Tampa International Airport Ground Transportation Traffic Study* (November 2017), and some key results are summarized in this section.

Exhibit 4.6-8 displays the future land uses. For purposes of this traffic study, hotels and offices only are anticipated to be constructed so that some roadway capacity can be preserved to accommodate traffic generated by the remote curbside road, located within the SkyCenter area. The remote curbside road will provide relief to the terminal curbside roadways in case of unanticipated heavy congestion or incidents.

SkyCenter Office Building I has already been completed; the following future commercial programs are assumed to be in place with completion of the SkyCenter project by PAL 1 (2032):

- Upscale Hotel – 350 rooms
- Select Service Hotel – 150 rooms
- Office Building II – 180,000 square feet

The Institute of Transportation Engineers' *Trip Generation Handbook* was used to determine the number of trips generated by each land use within the SkyCenter Development Plan, as shown in **Table 4.6-3**. For hotel and office uses, 85 percent of the traffic was assigned to enter and exit via George J. Bean Parkway, and 15 percent of the traffic was assumed to enter and exit via Spruce Street. The hotel and offices were assumed to be located adjacent to the existing cell phone lot and would be served by SkyCenter Boulevard, a north–south roadway parallel to Airport Service Road.

TABLE 4.6-3: 2032 SKYCENTER PROJECT TRIPS

LOCATION	LAND USES	SIZE (IN ROOMS OR SQ FT	ITE LAND USE CODE	GROSS DAILY TRIPS	PEAK-HOUR TRIPS		
					INBOUND	OUTBOUND	TOTAL
SkyCenter Development Area	Hotel	350 rooms	310	2,759	107	103	210
	Hotel	150 rooms	310	969	46	44	90
	Office	270,000 sq ft	710	2,793	65	316	381
	Office	180,000 sq ft	710	1,964	45	222	267
	Total Gross Trip Generation			**8,485**	**263**	**685**	**948**

NOTES:
ITE – Institute of Transportation Engineers
SOURCES: AECOM, June 2022; Institute of Transportation Engineers, *Trip Generation Manual*, 11th edition, September 2021.

Consistency with Florida Department of Transportation–Approved Volumes

The *Project Traffic Analysis Report* (PTAR; December 2019) that focused on Northwest Hillsborough Expressway was referenced as a benchmark to align forecast traffic volumes in the MPU with volumes recently approved by the FDOT. PAL 1 (2032) traffic volumes on major roadways and ramps leading to TPA were interpolated using 2022 traffic counts and forecast volumes in the PTAR, as listed in **Table 4.6-4**.

SOURCE: Hillsborough County Aviation Authority, May 2022.

EXHIBIT 4.6-8

SKYCENTER DEVELOPMENT PLAN

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6-7 Skycenter Development Plan.dwgLayout: 3 Plotted: May 15, 2024, 03:35PM

TABLE 4.6-4: FLORIDA DEPARTMENT OF TRANSPORTATION AVERAGE ANNUAL DAILY TRAFFIC INTERPOLATION TO PLANNING ACTIVITY LEVEL 1

FROM	TO	2018 AADT	2022 AADT	2025 AADT	2045 AADT	2032 (PAL 1) AADT
Tampa International Airport	Memorial Highway	7,300	8,800	10,040	17,865	12,800
	Veterans Expressway	3,400	3,400	7,090	17,650	10,400
	I-275 Loop Ramp	-	9,200	6,735	11,375	9,300
	I-275 Flyover Ramp	-	15,100	12,980	18,625	15,800
	Spruce St	8,100	3,300	9,540	13,655	9,900
	Cypress St	1,300	1,100	1,480	2,000	1,600
Clearwater/Veterans Expressway	Tampa International Airport	10,700	11,800	17,130	35,515	23,100
I-275 General-Use Lanes		19,040	23,100	16,755	22,750	20,900
I-275 Express Lanes		-	-	6,245	7,250	6,600
Spruce St		8,100	5,900	9,540	13,655	10,400

NOTES:
PAL – Planning Activity Level
I-275 – Interstate 275
AADT – Average Annual Daily Traffic (vehicles)
SOURCES: Project Traffic Analysis Report, Florida Department of Transportation, 2019; AECOM, June 2022.

It was assumed that future vehicular traffic at the landside will grow at a rate in proportion to enplaned passengers. Daily traffic volumes were grown to PAL 1 (2032) by 40 percent, corresponding to forecast enplaned passengers. In addition, SkyCenter project volumes were added to the Airport traffic for PAL 1. Subsequently, daily traffic volumes from the TPA MPU were adjusted to align with traffic on ramps to and from TPA, as identified in the table to the degree possible. **Table 4.6-5** compares the MPU volumes with the volumes approved by the FDOT. Daily traffic volumes developed for the MPU are generally in line with the volumes recently approved by the FDOT.

TABLE 4.6-5: COMPARISON OF PLANNING ACTIVITY LEVEL 1 DAILY VOLUME BETWEEN FLORIDA DEPARTMENT OF TRANSPORTATION AND MASTER PLAN UPDATE

FROM	TO	FDOT STUDY AADT	TPA MPU AADT	DIFF. %
Tampa International Airport	Memorial Highway	12,800	13,400	5%
	Veterans Expressway	10,400	11,200	8%
	Spruce St	9,900	10,500	6%
	W Cypress St	1,600	1,700	6%
	I-275 Loop Ramp	9,300	10,100	9%
	I-275 Flyover Ramp	15,800	16,800	6%
Veterans Expressway	Tampa International Airport	23,100	22,200	-4%
I-275 Express Lane		6,600	6,200	-6%
I-275 General-Use Lanes		20,900	22,000	5%
Spruce St		10,400	11,000	6%

NOTES:
FDOT – Florida Department of Transportation
I-275 – Interstate 275
MPU – Master Plan Update
TPA – Tampa International Airport
AADT – Average Annual Daily Traffic (vehicles)
SOURCES: Florida Department of Transportation, 2019; AECOM, June 2022.

Curbside Traffic Recirculation and Allocation

According to the anticipated airline allocation between the Red and Blue Sides, along with the estimated percentages of passengers who need to claim baggage, the traffic volume between the Red and Blue Sides was split in conjunction with the full-service and express lane splits for each PAL, as displayed in **Table 4.6-6**.

TABLE 4.6-6: PEAK-HOUR TERMINAL TRAFFIC SPLIT

	PAL 1 (FY 2032)		PAL 2 (FY 2037)		PAL 3 (FY 2042)	
	BLUE SIDE	RED SIDE	BLUE SIDE	RED SIDE	BLUE SIDE	RED SIDE
Arrivals Curb	57.8%	42.2%	56.1%	43.9%	60.6%	39.4%

NOTE:
PAL – Planning Activity Level
SOURCE: AECOM, June 2022.

According to the 2022 traffic counts, during the peak hour, traffic driving on the Blue Side recirculation road accounts for 43 percent of the total Blue Side traffic, which is noticeably higher than the 34 percent in 2018. Blue Side express lanes were open to traffic in November 2021. When traffic counts were collected in March 2022, drivers were still getting accustomed to the new traffic pattern. Some drivers missed their exits and had to use the recirculation road to drive back. It is anticipated that drivers will gradually become familiar with the new traffic pattern at the Blue Side, and the percentage of recirculation will drop to the 2018 level at 34 percent prior to PAL 1 (2032).

4.6.1.3 FUTURE CURBSIDE AND ROADWAY TRAFFIC ANALYSIS

Two analysis tools—static spreadsheet model and Vissim traffic simulation—were used to evaluate the existing conditions of the Airport roadways. The Vissim traffic simulation provided additional details on vehicle flows and dynamic interaction in time and space. Vissim outputs for this analysis included intersection and movement delays, speeds, density, queue lengths, and travel times. Another important aspect of traffic simulation is that it considers upstream and downstream conditions for any given roadway segment in the overall network. In this context, congested areas metering traffic, queues spilling over multiple intersections, and similar factors were included in the evaluation, thereby providing a more in-depth understanding of the overall traffic operation within the study area.

Static Curbside Analysis

A curbside spreadsheet model was developed to estimate the peak-hour terminal curbside requirements. This model uses peak-hour vehicle volumes, combined with average dwell times by vehicle mode, to estimate the demand for curbside frontage. To account for non-uniform arrival rates during the peak hour, the spreadsheet model applies a statistical "surge" factor based on a Poisson[4] arrivals distribution to estimate the number of vehicles that must be accommodated at any time during the peak hour. The estimated space requirements are multiplied by the average length of one vehicle (including a buffer to represent the empty space between two parked vehicles and lost spaces resulting from parking inefficiencies) to determine the demand for curbside frontage in linear feet.

Curbside frontage demand is a theoretical measurement of the peak accumulation of vehicles waiting at the curb if they were aligned nose-to-tail in a single line or queue. A "utilization" factor can be derived by calculating the

[4] A probability distribution expresses the probability of a given number of events occurring in a fixed interval of time or space if these events occur with a known constant rate and independently of the time since the last event.

curbside demand in linear feet, divided by the existing curbside length. The utilization factor provides an indication of the amount of double and triple parking that would result for a given space and demand level. The LOS[5] associated with a given utilization factor is determined considering vehicles do not park uniformly along the curbside and, instead, there is a propensity to park on those locations closer to their intended destinations inside the terminal, even if that means double or triple parking in lieu of other sections of the curbside that are not as heavily used but are farther away from the desired destination.

The curbside utilization factor indicates the amount of congestion at the curbside, as well as the resulting LOS. For example, a low utilization factor indicates vehicles are easily accommodated along the inner lane without the need to double park. **Table 4.6-7** provides the thresholds and descriptions for each LOS assumed for the analysis. A low utilization factor equates to an excellent LOS (e.g., LOS A). Conversely, a high utilization factor equates to double and triple parking along the entire curbside, restricting vehicle movements and resulting in a poor LOS (e.g., LOS F). **Exhibit 4.6-9** graphically depicts the LOS categories.

TABLE 4.6-7: CURBSIDE STATIC ANALYSIS – LEVEL OF SERVICE DESCRIPTION

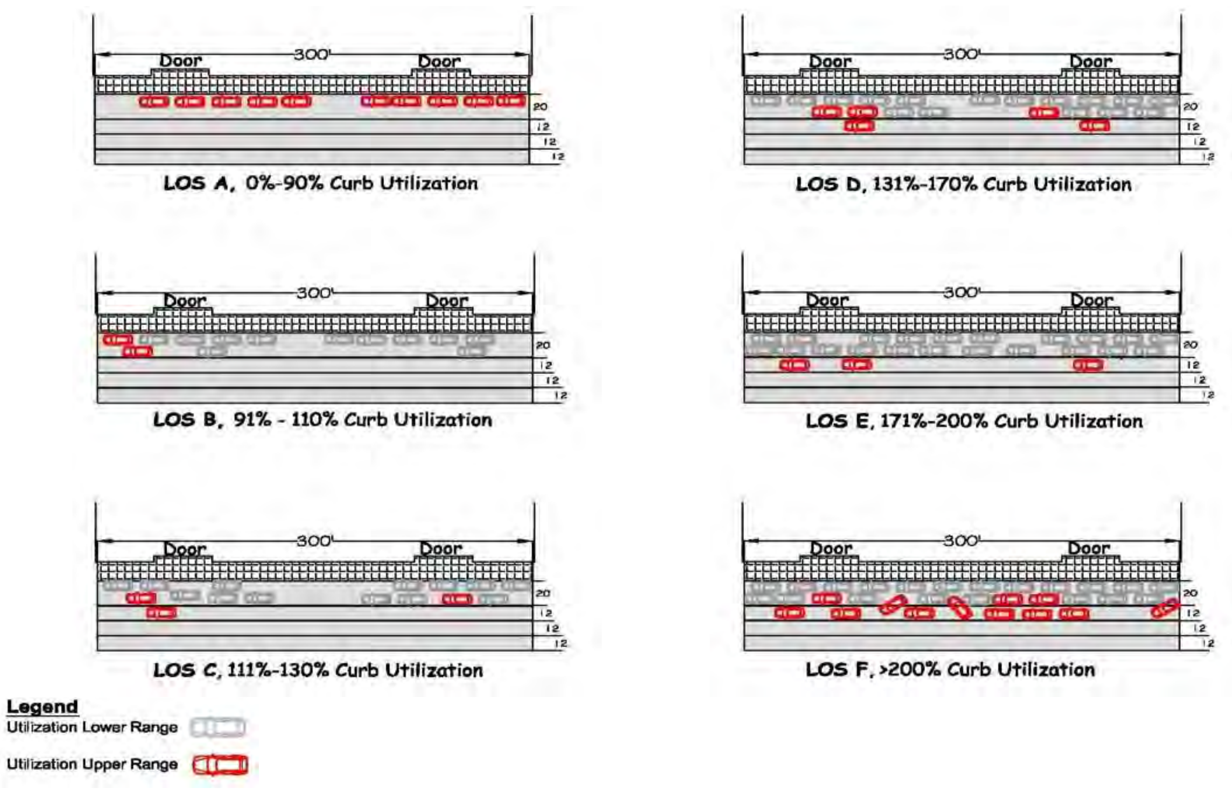
CURBSIDE UTILIZATION LEVEL OF SERVICE RANGES			
LOS	SINGLE-LANE LOADING	DOUBLE-LANE LOADING	DESCRIPTION
A	0% – 70%	0% – 90%	EXCELLENT: Drivers experience no interference from pedestrians or other motorists.
B	71% – 85%	91% – 110%	VERY GOOD: Relatively free-flowing conditions with limited double parking.
C	86% – 100%	111% – 130%	GOOD: Double parking near doors is common with some intermittent triple parking.
D	101% – 115%	131% – 170%	FAIR: Vehicle maneuverability is restricted by frequent double/triple parking.
E	116% – 130%	171% – 200%	POOR: Significant delays and queues; double/triple parking throughout curbside.
F	>131%	>201%	FAILURE: Motorists unable to access/depart curbside; significant queuing along entry road.

NOTE:
LOS – Level of Service
SOURCE: Ricondo & Associates, Inc., November 2023 (based on Transportation Research Board, Airport Cooperative Research Program, Report 40, *Airport Curbside and Terminal Area Roadway Operations*, 2010; and US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities*, January 19, 1994).

Additionally, the curbside spreadsheet model was used to evaluate the throughput capacity of the curbside section of the outer bypass lanes. The model also demonstrated the impact of congestion from stopped vehicles on the ability to process vehicles through the curbside lanes. The throughput of the bypass lanes at the Airport was analyzed using a dynamic capacity scale that varies as a function of the amount of congestion along the curbside frontage (measured as a utilization percentage, as described previously). This implies the curbside throughput capacity values change as a function of the curbside parking utilization and the number of available through lanes.

5 LOS refers to the operating performance of a roadway, measured quantitatively and reported on a scale of "A" to "F." LOS A represents the optimal operating condition, characterized by uninterrupted free-flow operations. At the other end of the scale, LOS F represents the worst operating condition, characterized by severe roadway congestion and delay.

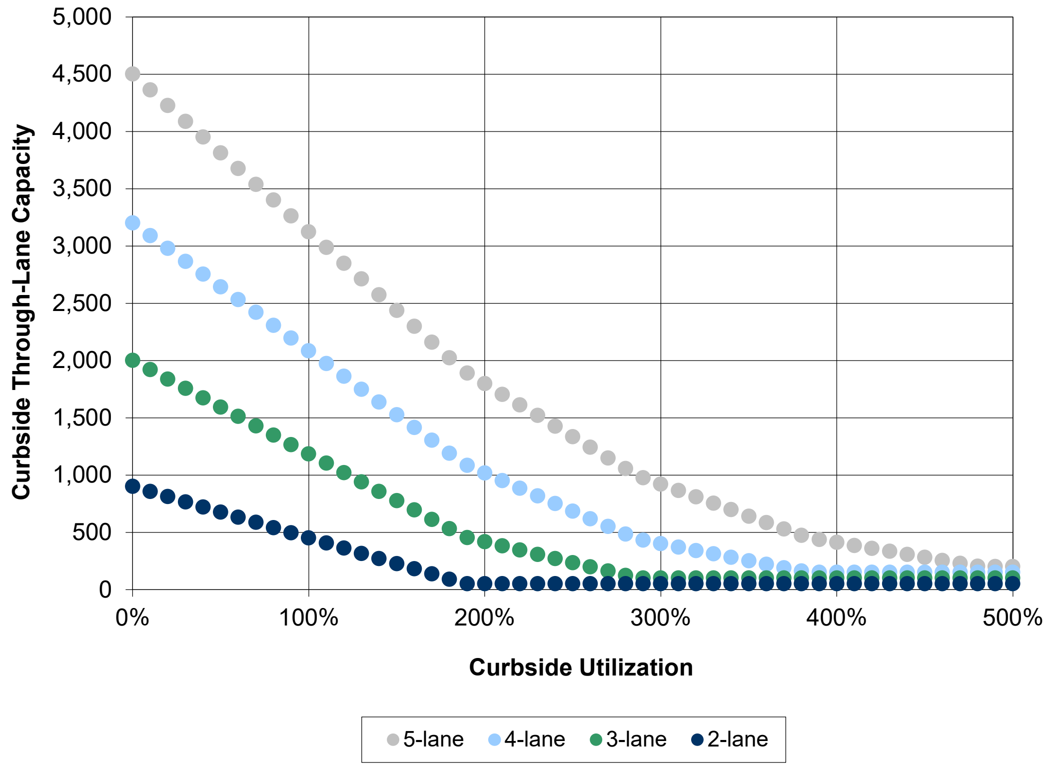
EXHIBIT 4.6-9: CURBSIDE STATIC ANALYSIS – VISUAL DEPICTION OF LEVEL OF SERVICE FOR DOUBLE-LOADING



NOTE:
LOS – Level of Service
SOURCE: Ricondo & Associates, Inc., November 2023 (based on Transportation Research Board, Airport Cooperative Research Program, Report 40, *Airport Curbside and Terminal Area Roadway Operations*, Washington, DC, 2010; and US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities*, January 19, 1994).

Exhibit 4.6-10 illustrates the estimated curbside roadway throughput capacity as a function of curbside utilization (measured as the length of stopped vehicles divided by the total available curbside length). Throughput capacity is a function of the number of lanes, the effects of friction from stopped and maneuvering vehicles, pedestrian crossing activity, and other characteristics. As shown, curbside roadway throughput capacity decreases as curbside utilization increases.

EXHIBIT 4.6-10: DYNAMIC CURBSIDE ROADWAY THROUGHPUT CAPACITY



SOURCE: Ricondo & Associates, Inc., November 2023 (based on Transportation Research Board, Special Report 215, *Measuring Airport Landside Capacity*; and US Department of Transportation, Federal Aviation Administration, Advisory Circular 150/5360-13, *Planning and Design Guidelines for Airport Terminal Facilities*, 1994).

The resulting curbside roadway throughput LOS is estimated by calculating the volume-to-capacity ratio using the criteria presented in **Table 4.6-8**. Like the curbside utilization analysis, the "point of failure" for curbside roadway throughput is considered the transition point from LOS D to LOS E (or LOS of 0.90 or worse).

TABLE 4.6-8: CURBSIDE ROADWAY LEVEL OF SERVICE AND VOLUME-TO-CAPACITY RANGES

LOS	V/C RATIO	CONDITION	DESCRIPTION
A	Less than 0.60	Excellent	Traffic is free flow, with low volumes and high speeds.
B	0.61–0.70	Very good	Drivers have reasonable freedom to select their speed and lane of operation.
C	0.71–0.80	Good	Drivers become restricted in their ability to select their speed or to change lanes.
D	0.81–0.90	Fair	Drivers have little freedom to maneuver and driving comfort levels are low.
E	0.91–1.00	Poor	Roadway is operating at or near capacity.
F	Greater than 1.00	Failure	Forced-flow operations where excessive roadway queuing develops.

NOTES:
LOS – Level of Service
V/C – Volume to Capacity
SOURCES: Transportation Research Board, National Research Council, *Highway Capacity Manual*, 2000; Ricondo & Associates, Inc., March 2019.

Table 4.6-9 lists the forecast volumes at the curbsides for 2018, 2022 (baseline), and the three PALs during the overall peak hour. In PAL 1, the full-service curbs accommodate 70 percent of the traffic, with 30 percent on the express lanes; in PAL 2, the full-service curbs accommodate 62 percent of the traffic, with 38 percent on the express lanes; and in PAL 3, the full-service curbs accommodate 52 percent of the traffic, with 48 percent on the express lanes.

TABLE 4.6-9: OVERALL PEAK-HOUR TERMINAL CURBSIDE TRAFFIC VOLUMES

LOCATION	2018 VEHICLES	BASE YEAR (2022) VEHICLES	PAL 1 (2032) VEHICLES	PAL 2 (2037) VEHICLES	PAL 3 (2042) VEHICLES
Red Departures					
Red Departures – Full-Service Lanes	530	440	560	550	460
Red Departures – Express Lanes	N/A	N/A	240	330	430
Red Arrivals					
Red Arrivals – Full-Service Lanes	590	500	560	590	490
Red Arrivals – Express Lanes	N/A	N/A	240	360	460
Blue Departures					
Blue Departures – Full-Service Lanes	590	690	670	700	710
Blue Departures – Express Lanes	N/A	220	290	430	660
Blue Arrivals					
Blue Arrivals – Full-Service Lanes	590	790	760	750	770
Blue Arrivals – Express Lanes	N/A	180	330	460	710

NOTES:
N/A – Not Applicable
PAL – Planning Activity Level
1 For PAL 1, 70:30 splits were assumed for volumes on full-service lanes versus express lanes.
2 For PAL 2, 62:38 splits were assumed for volumes on full-service lanes versus express lanes.
3 For PAL 3, 52:48 splits were assumed for volumes on full-service lanes versus express lanes.
SOURCE: AECOM, June 2022.

The split of curbside traffic between the full-service and express lanes on the Blue Side has evolved since the opening on the express lanes, and the split is anticipated to continue to evolve. After the express lanes opened, approximately 80 to 85 percent of Blue Side curb traffic continued to use the full-service lanes. Over approximately the following 12 to 18 months, that percentage declined to 70 to 75 percent on the full-service lanes. The theoretical "balanced" traffic split on the full-service lanes should be equal to the percentage of passengers that check bags (52 percent). Therefore, to arrive at the volume splits previously described for each PAL, curb activity was evaluated first assuming that 70 percent of traffic would use the full-service lanes, as in the existing conditions, with 30 percent on the express lanes, on both the Blue and Red Sides. If the curb LOS failed on the full-service lanes, then the percentage on the full-service lanes decreased. The curb LOS was evaluated for the peak hour of each curb (Red and Blue) individually. The overall peak hour corresponds to the Blue Side peak hour. **Table 4.6-10** displays PAL 1 results, **Table 4.6-11** displays PAL 2 results, and **Table 4.6-12** displays PAL 3 results.

TABLE 4.6-10: CURBSIDE LEVEL OF SERVICE – PLANNING ACTIVITY LEVEL 1 (2032)

	RED SIDE						BLUE SIDE					
	FULL SERVICE (70%)	EXPRESS (30%)	FULL SERVICE (62%)	EXPRESS (38%)	FULL SERVICE (52%)	EXPRESS (48%)	FULL SERVICE (70%)	EXPRESS (30%)	FULL SERVICE (62%)	EXPRESS (38%)	FULL SERVICE (52%)	EXPRESS (48%)
Available Curbside (linear feet)	600	390	600	390	600	390	630	420	630	420	630	420
Curbside Utilization (85th percentile)	142%	71%	125%	90%	113%	109%	139%	71%	123%	83%	111%	101%
Curbside Demand (linear feet)	850	275	750	350	675	425	875	300	775	350	700	425
Curbside LOS	D	A	C	A	C	B	D	A	C	A	C	B
Minimum Required Length of Curb for LOS D (linear feet)	500	162	441	206	397	250	515	176	456	206	412	250
Additional Curb Length Required for LOS D (linear feet)	-	-	-	-	-	-	-	-	-	-	-	-
Forecast Roadway LOS	D	A	B	A	A	A	C	A	B	A	A	A
Additional Through Lanes Required	-	-	-	-	-	-	-	-	-	-	-	-

NOTES:
LOS – Level of Service
1 Individual Red/Blue arrivals peaks are shown.
2 Further lengthening of the curb to meet LOS B/C can remove the added through-lane requirement.
3 Assumes the recirculation percentage decreases to 2018 levels as drivers/passengers become accustomed to the Red and Blue Express Curbs.
SOURCES: Hillsborough County Aviation Authority, March 2022 (data); AECOM, April 2022 (data collection and analysis); Ricondo & Associates, Inc., August 2022 (analysis).

TABLE 4.6-11: CURBSIDE LEVEL OF SERVICE – PLANNING ACTIVITY LEVEL 2 (2037)

	RED SIDE						BLUE SIDE					
	FULL SERVICE (70%)	EXPRESS (30%)	FULL SERVICE (62%)	EXPRESS (38%)	FULL SERVICE (52%)	EXPRESS (48%)	FULL SERVICE (70%)	EXPRESS (30%)	FULL SERVICE (62%)	EXPRESS (38%)	FULL SERVICE (52%)	EXPRESS (48%)
Available Curbside (linear feet)	600	390	600	390	600	390	630	420	630	420	630	420
Curbside Utilization (85th percentile)	158%	77%	142%	96%	117%	122%	155%	83%	139%	95%	119%	113%
Curbside Demand (linear feet)	950	300	850	375	700	475	975	350	875	400	750	475
Curbside LOS	D	A	D	B	C	C	D	A	D	B	C	C
Minimum Required Length of Curb for LOS D (linear feet)	559	176	500	221	412	279	574	206	515	235	441	279
Additional Curb Length Required for LOS D (linear feet)	-	-	-	-	-	-	-	-	-	-	-	-
Forecast Roadway LOS	F	A	D	A	A	A	F	A	C	A	A	A
Additional Through Lanes Required	1	-	-	-	-	-	1	-	-	-	-	-

NOTES:
LOS – Level of Service
1 Individual Red/Blue arrivals peaks are shown.
2 Further lengthening of the curb to meet LOS B/C can remove the added through-lane requirement.
3 Assumes the recirculation percentage decreases to 2018 levels as drivers/passengers become accustomed to the Red and Blue Express Curbs.
SOURCES: Hillsborough County Aviation Authority, March 2022 (data); AECOM, April 2022 (data collection and analysis); Ricondo & Associates, Inc., August 2022 (analysis).

TABLE 4.6-12: CURBSIDE LEVEL OF SERVICE – PLANNING ACTIVITY LEVEL 3 (2042)

	RED SIDE						BLUE SIDE					
	FULL SERVICE (70%)	EXPRESS (30%)	FULL SERVICE (62%)	EXPRESS (38%)	FULL SERVICE (52%)	EXPRESS (48%)	FULL SERVICE (70%)	EXPRESS (30%)	FULL SERVICE (62%)	EXPRESS (38%)	FULL SERVICE (52%)	EXPRESS (48%)
Available Curbside (linear feet)	600	390	600	390	600	390	630	420	630	420	630	420
Curbside Utilization (85th percentile)	167%	90%	150%	109%	129%	122%	187%	95%	171%	113%	139%	131%
Curbside Demand (linear feet)	1,000	350	900	425	775	475	1,175	400	1,075	475	875	550
Curbside LOS	D	A	D	B	C	C	E	B	E	C	D	C
Minimum Required Length of Curb for LOS D (linear feet)	588	206	529	250	456	279	691	235	632	279	515	324
Additional Curb Length Required for LOS D (linear feet)	0	0	0	0	0	0	61	-	2	-	-	-
Forecast Roadway LOS	F	A	E	A	B	A	F	A	F	A	D	C
Additional Through Lanes Required	1	-	1	-	-	-	1	-	1	-	-	-

NOTES:
LOS – Level of Service
1 Individual Red/Blue arrivals peaks are shown.
2 Further lengthening of the curb to meet LOS B/C can remove the added through-lane requirement.
3 Assumes the recirculation percentage decreases to 2018 levels as drivers/passengers become accustomed to the Red and Blue Express Curbs.
SOURCES: Hillsborough County Aviation Authority, March 2022 (data); AECOM, April 2022 (data collection and analysis); Ricondo & Associates, Inc., August 2022 (analysis).

Static Roadway Analysis

To analyze the future operating conditions along the Airport roadway system, the calculated volume for each roadway link was compared to the capacity of the roadway at that location. The capacities of the roadway segments were determined based on the characteristics of the roadway segment and the number of travel lanes. Based on the *Highway Capacity Manual* (TRB), the theoretical capacity of a roadway is the maximum hourly flow rate per lane under "ideal" conditions, which consist of (a) uninterrupted flow, (b) all passenger cars driven by frequent users of the roadway, (c) 12-foot-minimum lane widths, (d) relatively flat grades with minor curvature, and (e) optimal lateral clearance between the edge of the lane and adjacent obstructions (e.g., walls). Theoretical capacity under these conditions is 2,200 passenger vehicles per hour per lane.

For airport roadways, however, the capacities are significantly lower, as many of the "ideal" conditions listed previously cannot be attained. Specifically, drivers are often unfamiliar with the roadway system, and increased interaction and impedances between vehicles usually result in drivers slowing to change lanes or maneuvering in response to signage describing multiple on-airport destinations occurring over relatively short distances. **Table 4.6-13** summarizes the roadway capacities and LOS ranges for the on-Airport (non-curbside) roadways.

TABLE 4.6-13: LEVEL OF SERVICE CRITERIA FOR ON-AIRPORT ROADWAYS

CAPACITY AND LEVEL OF SERVICE RANGES FOR TERMINAL AREA ROADWAYS						
TYPICAL ROADWAY CLASSIFICATION	MAXIMUM FREE-FLOW SPEED (MPH)	MAXIMUM FLOW RATES (VEHICLES/HOUR/LANE)				
		A	B	C	D	E
Airport Access Highway	60	630	1,030	1,460	1,880	2,090
	55	520	850	1,220	1,580	1,800
Entry/Exit Roadway	50	450	730	1,050	1,390	1,620
	45	400	660	950	1,260	1,530
Terminal Loop Roadway	40	370	600	860	1,130	1,410
	35	340	540	790	1,030	1,290
Terminal Access Roadway	30	310	480	700	930	1,170
	25	250	400	600	800	1,010
Ramps (25 mph or less)	15	250	400	600	800	1,010

NOTES: Acceptable peak-hour operation is assumed to be LOS D or better; LOS E is the trigger for improvement.
LOS – Level of Service
mph – Miles per Hour
SOURCES: Transportation Research Board, National Research Council, *Highway Capacity Manual*, Exhibit 21-2, "LOS Criteria for Multilane Highways," December 2000; Transportation Research Board, Airport Cooperative Research Program, Report 40, *Airport Curbside and Terminal Area Roadway Operations*, Table 4-1, "Levels of Service for Airport Terminal Area Access and Circulation Roadways," July 2010.

After the 2022 traffic volumes were grown to the level of PAL 1, trips that will be generated by the SkyCenter commercial programs and the remote curbside road were added to the Airport's background traffic. Curbside volumes were derived from the forecast enplaned and deplaned passengers.

Table 4.6-14 presents the peak hour to daily ratios for PAL 1, along with ratios derived from the 2022 traffic counts. As indicated in the table, peak hour to daily ratios for PAL 1 on critical locations are comparable with the existing conditions. Traffic volumes for PALs 2 and 3 were produced in the same manner; peak-hour volumes are displayed on **Exhibits 4.6-11** through **4.6.13**.

TABLE 4.6-14: PEAK-HOUR TO DAILY VOLUME RATIOS FOR PLANNING ACTIVITY LEVEL 1 (2032)

FROM	TO	MASTER PLAN UPDATE			BASELINE (2022) PEAK/DAILY RATIO
		DAILY VEHICLES	PEAK HOUR VEHICLES	PEAK/DAILY RATIO	
Tampa International Airport	Memorial Highway	13,400	910	7%	6%
	Veterans Expressway	11,200	620	6%	6%
	Spruce St	10,500	730	7%	7%
	W Cypress St	1,700	120	7%	7%
	I-275 Loop Ramp	10,100	810	8%	7%
	I-275 Flyover Ramp	16,800	1,240	7%	7%
Veterans Expressway	Tampa International Airport	22,200	1,165	5%	6%
I-275 General-Use Lanes		22,000	1,550	7%	7%
Spruce St		11,000	550	5%	6%

NOTE:
I-275 – Interstate 275
SOURCE: AECOM, June 2022.

The roadway LOS results are presented in **Table 4.6-15** for PAL 1, PAL 2, and PAL 3. Roadway LOS is anticipated to be acceptable throughout the planning horizon, except for the ramp from Veterans Expressway and West Spruce Street to George J. Bean Parkway. This ramp will be addressed in Chapter 5.

4.6.1.4 TRAFFIC OPERATIONS ANALYSES

Vissim Simulation Model Development

This section describes the Vissim model development, calibration process, and the traffic operations related to the existing conditions. Signal timing plans received from the City of Tampa were incorporated into the Vissim model. The Vissim evaluation includes analyses for the Airport terminal, curbside roads, George J. Bean Parkway roadway segments, and roadways located within the SkyCenter area.

The traffic simulation was set with an initialization time of 900 seconds (15 minutes), plus 3 hours of simulation time. The initialization time is the time it takes the model to discharge vehicles from the entry points to the network and to reach equilibrium between the number of vehicles entering and exiting the network. The second hour of the simulation is the peak hour, and the first and third hours are the hours before and after the peak hour. Volume distributions as inputs for the Vissim model were derived from a continuous count, which was located on George J. Bean Parkway northbound, immediately downstream of the off-ramp to West Spruce Street. The Vissim model was run five times to minimize the variation in the results related to the randomness of the simulation models. An average of the output of the five runs during the peak hour was used to produce simulated results.

Map Number	Roadway		PAL 1	PAL 2	PAL 3
13	Access Rd to Airport Service/Bessie Coleman Blvd	North of Hotel/Terminal	190	220	240
14	GB(1) NB Pkwy	North of Blue Entrance	1,840	2,140	2,490
15	GB SB Pkwy	South of Red Arrival and Departure Entrance	1,760	2,070	2,420
16	Ramp back to Red		200	230	260
17	Airport Recirculation ramp		790	890	1,030
39A	Red Departure Full-Service Ramp		280	290	270
39B	Red Departure Entrance		120	170	250
40A	Red Arrival Full-Service Ramp		560	590	490
40B	Red Arrival Express Ramp		240	360	460
43A	Blue Arrival Full-Service Ramp		760	750	770
43B	Blue Arrival Express Ramp		330	460	710
44A	Blue Departure Full-Service Ramp		330	350	340
44B	Blue Departure Express Ramp		170	220	310
45	Short exit from Pay Parking		30	30	40
46	Long exit from Pay Parking to Recirculation Ramp		60	70	80
47	Exit Pay Parking to GB Southbound		630	630	810

NOTES:
GB : George Bean Parkway
NB: Northbound; SB: Southbound; EB: Eastbound; and WB: Westbound

LEGEND
Approach Count
Proposed Project Outline
Airport Property Boundary

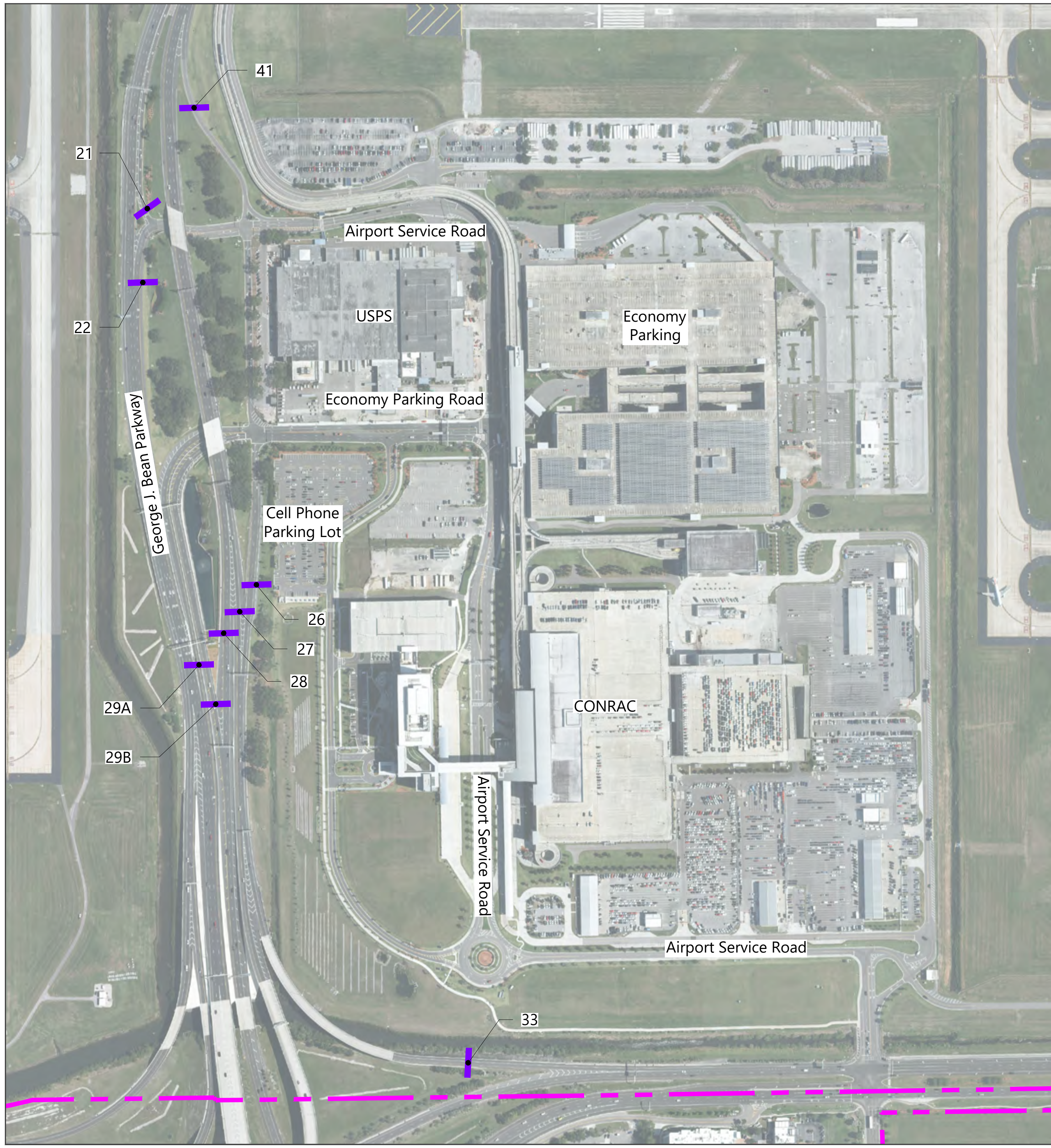
SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography); AECOM, *Tampa International Airport (TPA) Master Plan Update Ground Transportation Study*, June 2022.

NORTH 0 500 ft

EXHIBIT 4.6-11

AREA 1 - FUTURE TRAFFIC VOLUMES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6 Traffic Count Exhibits - PALs.dwgLayout: 4.6-11 Plotted: May 15, 2024, 03:40PM



Map Number	Roadway		PAL 1	PAL 2	PAL 3
21	GB SB ramp to Airport Service Rd EB		310	350	400
22	Airport Service Rd WB Ramp to GB SB		725	790	955
26	NB Bessie Coleman Blvd (one-way)	South of Economy Parking Rd	635	695	770
27	NB to terminal short-term ramp		1,865	2,105	2,435
28	NB George Bean Pkwy		1,370	1,560	1,850
29A	GB SB from Economy Parking WB	South of Economy Parking Rd	925	1,020	1,095
29B	GB NB to Economy Parking EB	South of Economy Parking Rd	730	820	910
33	Spruce St to GB NB	From Spruce St west of Obrien St	550	630	720
41	Bessie Coleman to GB NB		570	650	745

NOTES:
GB : George Bean Parkway
NB: Northbound; SB: Southbound; EB: Eastbound; and WB: Westbound

LEGEND
Approach Count
Proposed Project Outline
Airport Property Boundary

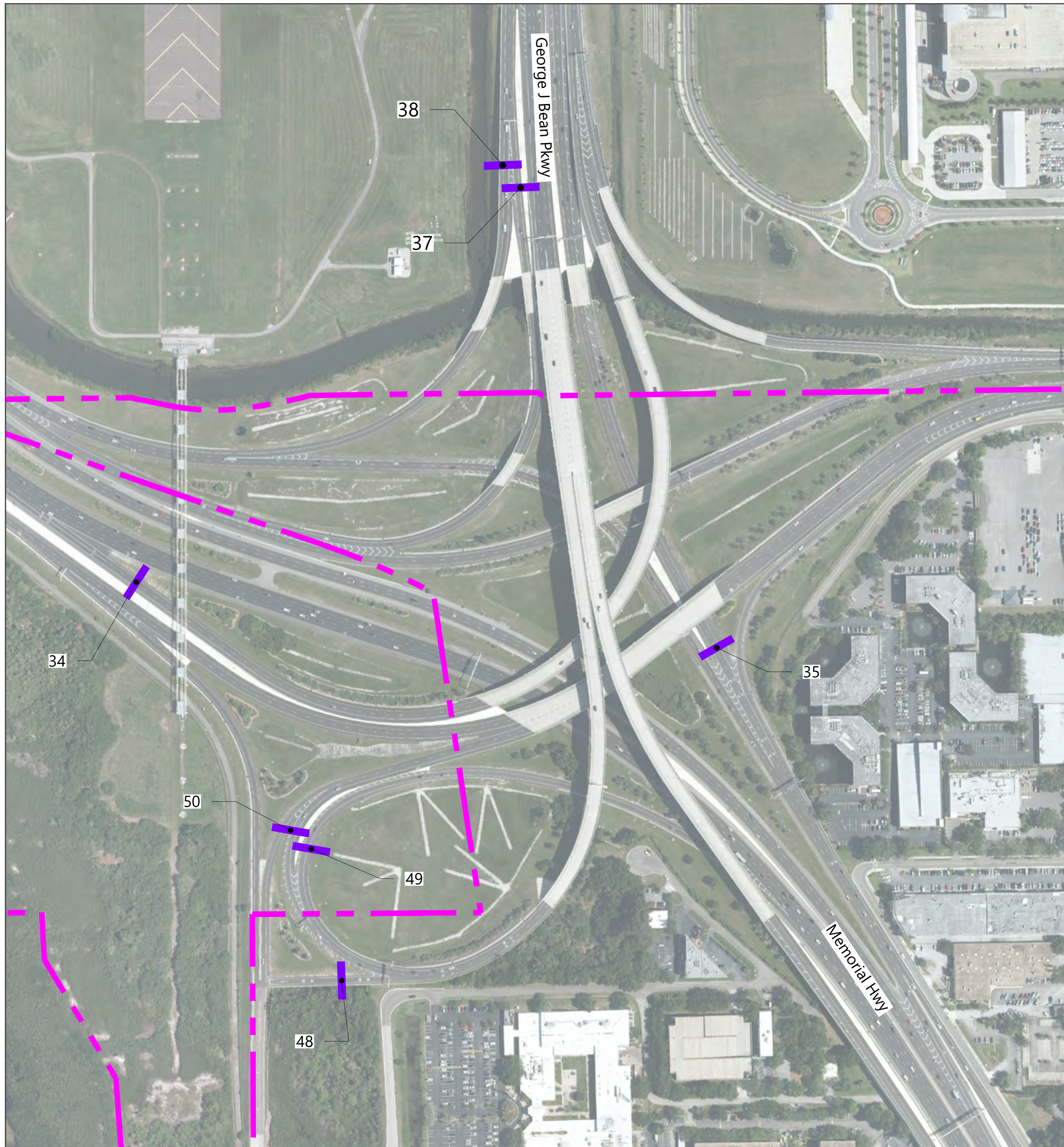
SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography); AECOM, *Tampa International Airport (TPA) Master Plan Update Ground Transportation Study*, June 2022.

NORTH
0 500 ft

EXHIBIT 4.6-12

AREA 2 - FUTURE TRAFFIC VOLUMES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6 Traffic Count Exhibits - PALs.dwgLayout: 4.6-12 Plotted: May 15, 2024, 03:38PM



Map Number	Roadway		PAL 1	PAL 2	PAL 3
34	GB NB Ramp from SR 60	From SR 60 EB	1,165	1,295	1,570
35	GB NB Ramp	To Tampa Int'l	1,550	1,750	2,040
36	GB SB Ramp to I-275 SB	To Pinellas County	1,240	1,425	1,760
37	GB SB exit Ramp	To North Veterans Expressway	620	690	770
38	GB SB exit Ramp	To West Courtney Campbell Causeway	910	1,010	1,130
48	GB SB Exit to Cypress St (O'Brien St) Ramp		120	145	170
49	GB SB Exit Ramp to I-275 NB		810	915	1,060
50	GB SB Exit Ramp to Spruce St		730	825	950

NOTES:
GB : George Bean Parkway
NB: Northbound; SB: Southbound; EB: Eastbound; and WB: Westbound

LEGEND
Approach Count
Airport Property Boundary

SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography); AECOM, *Tampa International Airport (TPA) Master Plan Update Ground Transportation Study*, June 2022.

NORTH
0 400 ft

EXHIBIT 4.6-13

AREA 3 - FUTURE TRAFFIC VOLUMES

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6 Traffic Count Exhibits - PALs.dwgLayout: 4.6-13 Plotted: May 15, 2024, 03:38PM

TABLE 4.6-15: ROADWAY LEVELS OF SERVICE

NUMBER	ROADWAY	PEAK HOUR VOLUME			VOLUME/CAPACITY RATIO			LEVEL OF SERVICE		
		PAL 1	PAL 2	PAL 3	PAL 1	PAL 2	PAL 3	PAL 1	PAL 2	PAL 3
13	Airport Access Rd to Airport Service Rd / Bessie Coleman Blvd	190	220	240	0.19	0.22	0.24	A	A	A
14	George J. Bean Pkwy NB	1,840	2,140	2,490	0.71	0.83	0.97	C	D	E
15	George J. Bean Pkwy SB	1,760	2,070	2,420	0.68	0.80	0.94	B	C	E
16	Ramp back to Red	200	230	260	0.20	0.23	0.26	A	A	A
17	Airport recirculation ramp	790	890	1,030	0.39	0.44	0.51	A	A	A
21	George J. Bean Pkwy SB ramp to Airport Service Rd EB	310	350	400	0.31	0.35	0.40	A	A	A
22	Airport Service Rd WB ramp to George J. Bean Pkwy SB	725	790	955	0.36	0.39	0.47	A	A	A
26	NB Bessie Coleman Blvd (one-way)	635	695	770	0.63	0.69	0.76	B	B	C
27	NB to terminal short-term ramp	1,233	1,404	1,665	0.81	0.92	1.09	D	E	F
28	NB George J. Bean Pkwy	1,370	1,560	1,850	0.45	0.51	0.60	A	A	A
29A	George J. Bean Pkwy SB from Economy Parking WB	925	1,020	1,095	0.72	0.79	0.85	C	C	D
29B	George J. Bean Pkwy NB to Economy Parking EB	730	820	910	0.57	0.64	0.71	A	B	C
33	Spruce St to George J. Bean Pkwy NB	550	630	720	0.36	0.41	0.47	A	A	A
34	George J. Bean Pkwy NB ramp from SR 60	1,165	1,295	1,570	0.38	0.42	0.51	A	A	A
35	George J. Bean Pkwy NB ramp	1,550	1,750	2,040	0.51	0.57	0.67	A	A	B
36	George J. Bean Pkwy SB ramp to I-275 SB	1,240	1,425	1,760	0.69	0.79	0.98	B	C	E
37	George J. Bean Pkwy SB exit ramp	620	690	770	0.41	0.45	0.50	A	A	A
38	George J. Bean Pkwy SB exit ramp	910	1,010	1,130	0.59	0.66	0.74	A	B	C
41	Bessie Coleman Blvd to George J. Bean Pkwy NB	570	650	745	0.44	0.50	0.58	A	A	A
45	Short exit from pay parking	30	30	40	0.03	0.03	0.04	A	A	A
46	Long exit from pay parking to recirculation ramp	60	70	80	0.06	0.07	0.08	A	A	A
47	Exit pay parking to George J. Bean Pkwy SB	630	630	810	0.49	0.49	0.63	A	A	B
48	George J. Bean Pkwy SB exit to Cypress St (O'Brien St) ramp	120	145	170	0.09	0.11	0.13	A	A	A
49	George J. Bean Pkwy SB exit ramp to I-275 NB	810	915	1,060	0.63	0.71	0.82	B	C	D
50	George J. Bean Pkwy SB exit ramp to Spruce St	730	825	950	0.57	0.64	0.74	A	B	C

NOTES: PAL 1 – 2032; PAL 2 – 2037; PAL 3 – 2042
PAL – Planning Activity Level
EB – Eastbound
WB – Westbound
SB – Southbound
NB – Northbound
I-275 – Interstate 275
SR – State Road
SOURCES: AECOM, March 2022 (data); Ricondo & Associates, Inc., August 2022 (analysis).

Pedestrians are not allowed to cross the arrivals or departures curbside roads at either the Blue or Red Side. The vehicle dwell times at the full-service curbside roadways were originally collected in March 2018. Full-service lane arrival peak hours were observed on March 16, 2018, and full-service lane departure peak hours were observed on March 19, 2018. Dwell times at the express lanes were measured on July 4, 2022. **Table 4.6-16** lists the average dwell times implemented in the Vissim model.

TABLE 4.6-16: AVERAGE DWELL TIMES

	AVERAGE DWELL TIMES (HR:MIN:SEC)			
	BLUE DEPARTURES	RED DEPARTURES	BLUE ARRIVALS	RED ARRIVALS
Full-Service Lanes	0:02:00	0:01:33	0:01:33	0:01:48
Express Lanes	0:01:11	N/A	0:01:00	N/A

NOTE:
N/A – Not Applicable
SOURCE: Ricondo & Associates, Inc., June 2022.

Model Calibration Process

The model calibration was conducted to accomplish the best match between the model performance estimates and actual field measurements. The simulation model attempts to closely replicate the local driving behavior and traffic patterns (including delays and queues) observed along the roadway network. The calibration efforts included a visual review of microsimulation flows against security camera videos of actual peak-hour traffic conditions, which were provided by the HCAA and Miovision videos.

The existing Vissim model was adjusted to replicate field conditions. At the Blue curbside roads, the longest queue was observed to extend beyond the gore point and sporadically spill over to George J. Bean Parkway, but it did not block the through traffic on George J. Bean Parkway. The developed Vissim model provides a simulation of anticipated traffic accessing the curbside and the effects of the interaction of vehicles stopping and maneuvering within curbside pick-up and drop-off zones during the peak period conditions. In general, the Vissim model's simulation of the existing conditions closely follows the observed traffic characteristics.

George J. Bean Parkway and Signalized Intersection Analysis

A total of 23 key segments and 8 major intersections within the study area were coded in the Vissim model. A LOS letter grade was assigned to each roadway segment or intersection for the peak hour of traffic based on the number of lanes, traffic volumes, and traffic controls. According to the *Highway Capacity Manual*, LOS is a qualitative measure describing operational conditions within a traffic stream, generally in terms of measures such as speed and travel time, freedom to maneuver, traffic interruptions, and comfort and convenience. Letters designate each level, from A to F, with LOS A representing the best operating conditions and LOS F representing the worst conditions. LOS A, B, and C represent stable flow conditions or better; LOS D represents traffic operations approaching unstable flow; LOS E represents unstable flow; and LOS F represents forced or breakdown flow. **Table 4.6-17** shows the LOS ranges for intersections, in seconds of delay per vehicle.

TABLE 4.6-17: LEVEL OF SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

LOS	AVERAGE CONTROL DELAY (SEC/VEH)	DESCRIPTION
A	<10	Free flow
B	>10 – 20	Stable flow (slight delays)
C	>20 – 35	Stable flow (acceptable delays)
D	>35 – 55	Approaching unstable flow (tolerable delay)
E	>55 – 80	Unstable flow (intolerable delay)
F	>80	Forced flow (jammed)

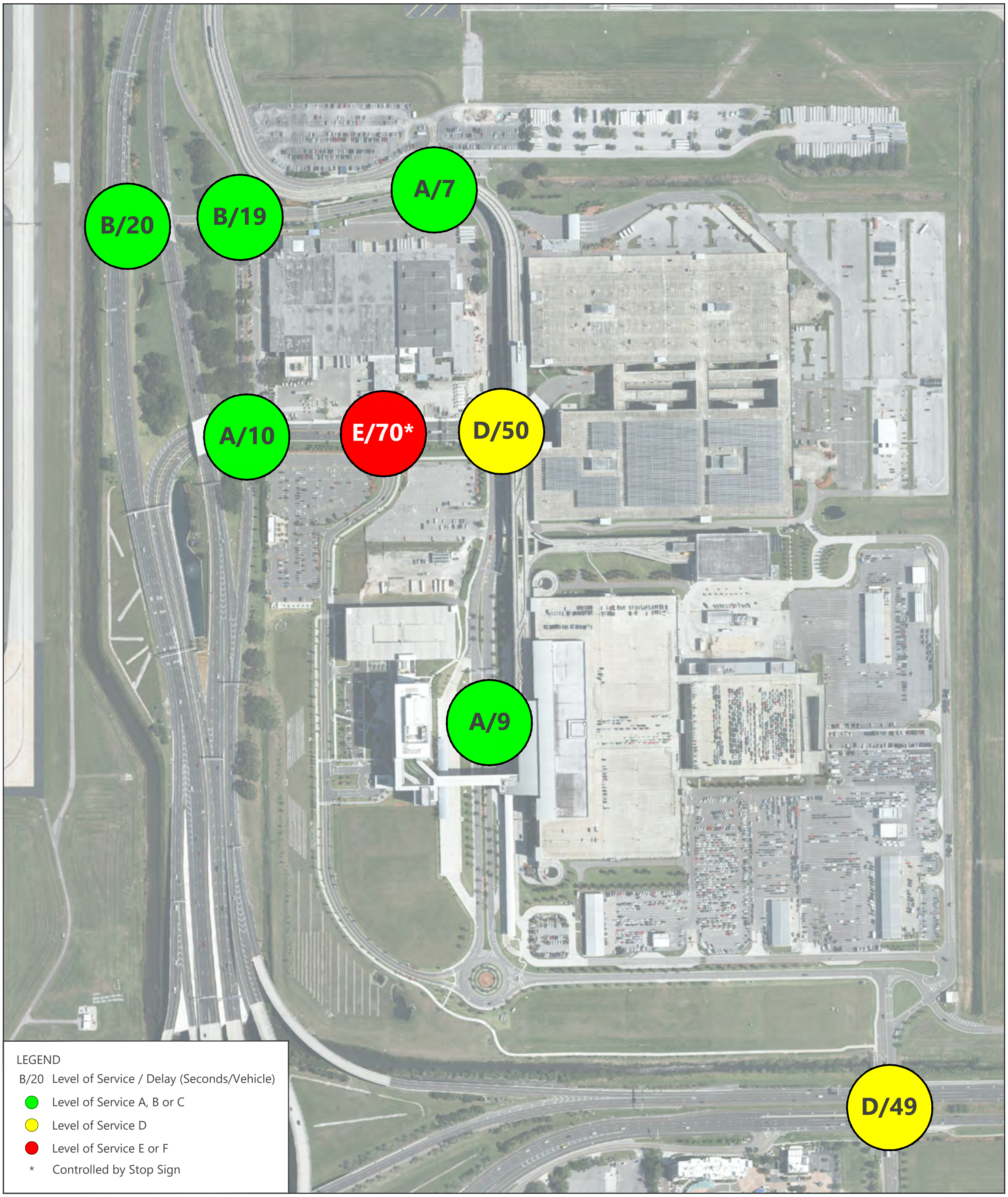
SOURCE: Transportation Research Board, National Research Council, *Highway Capacity Manual*, 2016.

Table 4.6-18 and **Exhibit 4.6-14** present the Vissim simulation outputs for the intersections within the SkyCenter area for the existing conditions.

TABLE 4.6-18: EXISTING CONDITIONS INTERSECTION ANALYSIS RESULTS

LOCATION	CONTROL TYPE	DELAY (SEC/VEH)	LOS
Economy Parking Rd and Bessie Colemand Blvd	Signal	10	A
SkyCenter Dr and Economy Parking Rd	Stop Sign	70	E
Economy Parking Rd and Airport Service Rd	Signal	50	D
Rental Car Center and Airport Service Rd	Signal	9	A
Post office dock and Airport Service Rd	Signal	7	A
Bessie Coleman Blvd and Airport Service Rd	Signal	20	B
George J. Bean Pkwy SB off-ramp and Airport Service Rd	Signal	19	B
O'Brien St and Spruce St	Signal	49	D

NOTES:
LOS – Level of Service
SB – Southbound
SOURCE: AECOM, June 2022.



SOURCE: Martinez Geospatial, Inc., December 2022 (aerial photography);
AECOM, *Tampa International Airport (TPA) Master Plan Update Ground Transportation Study*, June 2022.

NORTH 0 500 ft

EXHIBIT 4.6-14

EXISTING CONDITIONS INTERSECTION ANALYSIS RESULTS

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6-11 Intersection Analysis Results.dwgLayout: 3 Plotted: May 15, 2024, 03:40PM

Table 4.6-19 lists the Vissim simulation outputs for the roadway segments along George J. Bean Parkway for the existing conditions. As displayed in the table, the simulated travel speeds along George J. Bean Parkway are in the range of 22 to 45 miles per hour.

TABLE 4.6-19: EXISTING CONDITIONS – GEORGE J. BEAN PARKWAY SEGMENTS

SEG ID		FROM	TO	SPEED (MPH)
1	George J. Bean Parkway Inbound	South end	Exit to Economy Parking Rd	43
2	George J. Bean Parkway Inbound	Exit to Economy Parking Rd	Entrance from Spruce St	40
3	George J. Bean Parkway Inbound	Entrance from Spruce St	Entrance from Airport Service Rd	32
4	George J. Bean Parkway Inbound	Entrance from Airport Service Rd	Exit to Short- / Long-Term Parking	30
5	George J. Bean Parkway Inbound	Exit to Short- / Long-Term Parking	Entrance from Blue recirculation road	30
6	George J. Bean Parkway Inbound	Entrance from Blue recirculation road	Exit to Blue curbside road	22
7	George J. Bean Parkway Inbound	Exit to Blue curbside road	Entrance from Red recirculation road	28
8	George J. Bean Parkway Inbound	Entrance from Red recirculation road	Entrance from Red departures	26
9	George J. Bean Parkway Inbound	Entrance from Red departures	Entrance from Red arrivals	26
10	George J. Bean Parkway Inbound	Entrance from Red arrivals	Exit to Airport Access Rd	26
11	George J. Bean Parkway Outbound	Entrance from Airport Access Rd	Exit to Red arrivals	25
12	George J. Bean Parkway Outbound	Exit to Red arrivals	Exit to Red departures	26
13	George J. Bean Parkway Outbound	Exit to Red departures	Entrance from Blue departures full-service lane	26
14	George J. Bean Parkway Outbound	Entrance from Blue departures full-service lane	Entrance from Blue arrivals	22
15	George J. Bean Parkway Outbound	Entrance from Blue arrivals	Entrance from Blue departures express lanes	25
16	George J. Bean Parkway Outbound	Entrance from Blue departures express lanes	Exit to recirculation lanes	26
17	George J. Bean Parkway Outbound	Exit to recirculation lanes	Entrance from parking	26
18	George J. Bean Parkway Outbound	Entrance from parking	Exit to Airport Service Rd	42
19	George J. Bean Parkway Outbound	Exit to Airport Service Rd	Entrance from Airport Service Rd	41
20	George J. Bean Parkway Outbound	Entrance from Airport Service Rd	Entrance from Economy Parking Rd	40
21	George J. Bean Parkway Outbound	Entrance from Economy Parking Rd	Exit to Clearwater	42
22	George J. Bean Parkway Outbound	Exit to Clearwater	Exit to I-275 NB / Spruce St	45
23	George J. Bean Parkway Outbound	Exit to I-275 NB / Spruce St	I-275 SB	38

NOTES:
MPH – Mies per Hour
NB – Northbound
SB – Southbound
I-275 – Interstate 275
SOURCE: AECOM, June 2022.

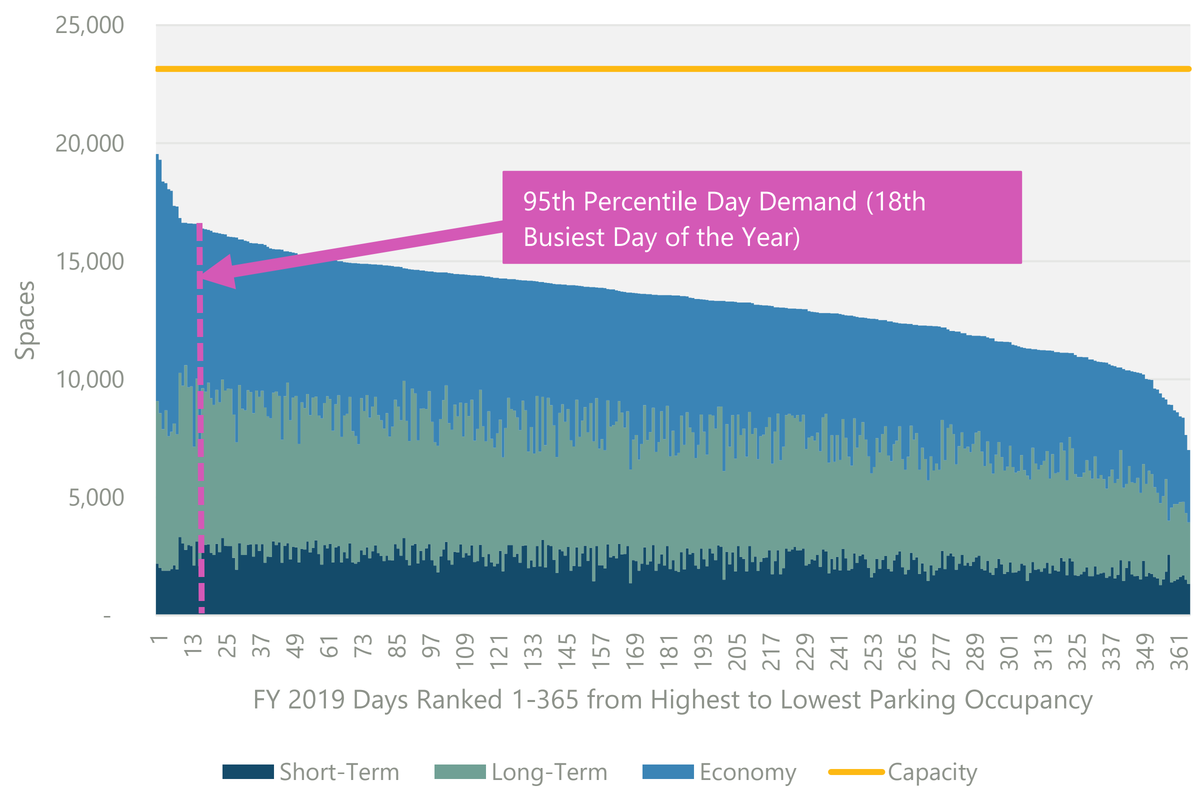
4.6.2 PUBLIC AND EMPLOYEE PARKING

4.6.2.1 PUBLIC PARKING

Demand/Capacity

The existing conditions for public parking demand were determined by analyzing the peak occupancy in each parking facility for every day of a 365-day period. Given the impacts of COVID-19 on parking demand, multiple base years were analyzed for the MPU. FY 2019 was identified as the base year since it was the last full FY prior to COVID-19. **Exhibit 4.6-15** shows the public parking demand by product (Short-Term, Long-Term, and Economy), sorted in descending order from busiest day to least busy day of the year. The 95th percentile demand day of the year represents the capacity planning standard for future years.

EXHIBIT 4.6-15: FY 2019 PUBLIC PARKING DEMAND IN DESCENDING ORDER

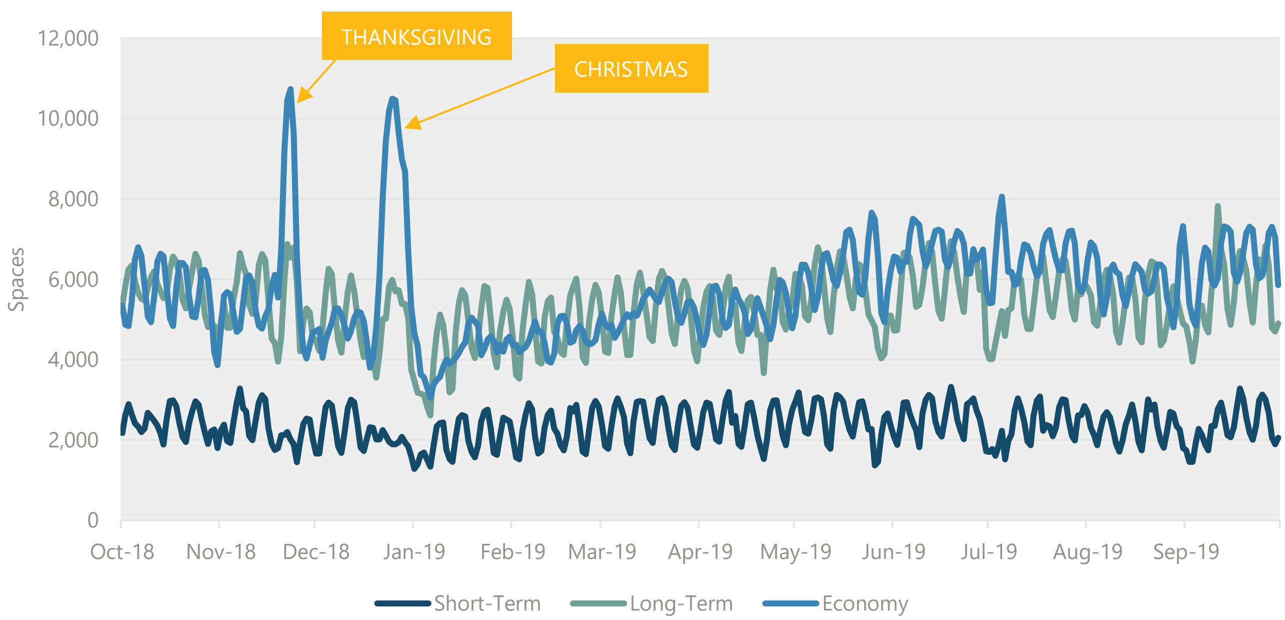


SOURCES: Hillsborough County Aviation Authority, June 2022 (data); Ricondo & Associates, Inc., June 2022 (analysis).

FY 2019 demand was then compared to FY 2021 demand to assess the recovery in parking demand from COVID-19. FY 2020 was excluded from this analysis due to substantially reduced demand during the pandemic. **Exhibit 4.6-16** shows FY 2019 demand by product and **Exhibit 4.6-17** shows FY 2021 demand to compare peak periods and trends between the 2 years. In FY 2019, overall demand peaked around Thanksgiving and Christmas, which was driven by increases in Economy parking demand. The first half of FY 2021 did not show the same magnitude of demand at that time of year. However, a clear recovery pattern emerged beginning in the summer of 2021; the end of FY 2021 had nearly similar demand levels as the same period in FY 2019. Given the rapid change in demand, the analysis was further updated to include the latest available data through May 31, 2022. The year ending May 31, 2022, is the analysis year for existing conditions.

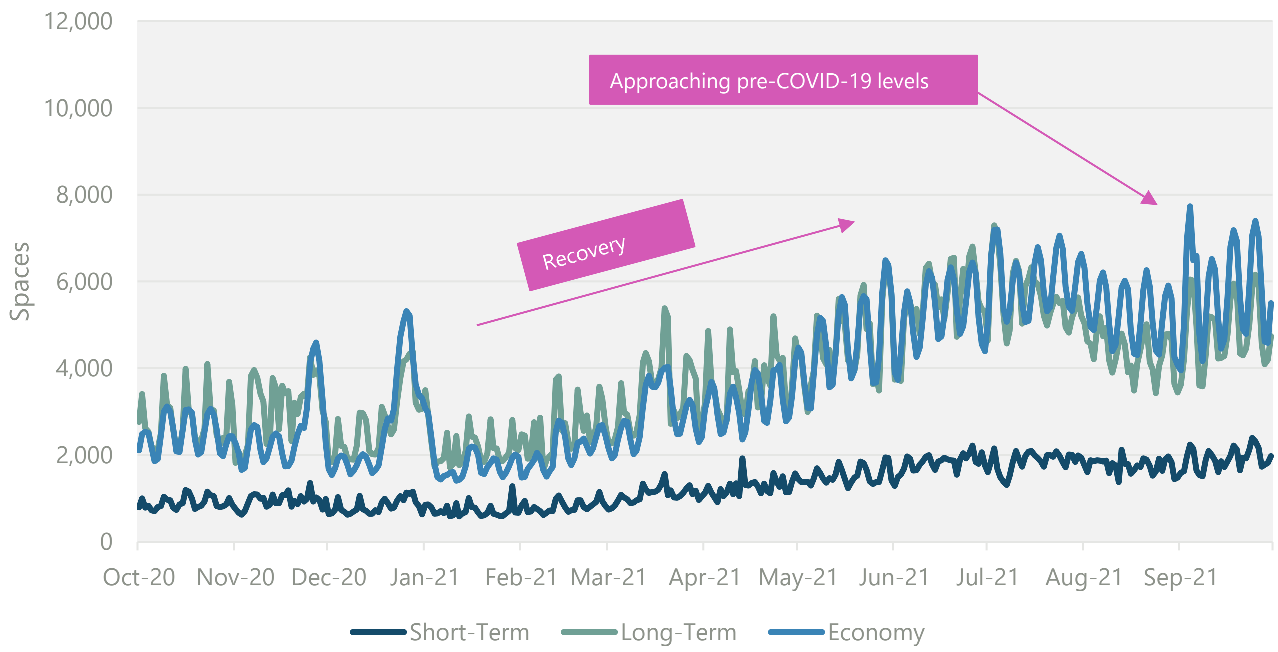
Because the analysis year spans FY 2021 to FY 2022, the comparison focuses on the same 12-month period leading up to the COVID-19 pandemic. The analysis year was impacted by COVID-19 but had generally recovered close to pre-pandemic levels. **Exhibit 4.6-18** shows the year ending May 31, 2020, while **Exhibit 4.6-19** shows the analysis year (ending May 31, 2022). The analysis shows the product distribution has changed; in the analysis year, Economy parking demand surged past pre-pandemic levels, while Short-Term parking demand lagged. This is likely attributable to a change in traveler demographics and trip purpose (i.e., faster recovery in leisure travel than business travel).

EXHIBIT 4.6-16: FY 2019 PUBLIC PARKING DEMAND BY PRODUCT



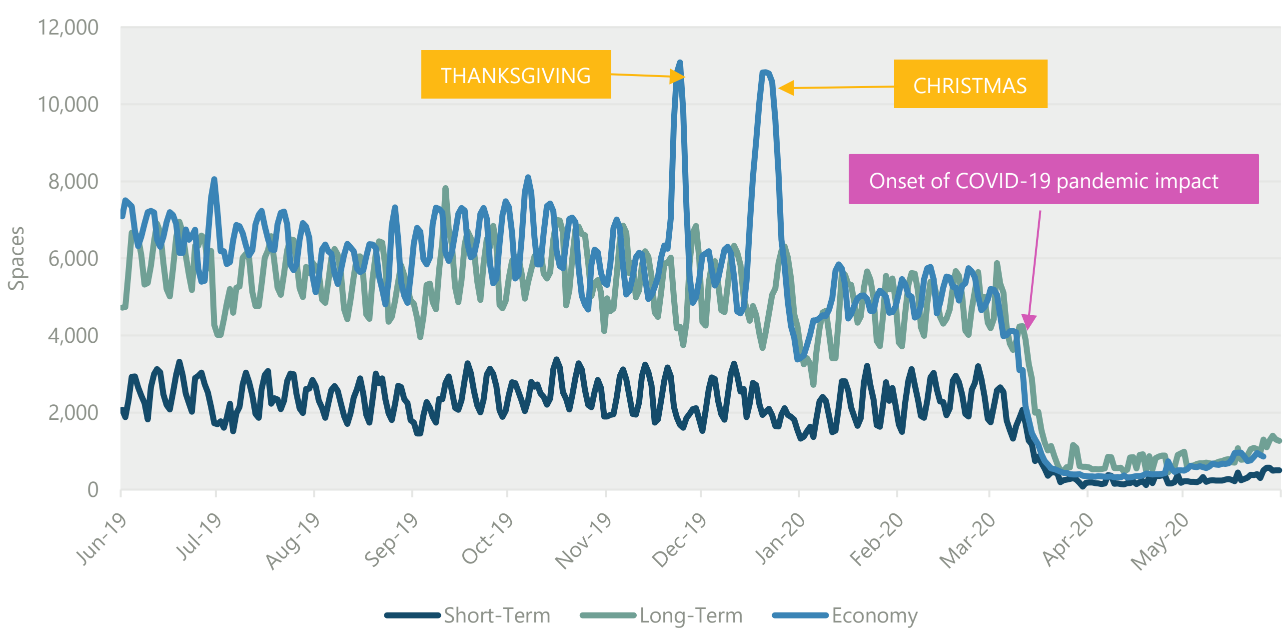
SOURCES: Hillsborough County Aviation Authority, June 2022 (data); Ricondo & Associates, Inc., June 2022 (analysis).

EXHIBIT 4.6-17: FY 2021 PUBLIC PARKING DEMAND BY PRODUCT



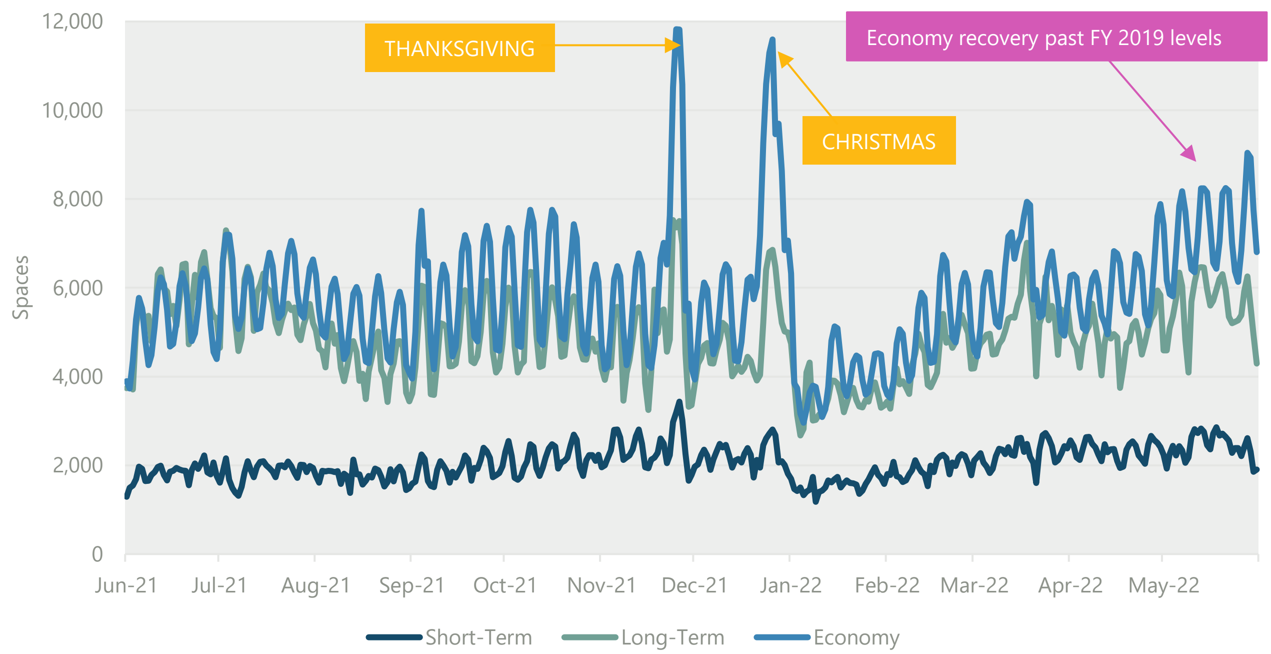
SOURCES: Hillsborough County Aviation Authority, June 2022 (data); Ricondo & Associates, Inc., June 2022 (analysis).

EXHIBIT 4.6-18: YEAR ENDING MAY 31, 2020, PARKING DEMAND BY PRODUCT



SOURCES: Hillsborough County Aviation Authority, June 2022 (data); Ricondo & Associates, Inc., June 2022 (analysis).

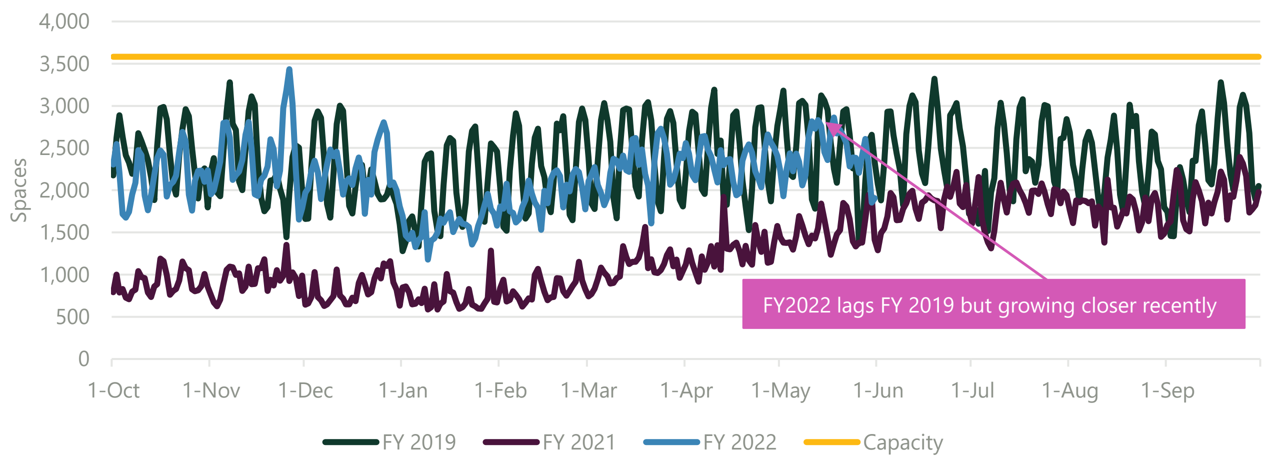
EXHIBIT 4.6-19: YEAR ENDING MAY 31, 2022, PARKING DEMAND BY PRODUCT



SOURCES: Hillsborough County Aviation Authority, June 2022 (data); Ricondo & Associates, Inc., June 2022 (analysis).

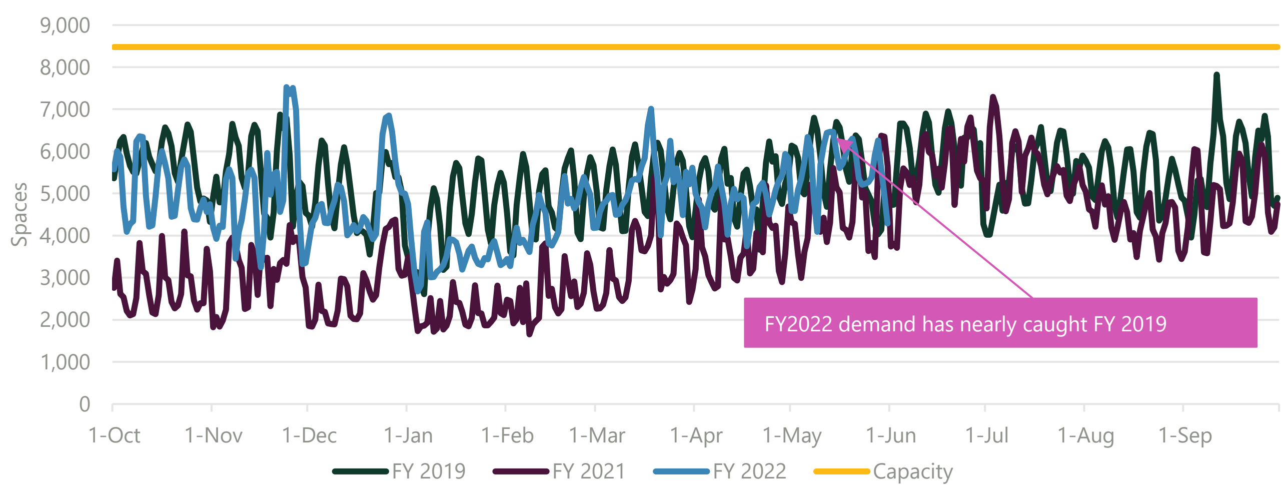
The peak days of the analysis year exceeded pre-pandemic levels, and recurring daily demand was near pre-pandemic levels (96 percent of days in year ending May 31, 2020, were above 10,000 spaces occupied, versus 88 percent in the analysis year). **Exhibit 4.6-20** compares the Short-Term demand in FYs 2019, 2021, and 2022, while **Exhibit 4.6-21** compares the Long-Term demand, and **Exhibit 4.6-22** compares the Economy demand. At the end FY 2021, Short-Term and Long-Term demand lagged FY 2019 demand by approximately 26 percent and 11 percent, respectively; in the most recent months of FY 2022, demand was approximately 10 percent and 3 percent below FY 2019, respectively. Economy parking demand recovered to within approximately 3 percent of FY 2019 levels by the end of FY 2021 and was 15 percent higher in FY 2022 compared to FY 2019.

EXHIBIT 4.6-20: SHORT-TERM GARAGE DEMAND COMPARISON



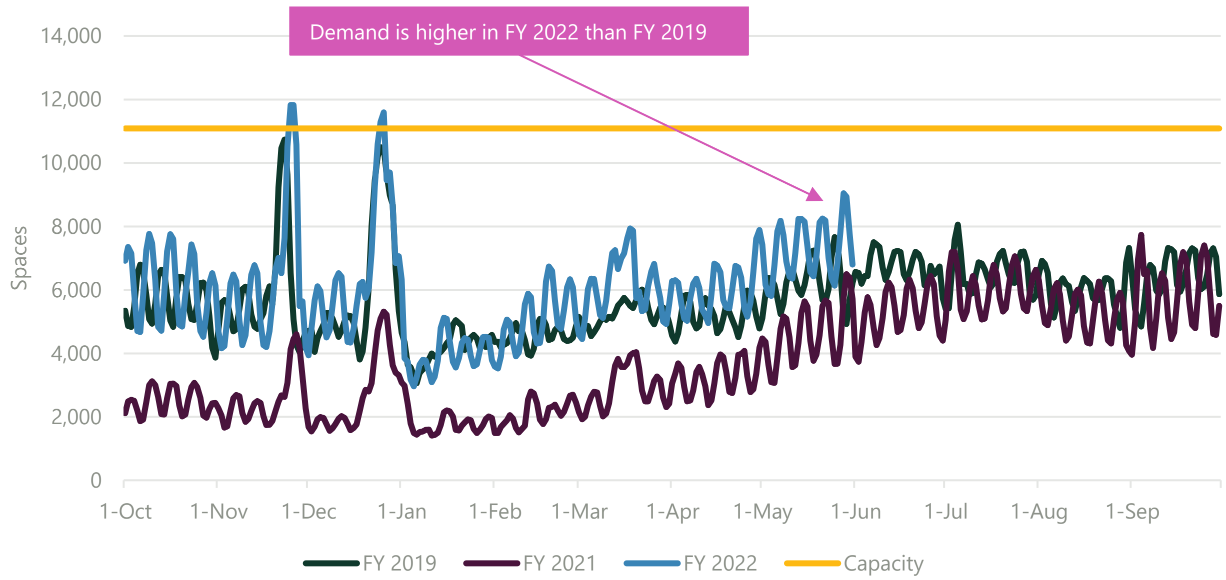
SOURCES: Hillsborough County Aviation Authority, June 2022 (data); Ricondo & Associates, Inc., June 2022 (analysis).

EXHIBIT 4.6-21: LONG-TERM GARAGE DEMAND COMPARISON



SOURCES: Hillsborough County Aviation Authority, June 2022 (data); Ricondo & Associates, Inc., June 2022 (analysis).

EXHIBIT 4.6-22: ECONOMY GARAGE DEMAND COMPARISON



SOURCES: Hillsborough County Aviation Authority, June 2022 (data); Ricondo & Associates, Inc., June 2022 (analysis).

Baseline Requirements

Baseline public parking requirements were calculated by forecasting the analysis year demand according to the MPU forecast. Public parking products were defined as effectively full at 90 percent capacity. A net increase of 140 Short-Term spaces (resulting in 3,722 total spaces) and 384 Long-Term spaces (resulting in 8,862 total spaces) were included in the capacity from 2025 onward due to the anticipated completion of the monorail removal and moving walkways installation project. An increase of 1,209 Economy spaces from 2026 onward was included in the capacity, representing surface parking overflow and Red Express Curb construction staging to the east of the Economy Parking Garage, which is anticipated to be available for public parking when that project is complete. **Table 4.6-20** shows the future parking requirements for the Short-Term, Long-Term, and Economy parking products for PALs 1, 2, and 3. The public parking system is anticipated to reach capacity in approximately FY2027, with a total PAL 3 deficit of approximately 9,210 spaces.

Other factors, such as the introduction of autonomous vehicles to the airport landside environment, changes to the TNC business model, new modes of transportation access to the airport such as public rail transit may impact future parking demand and requirements. Additionally, the Authority conducted a public parking pricing strategy study concurrent with the MPU, and the effects of pricing on parking demand are considered and incorporated into the MPU parking analysis. These factors are discussed further in Chapter 5.

TABLE 4.6-20: BASELINE FUTURE PUBLIC PARKING REQUIREMENTS

FACILITY	CAPACITY / REQUIREMENT (PARKING SPACES)	BASELINE (2022)	PAL 1 (2032; 30.5 MAP)	PAL 2 (2037; 34.6 MAP)	PAL 3 (2042; 38.8 MAP)
Short-Term	Capacity	3,582	3,722	3,722	3,722
	90% Effective Capacity	3,220	3,350	3,350	3,350
	Requirement	2,680	3,880	4,390	4,940
	Surplus/(Deficit)	**540**	**(530)**	**(1,040)**	**(1,590)**
Long-Term	Capacity	8,478	8,862	8,862	8,862
	90% Effective Capacity	7,630	7,980	7,980	7,980
	Requirement	6,460	9,340	10,570	11,880
	Surplus/(Deficit)	**1,170**	**(1,360)**	**(2,590)**	**(3,900)**
Economy	Capacity	11,290	12,499	12,499	12,499
	90% Effective Capacity	10,160	11,250	11,250	11,250
	Requirement	8,140	11,760	13,320	14,970
	Surplus/(Deficit)	**2,020**	**(510)**	**(2,070)**	**(3,720)**
Total Public Parking	Capacity	23,350	25,083	25,083	25,083
	90% Effective Capacity	21,010	22,580	22,580	22,580
	Requirement	17,280	24,980	28,280	31,790
	Surplus/(Deficit)	**3,730**	**(2,400)**	**(5,700)**	**(9,210)**

NOTES: The 90 percent effective capacities and requirements were rounded to the nearest 10 spaces.
MAP – Million Annual Passengers
PAL – Planning Activity Level
SOURCES: Hillsborough County Aviation Authority, June 2022 (data); Ricondo & Associates, Inc., June 2022 (analysis).

4.6.2.2 EMPLOYEE PARKING

Employee parking requirements for the North Employee Lot were derived from parking occupancy data provided by the HCAA, and they were compared to a previous study conducted by Ricondo in 2020. COVID-19 impacted employee parking demand in 2020 and 2021 due to changes in employment at the Airport and other factors. Based on discussions with HCAA staff, it was determined that 2019 employment levels (and employee parking demand) would be more representative of employee parking demand per enplaned passenger and per aircraft operation for the post–COVID-19 period. Therefore, 2019 was used as the base year for the analysis of employee parking demand and for the requirements.

The peak demand in the North Employee Lot in 2019 was 2,412 vehicles, compared to a capacity of 2,615 vehicles. Employee parking demand was forecast using a blended rate of enplaned passenger growth and aircraft operations growth for the employee categories that are anticipated to track with general activity at the Airport (e.g., airline employees). Additionally, employee parking demand was assumed to grow incrementally with the opening of Airside D. For employee categories that would experience a step change in growth with a new airside facility to support (e.g., TSA, concessions, and Airport support/janitorial), there is an incremental growth step for the year (assumed to be FY2028) that Airside D opens, which is proportional to new square footage and gates.

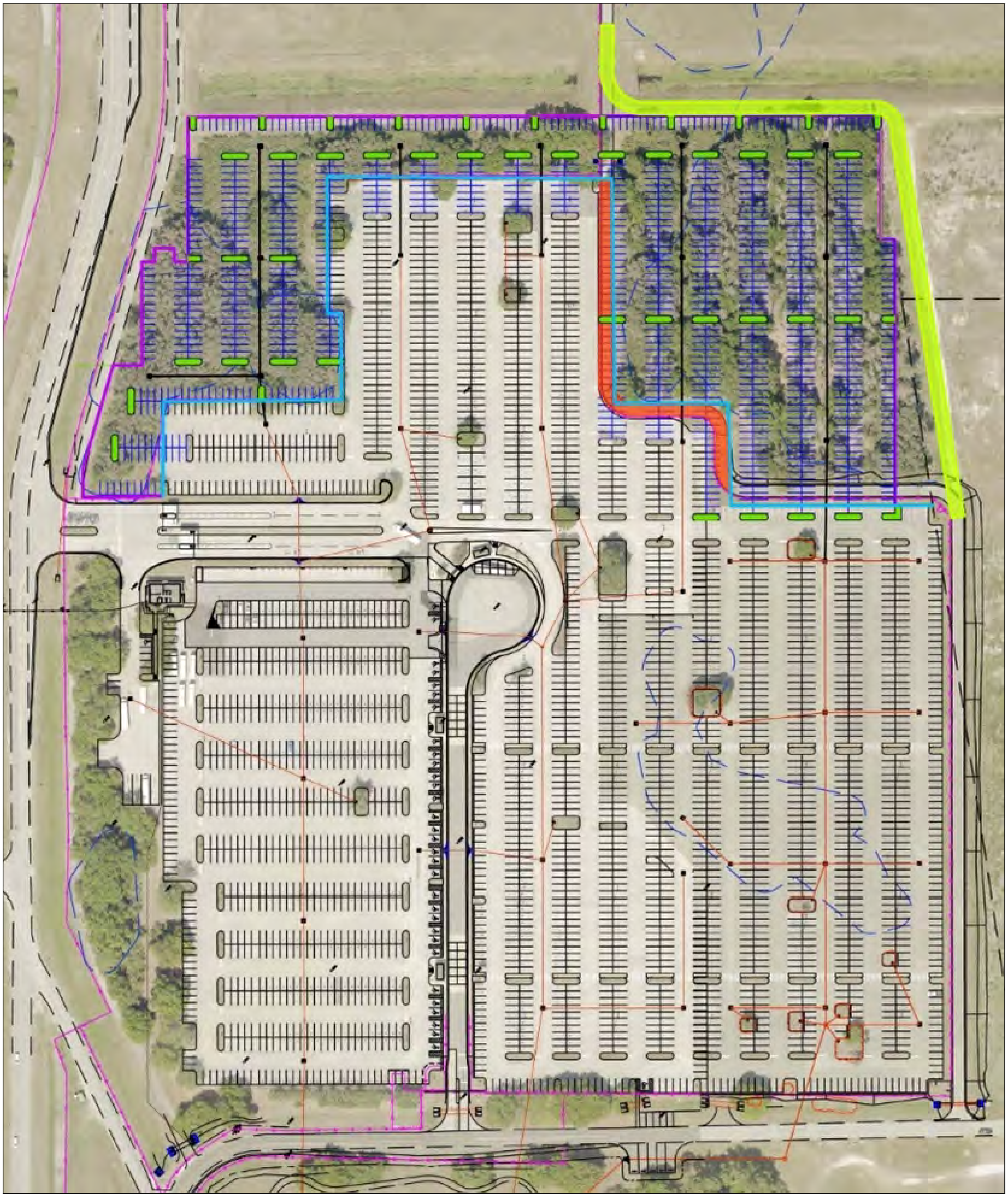
The HCAA is planning to expand the North Employee Lot in 2024 from 2,615 spaces to approximately 3,590 spaces. **Exhibit 4.6-23** shows the conceptual planned expansion of the North Employee Lot.

Table 4.6-21 lists the parking requirements for each PAL. Accounting for the planned expansion and the opening of Airside D, the North Employee Lot is anticipated to have sufficient capacity until PAL 1, as shown on **Exhibit 4.6-24**. However, approximately 890 additional spaces will be required to meet PAL 3 requirements.

TABLE 4.6-21: EMPLOYEE PARKING REQUIREMENTS

			PAL 1	PAL 2	PAL 3
	FY2019	FY2022	FY2032	FY2037	FY2042
Enplaned Passengers (millions)[1]	**11.1**	**10.6**	*15.3*	*17.3*	*19.4*
Operations (thousands)[1]	**167**	**166**	*220*	*243*	*266*
NEL Parking Capacity (spaces)[2,3]	2,615	2,615	3,590	3,590	3,590
NEL Parking Requirements (spaces)[3]	2,410	2,360	3,610	4,040	4,480
Parking Space Surplus/(Deficit)[2,3]	205	255	(20)	(450)	(890)

NOTES:
NEL – North Employee Lot
PAL – Planning Activity Level
1 Actual passengers/operations are in **bold**; forecast passengers/operations are in *italics*.
2 Capacity increases due to the planned expansion.
3 Parking space capacity is rounded to the nearest 5 spaces, and requirements are rounded to the nearest 10 spaces.
SOURCES: Hillsborough County Aviation Authority, April 2022 (data); Ricondo & Associates, Inc., May 2022 (analysis).



SOURCE: Hillsborough County Aviation Authority, May 2022.

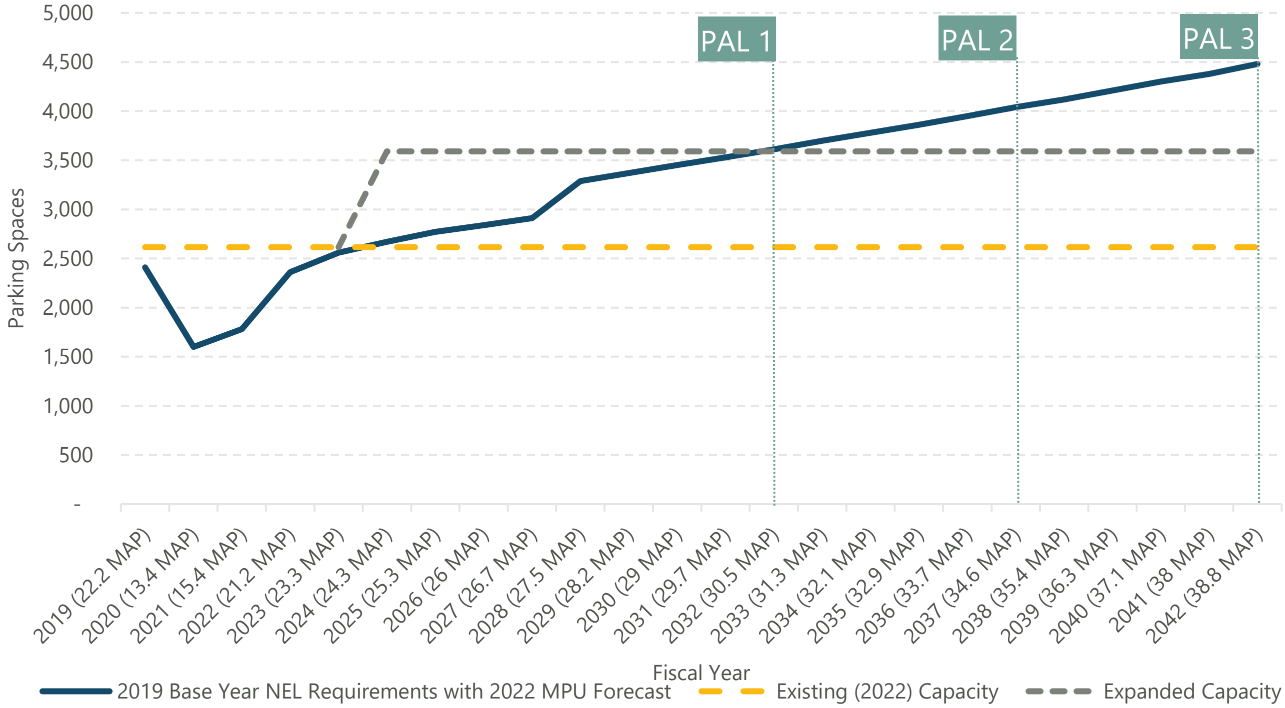
NORTH 0 400 ft

EXHIBIT 4.6-23

NORTH EMPLOYEE LOT PLANNED EXPANSION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Drawings&Models\AutoCAD\Ex 4.6-12 North Employee Lot Planned Expansion.dwgLayout: 3 Plotted: May 15, 2024, 03:41PM

EXHIBIT 4.6-24: NORTH EMPLOYEE LOT PARKING DEMAND/CAPACITY

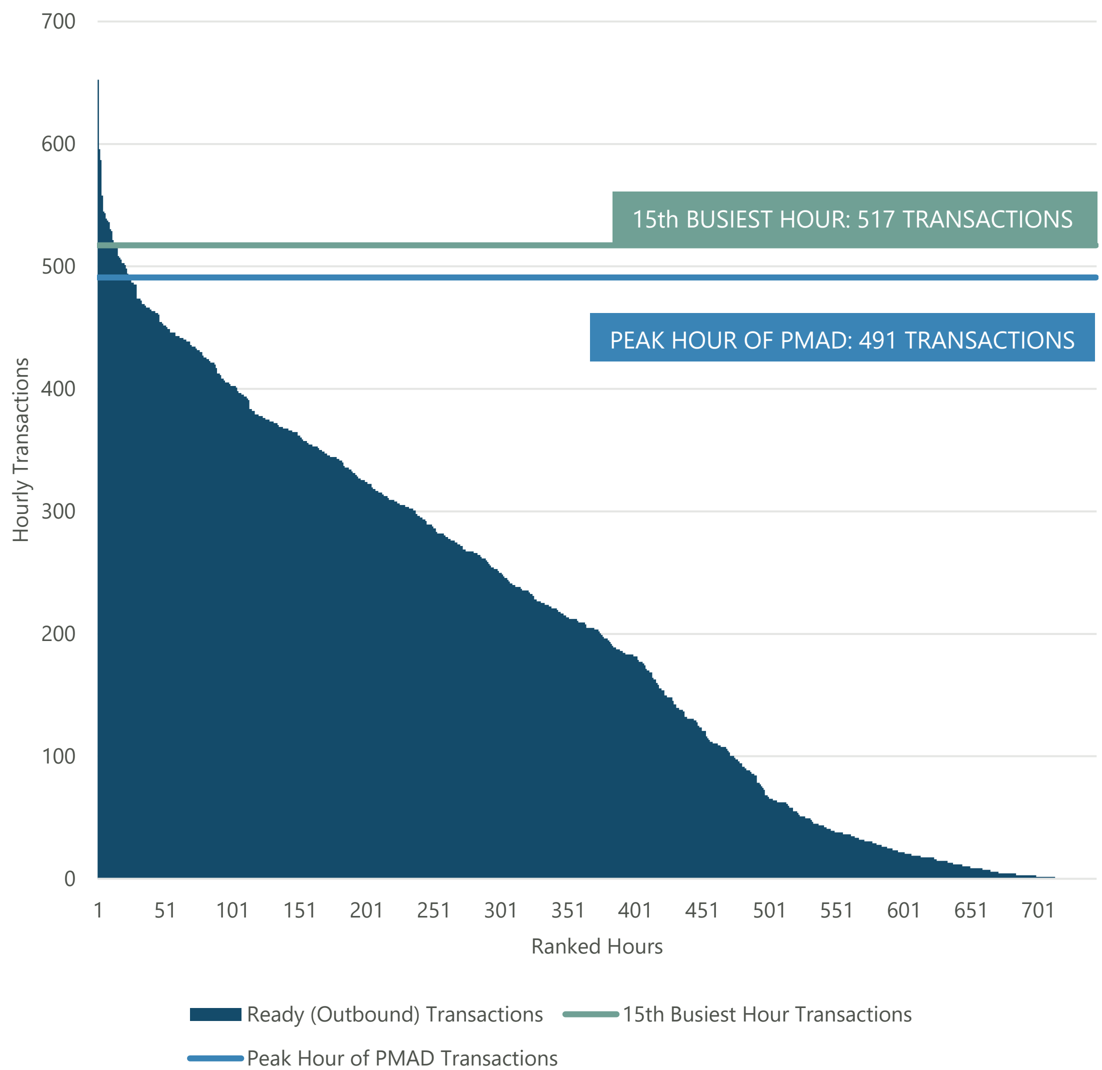


NOTES:
MAP – Million Annual Passengers
MPU – Master Plan Update
NEL – North Employee Lot
SOURCES: Hillsborough County Aviation Authority, April 2022 (data); Ricondo & Associates, Inc., May 2022 (analysis).

4.6.3 RENTAL CAR FACILITIES

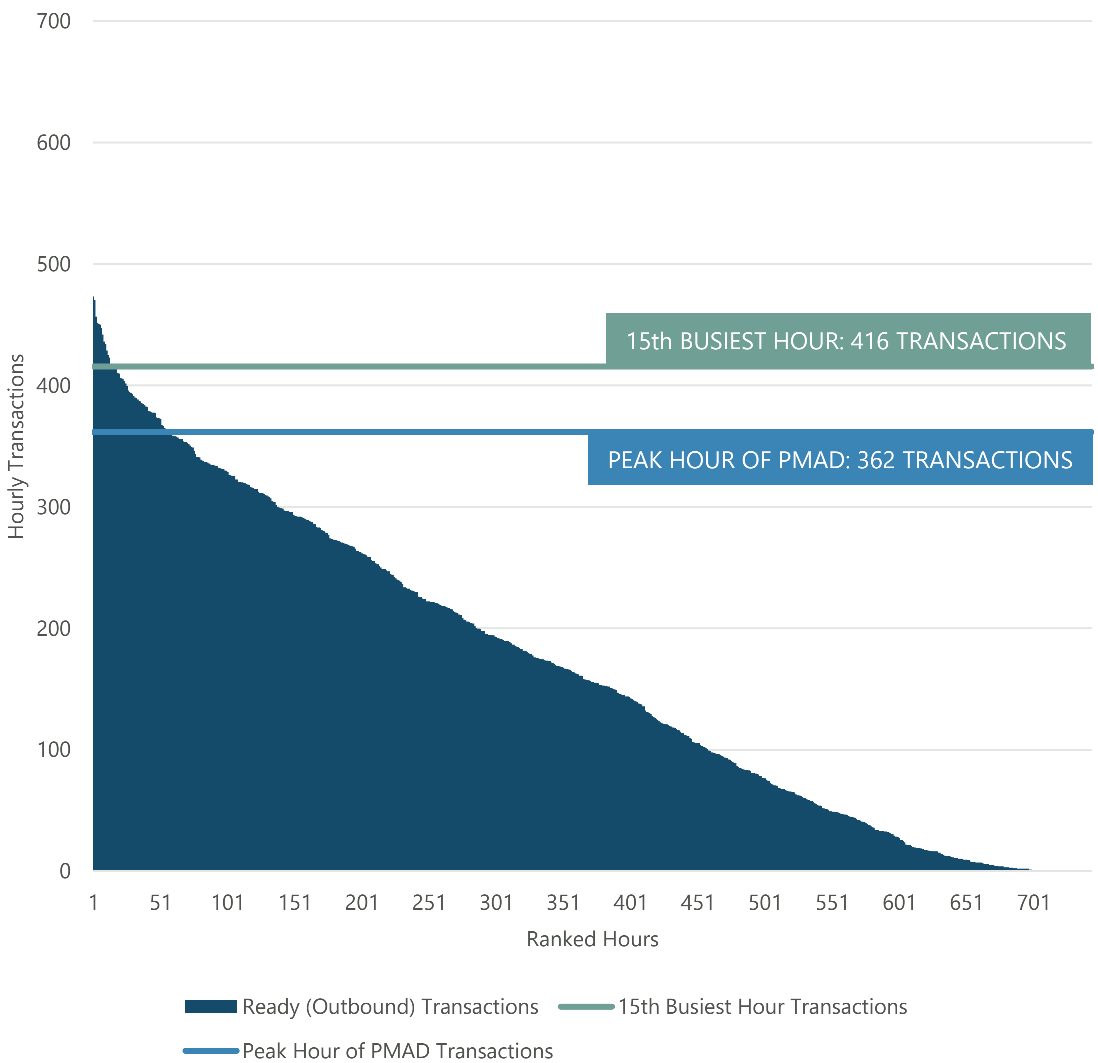
Given the impact of COVID-19 on travel demand and, by extension, rental car demand, the rental car demand analysis compared rental car transaction data from 2 years to establish a baseline condition: 2019 and 2022. Detailed rental car facility planning is often aligned with a 15th busiest hour planning standard; however, to maintain consistency with other Airport functional areas being planned to the PMAD standard for this MPU, both standards are shown for the 2019 and 2022 return (inbound) and ready (outbound) transactions for rental cars. March is the peak month for rental car activity at the Airport. **Exhibit 4.6-25** through **Exhibit 4.6-28** show the March transactions, sorted from busiest hour to least busy hour of the month. The peak hour of the PMAD is approximately 5 to 13 percent lower than the 15th busiest hour demand.

EXHIBIT 4.6-25: MARCH 2019 READY (OUTBOUND) TRANSACTIONS IN DESCENDING ORDER



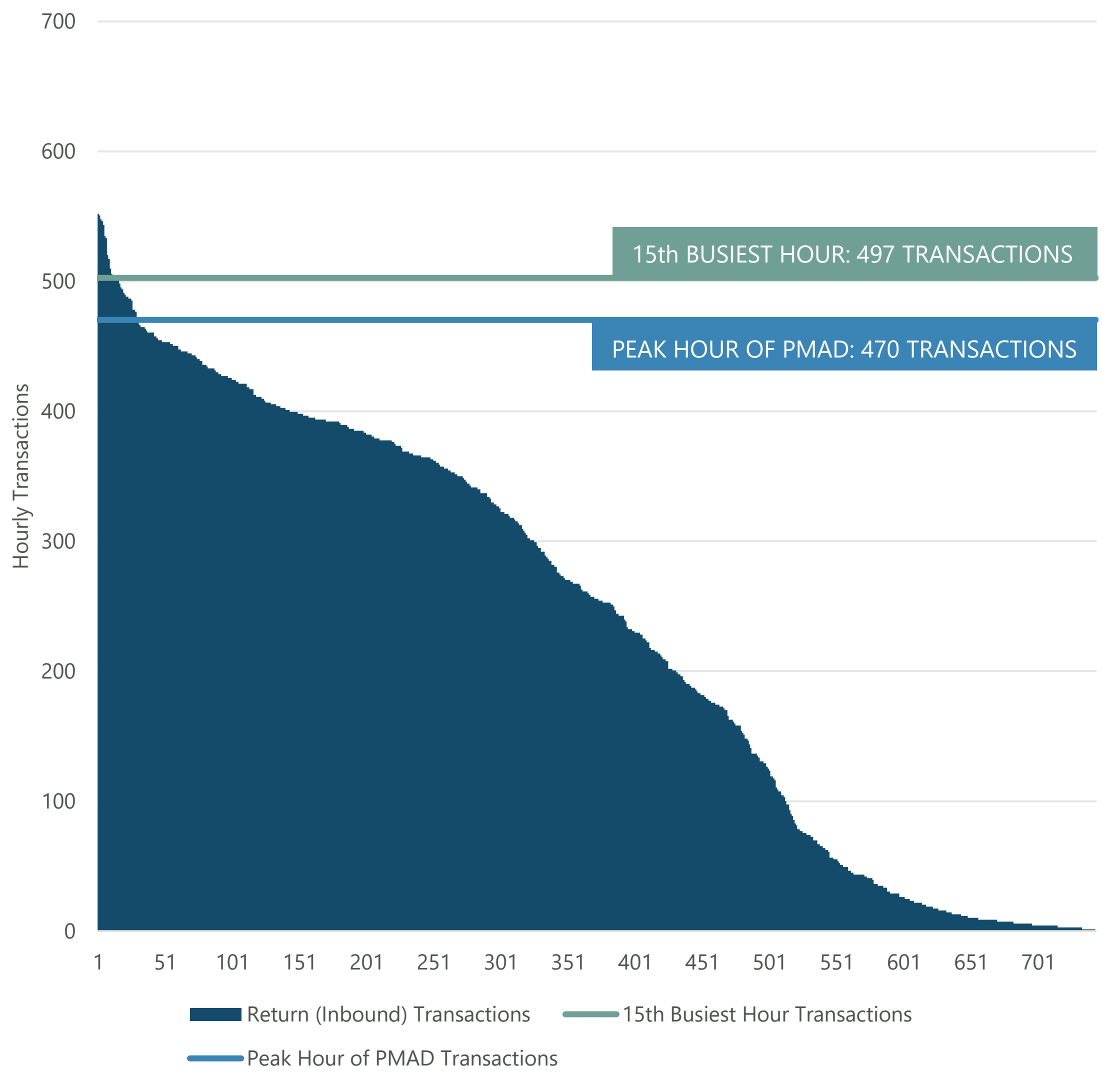
NOTE:
PMAD – Peak Month Average Day
SOURCES: Hillsborough County Aviation Authority, 2022 (data); Ricondo & Associates, Inc., October 2022 (analysis).

EXHIBIT 4.6-26: MARCH 2022 READY (OUTBOUND) TRANSACTIONS IN DESCENDING ORDER



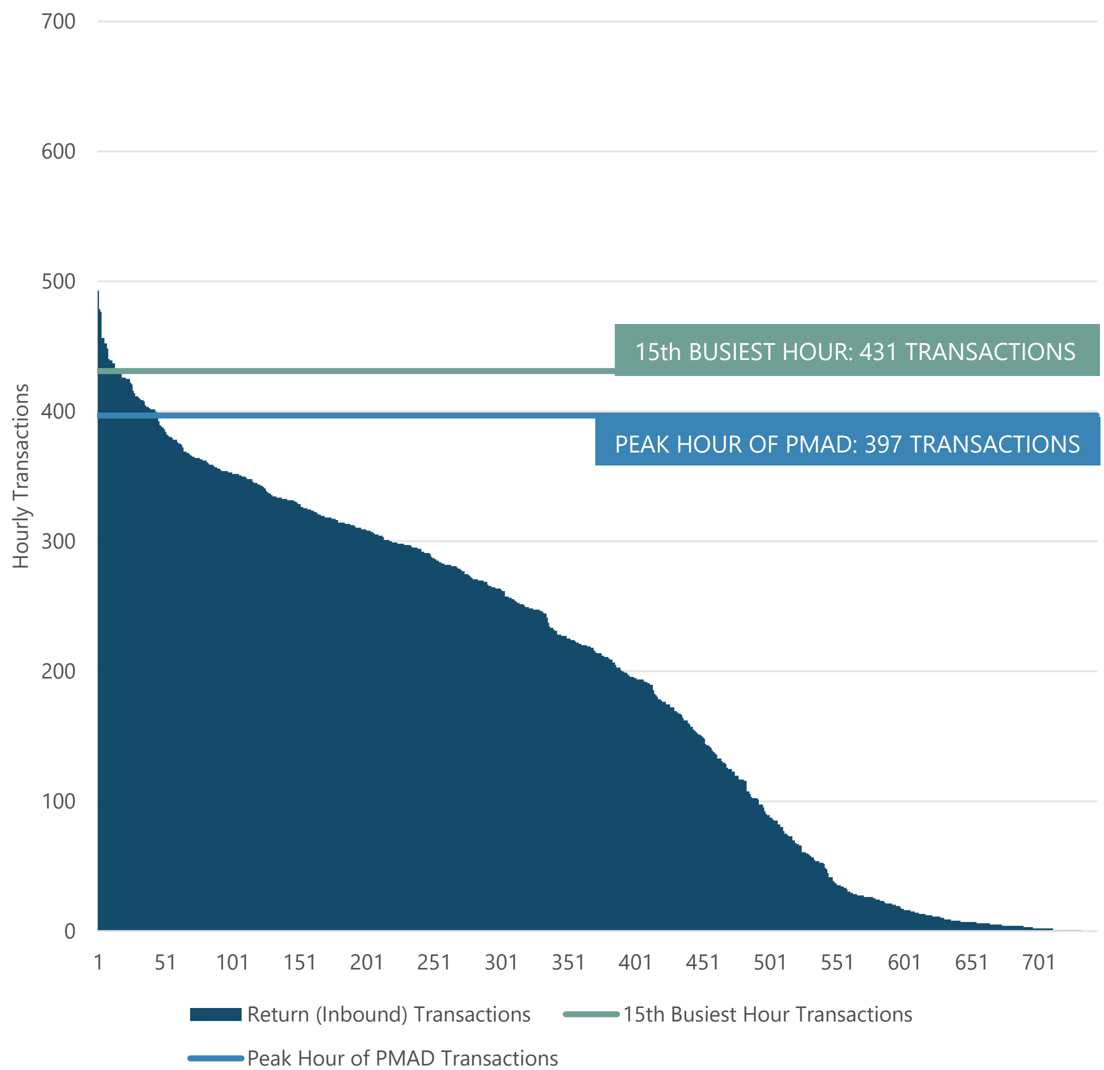
NOTE:
PMAD – Peak Month Average Day
SOURCES: Hillsborough County Aviation Authority, 2022 (data); Ricondo & Associates, Inc., October 2022 (analysis).

EXHIBIT 4.6-27: MARCH 2019 RETURN (INBOUND) TRANSACTIONS IN DESCENDING ORDER



NOTE:
PMAD – Peak Month Average Day
SOURCES: Hillsborough County Aviation Authority, 2022 (data); Ricondo & Associates, Inc., October 2022 (analysis).

EXHIBIT 4.6-28: MARCH 2022 RETURN (INBOUND) TRANSACTIONS IN DESCENDING ORDER



NOTE:
PMAD – Peak Month Average Day
SOURCES: Hillsborough County Aviation Authority, 2022 (data); Ricondo & Associates, Inc., October 2022 (analysis).

Table 4.6-22 compares March 2019 and March 2022 rental car demand with overall enplaned passengers. While enplaned passengers were only 4 percent lower in March 2022 compared with March 2019, rental car transactions were 21 percent lower for the month. Peak-hour transactions were 16 to 26 percent lower. Therefore, using March 2019 as a base year yields a more conservative requirement for rental car functional space. These divergences may be due to changing traveler behavior or a change in the mix of travelers (local or visitor) post–COVID-19.

TABLE 4.6-22: COMPARISON OF MARCH 2019 AND MARCH 2022 RENTAL CAR DEMAND

	MARCH 2019	MARCH 2022	% DIFFERENCE
Peak Hour of PMAD Ready Transactions	491	362	-26%
Peak Hour of PMAD Return Transactions	470	397	-16%
Total March Transactions	175,090	139,065	-21%
Total March Enplaned Passengers	1,169,861	1,121,117	-4%

NOTE:
PMAD – Peak Month Average Day
SOURCES: Hillsborough County Aviation Authority, 2022 (data); Ricondo & Associates, Inc., October 2022 (analysis).

Table 4.6-23 presents the space requirements for the four functional areas evaluated (customer service, ready/return, QTA area, and vehicle storage). The facility capacity is adequate through PAL 2. The ready/return and vehicle storage areas are anticipated to marginally exceed capacity in PAL 3, using FY2019 as the base year. The customer service building and quick turnaround area / service area, however, provide sufficient capacity through PAL 3. Considering the rental market is still evolving post–COVID-19 and that autonomous vehicle and aircraft technology and future transit system connecting downtown Tampa and other neighborhoods to the Airport could impact rental car transactions at the Airport in the long-term, no additional facilities are being recommended as part of this MPU. HCAA staff, however, should continue monitoring rental car transactions and relationship to enplaned passengers to identify whether additional capacity, especially ready/return and vehicle storage areas, would need to be provided before the end of the planning horizon (2042).

TABLE 4.6-23: RENTAL CAR SPACE REQUIREMENTS

	EXISTING CAPACITY (SQ FT)	FY2019		PAL 1 (FY2032)		PAL 2 (FY2037)		PAL 3 (FY2042)	
		REQUIREMENT (SQ FT)	SURPLUS/(DEFICIT) (SQ FT)	REQUIREMENT (SQ FT)	SURPLUS/(DEFICIT) (SQ FT)	REQUIREMENT (SQ FT)	SURPLUS/(DEFICIT) (SQ FT)	REQUIREMENT (SQ FT)	SURPLUS/(DEFICIT) (SQ FT)
Customer Service Building	40,912	18,000	22,912	24,700	16,212	28,000	12,912	31,500	9,412
Ready/Return	1,070,766	627,000	443,766	863,200	207,566	977,500	93,266	1,098,700	(27,934)
Storage	972,790	600,600	372,190	826,800	145,990	936,300	36,490	1,052,300	(79,510)
Quick Turnaround Area / Service Area	687,664	377,200	310,464	519,300	168,364	589,400	98,264	662,000	25,664
Total Sq Ft	2,772,132	1,622,800	1,149,332	2,234,000	538,132	2,531,200	240,932	2,844,500	(72,368)

NOTES:
FY – Fiscal Year
PAL – Planning Activity Level
SOURCES: Hillsborough County Aviation Authority, 2022 (data); Ricondo & Associates, Inc., November 2022 (analysis).

4.7 AIR CARGO FACILITIES

Cargo tonnage at TPA is currently handled by a combination of cargo integrators (FedEx, UPS, and Amazon), passenger airline belly cargo, and smaller on-demand all-cargo airlines. They operate from multiple facilities on the north side and east side of the airfield, as either primary or sublease tenants. This section evaluates the ability of the existing facilities to accommodate current and future air cargo volumes, as projected in the latest approved forecast. Spaces evaluated include warehouse processing space, apron space, and GSE staging space.

4.7.1 ASSUMPTIONS AND METHODOLOGY

The demand/capacity analysis for air cargo facilities at TPA was based on the methodology outlined in ACRP Report 143, *Guidebook for Air Cargo Facility Planning and Development* (2015). This methodology is founded on typical processing rates of cargo volume per square foot of space (i.e., warehouse processing space, apron space, and GSE staging space). The process included the following steps:

- Inventory of existing cargo facilities (by carrier and leasehold) from HCAA data and carrier/tenant interview/survey.
- Evaluation of 2011 to 2021 cargo activity and processing rates by carrier and type of facility (all-cargo versus belly).
- Comparison of historical processing rates at TPA to the rates prescribed in ACRP Report 143 and selection of appropriate target processing rates to evaluate future capacity.
- Application of target processing rates to projected cargo volumes to identify any facility surpluses or deficits.

4.7.2 EXISTING AIR CARGO FACILITIES

As of 2022, existing air cargo buildings at TPA are distributed in three primary facilities: East Air Cargo Building, North Air Cargo Building, and FedEx Cargo Building. In addition, the new UPS Cargo Building is anticipated to be completed during the middle of 2024. The East and North Air Cargo Buildings accommodate all-cargo tenants (UPS and Amazon), belly cargo tenants, and multiple passenger airline and cargo service provider tenants. All-cargo tenants (UPS and Amazon) are using Airside D hardstands to unload and reload their cargo. UPS, currently located in the North Air Cargo Building, will be relocated to its new facility once completed in mid-2024. **Table 4.7-1** summarizes the space inventory for each facility. **Exhibits 4.7-1** through **4.7-4** illustrate the existing space allocation.

The following are the assumptions incorporated into this inventory:

Building

- Warehouse Space – This refers to the interior floor space of an airport facility that is primarily dedicated to the processing, storage, and movement of air cargo. Warehouse space is typically leased to a particular airline, handler, or contractor and is measured in square feet.
- Office Space – The interior floor space of an airport cargo facility primarily dedicated to management and operations of the air cargo logistics process. Office space is typically leased to a particular airline, handler, or contractor, and is measured in square feet. For this analysis, office space directly attached to other types of space will be included as part of the space it is attached to. For example, the office space attached to the warehouse space under one suite will be accounted for in the warehouse space.
- Support Space – The interior floor space of an airport cargo facility dedicated to operations of the airport authority, government agencies, or other third-party organizations, as well as building safety and utility

functions (i.e., fire pump or electrical rooms). These spaces are not necessarily associated with the handling of cargo.

- Airline Support Space – The interior floor space of an airport cargo facility leased by a specific airline, handler, or contractor that supports airlines for non-cargo support purposes. Examples include aircraft provisioning, spare parts storage, crew hospitality, or dispatching. This is typically leased to a particular airline, handler, or contractor, and is measured in square feet.

Airside

- Aircraft Positions – The number of spaces available within the aircraft apron for parking cargo aircraft. Design requirements vary depending on the size of aircraft utilizing the stand, but are conventionally sized according to Aircraft Design Group, a standardized set of measurements categorizing aircraft based on their dimensions. Cargo loaded into passenger aircraft belly space does not require dedicated aircraft stands, as these flights utilize the terminal area ramp in conjunction with loading and unloading passengers.
- Aircraft Apron – This is the paved area of the airfield used for the loading and unloading of cargo aircraft. This typically includes space for aircraft parking, the associated equipment, and buffer area to ensure spatial separation is maintained between aircraft, facilities, and ground equipment. Cargo loaded into passenger aircraft belly space does not require dedicated apron space, other than the terminal area ramp used when aircraft load and unload passengers. Apron space available for cargo processing was calculated exclusive of taxilanes, maneuvering, and other storage areas. Apron space is typically measured in square feet.
- GSE Storage/Staging – This is the paved area of the airfield that is used for the storage, staging, and assembly of GSE used in the transport and storage of cargo. This typically also includes space to park GSE during downtime, as well as load cargo shipments near buildings. Occasionally, apron space will be used for storing and staging GSE. This is typically measured in square feet.

Landside

- Truck Docks – A truck dock is a section of the landside area directly adjacent to the cargo building that is used to park trucks while shipments are loaded and unloaded. This is typically associated with a particular airline, handler, or contractor, and is a part of the leasing of other spaces, particularly warehouse or airline support space.
- Truck/Trailer Staging – The land area, typically paved, used for the storage and organization of trucks and trailers while not actively loading or unloading at the airport cargo facility. Storage and staging can be located on- or offsite and is typically measured in square feet.
- Employee Parking – The land area, typically paved, used to park employee or visitor vehicles. This is typically measured in square feet.

TABLE 4.7-1: INVENTORY OF EXISTING AIR CARGO FACILITIES

	SPACE CATEGORY	NORTH AIR CARGO	EAST AIR CARGO	FEDEX CARGO	UPS CARGO[2]
BUILDING	Warehouse (sq ft)	104,641	30,242	74,000	30,850
	Office (sq ft)[1]	4,650	0[2]	38,800	9,530
	Support Space (sq ft)	1,103	5,352	0	0
	Airline Support (sq ft)	3,006	38,628	0	0
AIRSIDE	Aircraft Positions	N/A	N/A	7	4
	Apron (sq ft)[3]	N/A	N/A	679,000	531,000
	GSE Storage/Staging (sq ft)[3]	307,000	213,000	36,000	111,000
LANDSIDE	Truck Docks	48	27	34	41
	Truck/Trailer Staging (sq ft)[3]	267,000	64,000	118,000	56,000
	Employee Parking (sq ft)[3]	204,000	48,000	92,000	77,000

NOTES: N/A – Not Applicable; GSE – Ground Service Equipment

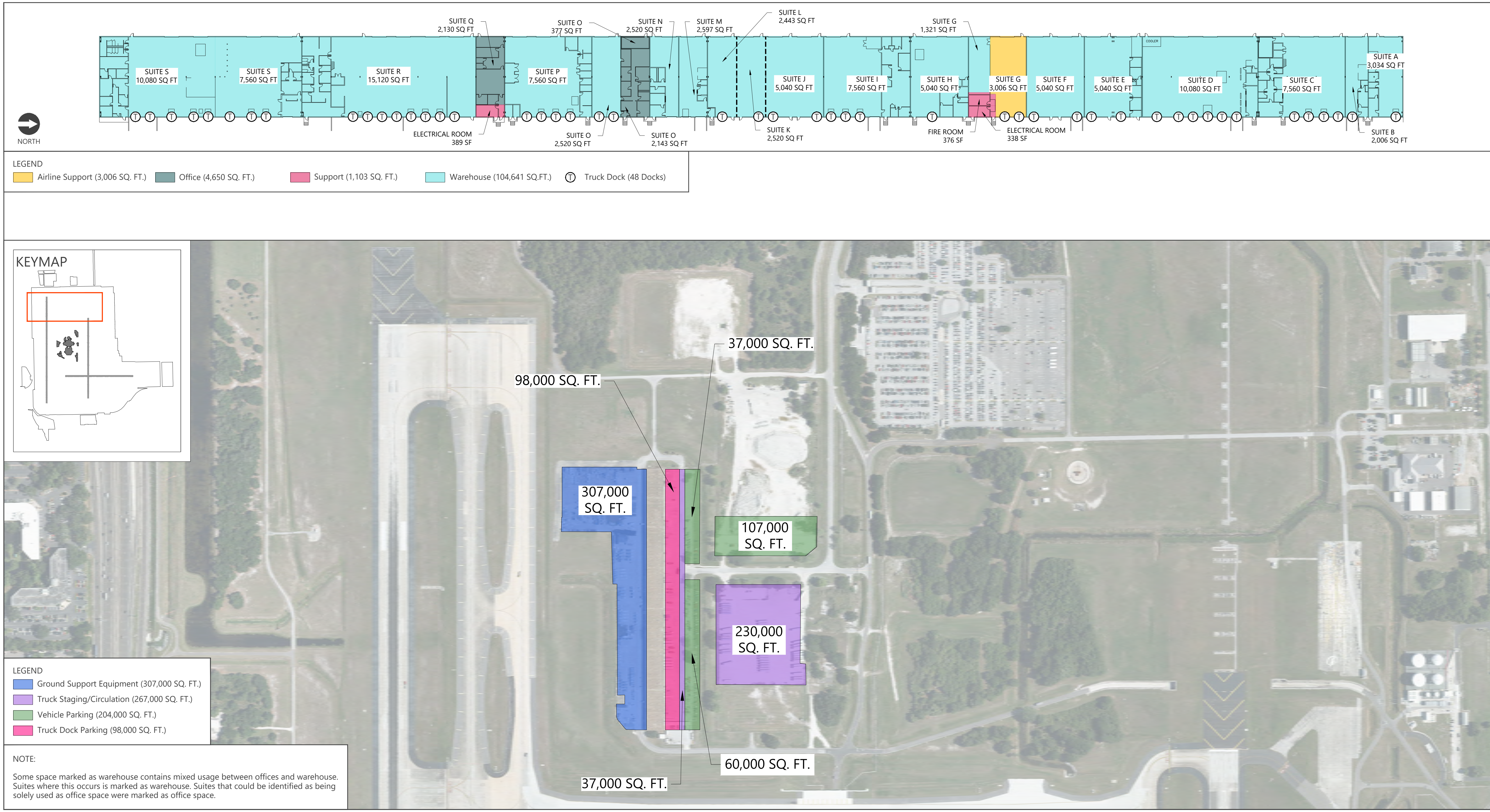
1 Portions of the cargo facilities contain mixed use space, which is a blend of office space directly attached to other types of space (airline support, support, or warehouse). Suites where this occurs are classified as airline support, support, or warehouse. Suites that could be classified as being solely used for office space are included as office space.

2 Office space in the East Air Cargo Building is included in the adjoining warehouse, support, or airline support areas.

3 The square footage was rounded to the nearest hundred.

4 The UPS Cargo Building is expected to be completed in the middle of 2024.

SOURCES: Google Earth Pro, September 20, 2020 (cargo facilities, Tampa International Airport); Hillsborough County Aviation Authority, 2018 (existing cargo facilities inventory); Hillsborough County Aviation Authority, February 2023 (tenant surveys).



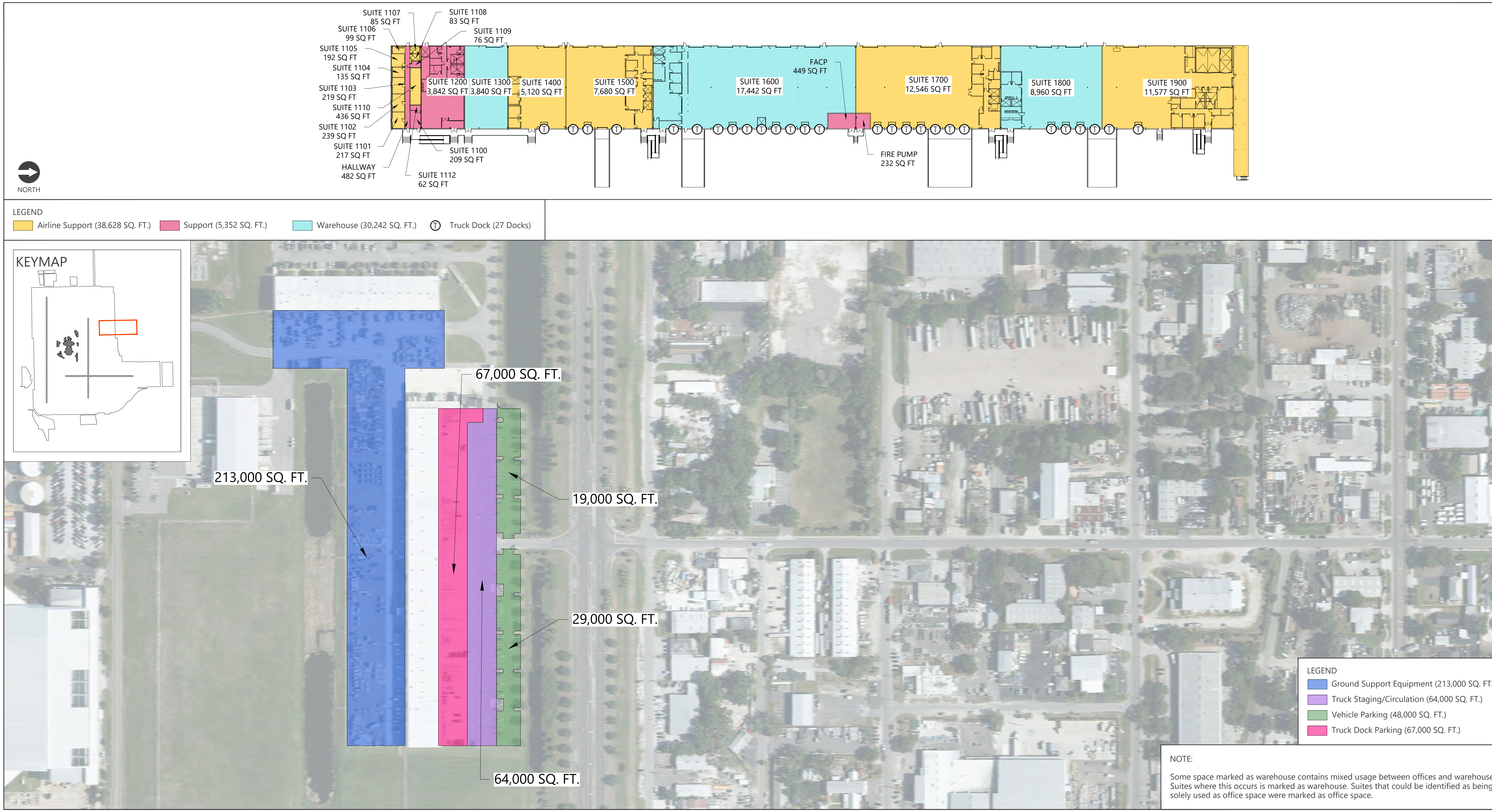
SOURCE: Martinez Geospatial, Inc., October 2022 (aerial photography); Hillsborough County Aviation Authority, October 2021 (base mapping).

NORTH 0 500 ft

EXHIBIT 4.7-1

NORTH AIR CARGO BUILDING
SPACE ALLOCATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Cargo\04-Drawings&Models\AUTOCAD\Ex 4.7 Cargo Facilities.dwgLayout: NORTH Plotted: May 15, 2024, 03:45PM



NOTE:

Some space marked as warehouse contains mixed usage between offices and warehouse. Suites where this occurs is marked as warehouse. Suites that could be identified as being solely used as office space were marked as office space.

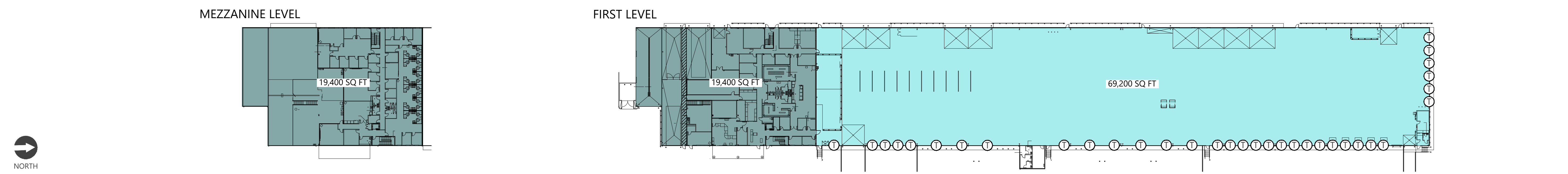
SOURCE: Martinez Geospatial, Inc., October 2022 (aerial photography); Hillsborough County Aviation Authority, October 2021 (base mapping).

NORTH 0 250 ft

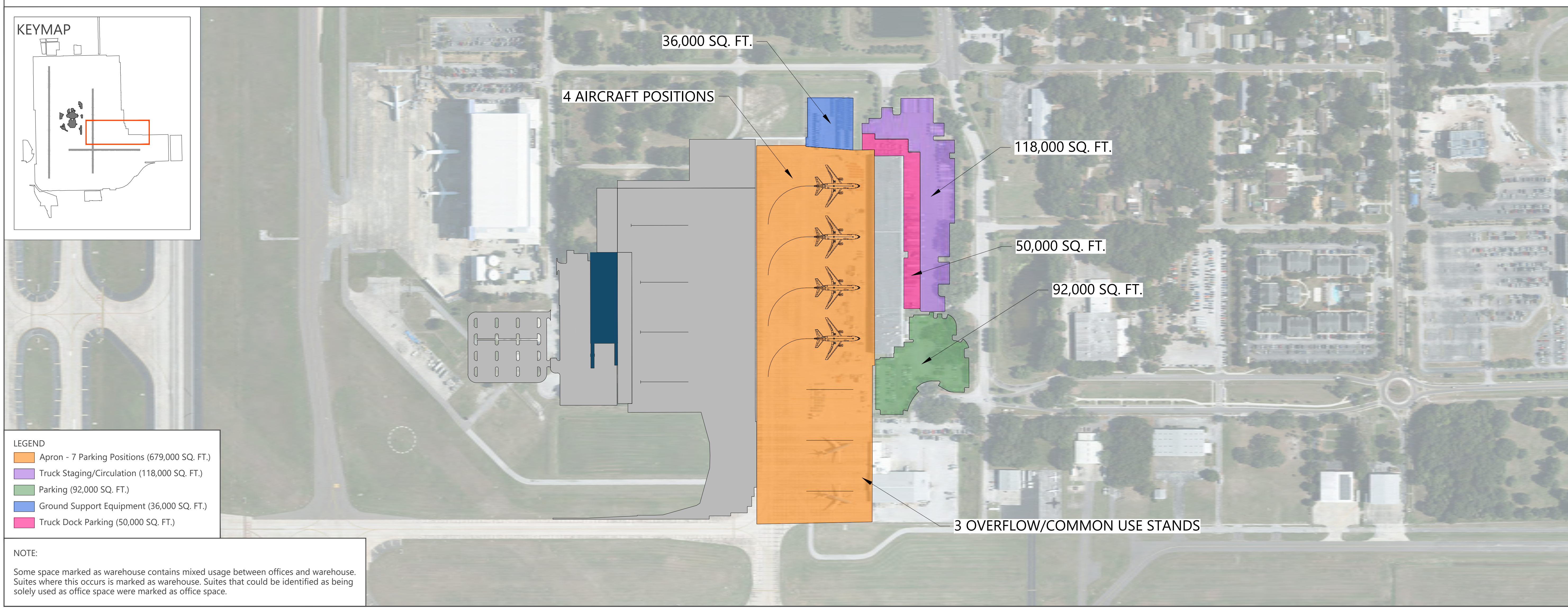
EXHIBIT 4.7-2

EAST AIR CARGO BUILDING
SPACE ALLOCATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Cargo\04-Drawings&Models\AUTOCAD\Ex 4.7 Cargo Facilities.dwgLayout: GSE Plotted: May 15, 2024, 03:45PM



LEGEND
- Office (38,800 SQ. FT.)
- Warehouse (69,200 SQ. FT.)
- Ⓣ Truck Dock (27 Docks)



NOTE:

Some space marked as warehouse contains mixed usage between offices and warehouse. Suites where this occurs is marked as warehouse. Suites that could be identified as being solely used as office space were marked as office space.

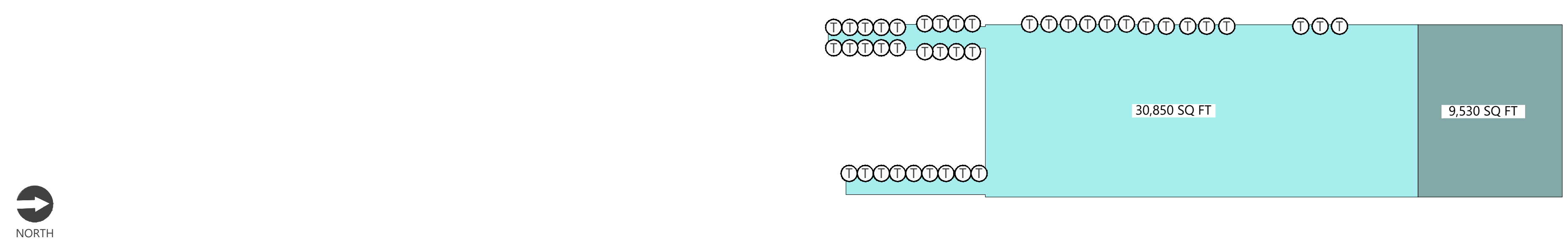
SOURCE: Martinez Geospatial, Inc., October 2022 (aerial photography); Hillsborough County Aviation Authority, October 2021 (base mapping).

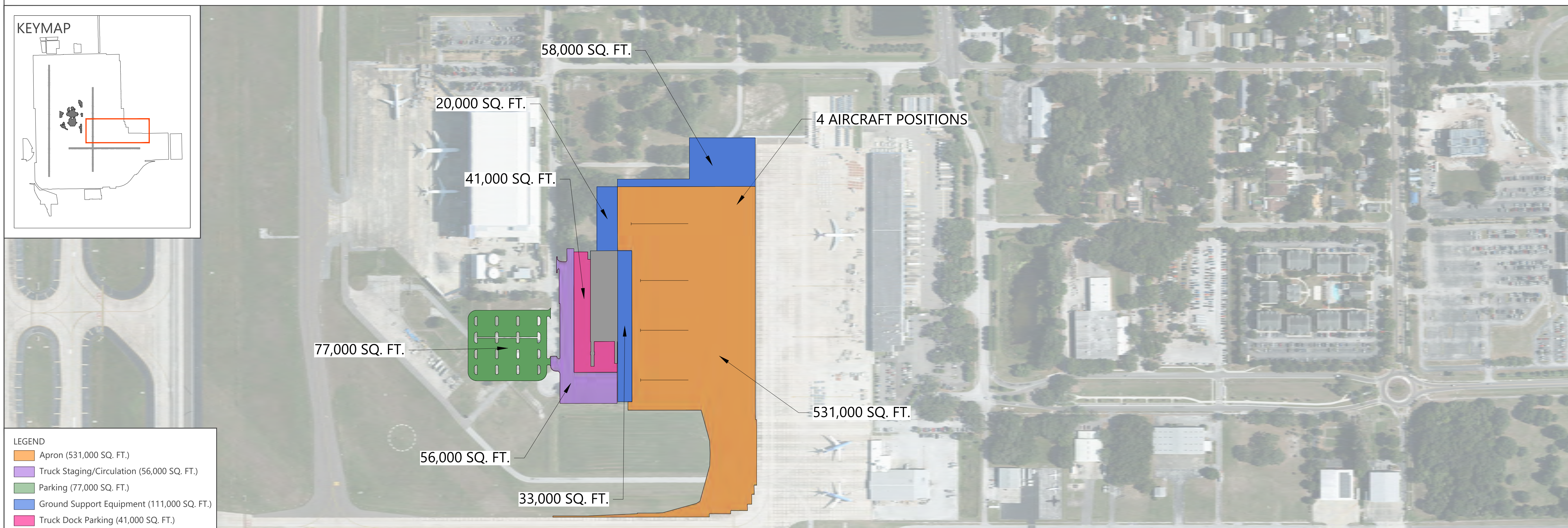
NORTH 0 400 ft

EXHIBIT 4.7-3

FEDEX CARGO BUILDING
SPACE ALLOCATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Cargo\04-Drawings&Models\AUTOCAD\Ex 4.7 Cargo Facilities.dwgLayout: FEDEX Plotted: May 15, 2024, 03:44PM





NOTE:

Some space marked as warehouse contains mixed usage between offices and warehouse. Suites where this occurs is marked as warehouse. Suites that could be identified as being solely used as office space were marked as office space.

SOURCE: Martinez Geospatial, Inc., October 2022 (aerial photography); Hillsborough County Aviation Authority, October 2021 (base mapping).

NORTH 0 400 ft

EXHIBIT 4.7-4

UPS CARGO BUILDING SPACE ALLOCATION

Drawing: P:_PROJECTS\HCAA (TPA)\19041140 - 2019 GC\21-05 TPA Master Plan Update\Task 4-5- Demand Capacity and Facility Req\Cargo\04-Drawings&Models\AUTOCAD\Ex 4.7 Cargo Facilities.dwgLayout: UPS Plotted: May 15, 2024, 03:44PM

4.7.3 CARGO FORECAST

Historical freight volume data by airline show that 248,800 tons of air freight and belly cargo were processed at the Airport in FY2022. Of this, 92.8 percent was carried by integrators and all-cargo carriers, while 7.2 percent was carried by passenger airline belly cargo (American Airlines, Delta Air Lines, United Airlines, Southwest Airlines, and others). **Table 4.7-2** presents the percentage of air cargo processed by each carrier in FY2022.

TABLE 4.7-2: AIR CARGO CARRIER SHARE – TOTAL CARGO (FISCAL YEAR 2022)

CARRIER	TONS	PERCENT
FedEx Express	80,364	32.3%
UPS	40,200	16.2%
Amazon Air	109,643	44.1%
Belly	17,843	7.2%
Other Cargo Airlines	745	0.3%
Total	**248,796**	**100.0%**

NOTES: 1 US (short) ton = 2,000 pounds.
2 The cargo tonnage for ABX Air, Air Transport International, and Atlas Air is shown as Amazon Air since it handles all Amazon Air cargo at TPA.
3 Totals may not add up due to rounding.
SOURCE: US Department of Transportation, T-100, September 2023 (fiscal year 2022 total freight transported at Tampa International Airport).

According to the baseline forecast presented in Chapter 3, total cargo tonnage is forecast to grow at a CAGR of 2.4 percent from 248,796 in FY2022 to 402,000 in FY2042. The alternate demand forecast includes additional cargo demand resulting in increased cargo aircraft operations, better-than-projected socioeconomic activity, and additional service offered by Amazon Air. It forecasts total cargo tonnage to increase at a CAGR of 3.2 percent from 248,796 in FY2022 to 465,000 in FY2042.

Since the onset of the MPU and development of the Aviation Activity Forecasts in 2022, Amazon Air has demobilized and ceased cargo operations at TPA. The forecasts were prepared from historical information and the corresponding PALs are not linked to a specific tenant's or airline's evolving business models, new entrants, or significant increases in activity by existing tenants. Fluctuations in activity levels could delay (or advance) the timing of corresponding improvements needed to provide facilities and infrastructure to meet the PALs.

Table 4.7-3 presents the baseline cargo forecast and alternate demand forecast.

TABLE 4.7-3: BASELINE AND ALTERNATE DEMAND CARGO FORECAST

	BASELINE FORECAST			ALTERNATE DEMAND FORECAST		
FISCAL YEAR	FREIGHTER AIRCRAFT TONNAGE	PASSENGER AIRCRAFT/ BELLY TONNAGE	TOTAL TONNAGE	FREIGHTER AIRCRAFT TONNAGE	PASSENGER AIRCRAFT/ BELLY TONNAGE	TOTAL TONNAGE
2022 (Actual)	230,953	17,843	248,796	230,953	17,843	248,796
PAL 1 (2032)	297,000	24,000	321,000	343,400	26,700	370,100
PAL 2 (2037)	335,000	27,000	362,000	387,500	30,300	417,800
PAL 3 (2042)	372,000	30,000	402,000	431,200	33,800	465,000
Compound Annual Growth Rate						
2022–2042	2.4%	2.6%	2.4%	3.2%	3.3%	3.2%

SOURCES: Hillsborough County Aviation Authority, January 2022 (Historical); Woods & Poole Economics, Inc. January 2022; Moody's Analytics, Inc. January 2022; Ricondo & Associates, Inc. January 2022 (Forecast).

4.7.4 CARGO WAREHOUSE REQUIREMENTS

Cargo warehouse requirements, including integrated/all-cargo and belly cargo warehouse requirements, are presented in the following subsections.

4.7.4.1 INTEGRATED AND ALL-CARGO CARRIER FACILITIES

The integrated and all-cargo carrier facilities at TPA include:

- FedEx Cargo Building
- UPS Cargo Building

Combined, these include approximately 104,900 square feet of available integrated/all-cargo warehouse processing space, or approximately 78 percent of the total cargo building space (acknowledging the balance is used for office, storage, and other functions). Based on the carrier interview/survey, the FedEx and UPS facilities can process up to 1.5 tons per square foot, annually. In addition, based on the survey results, FedEx should not require additional capacity within the next 5 years and UPS should not require additional capacity within the next 10 years.

ACRP Report 143 identifies typical annual processing rates between 0.41 and 1.63 tons of cargo per square foot, based on the type of airport and the type of operator (i.e., domestic or international, integrator or all-cargo). For this analysis, the target processing rate of 1.5 tons of cargo per square foot was selected considering the majority of cargo is handled by domestic integrated and all-cargo carriers (FedEx and UPS). **Table 4.7-4** summarizes the cargo warehouse processing space requirements for integrated and all-cargo facilities through the planning horizon. Based on the results, additional facilities will be required by PAL 2 and PAL 3 to accommodate the baseline activity forecast cargo volumes. The construction of additional integrated and all-cargo carrier facilities, however, would likely be completed by a third party based on market demand.

4.7.4.2 BELLY CARGO WAREHOUSE

The belly cargo facilities at TPA include the North and East Air Cargo Buildings. As of 2022, American Airlines, UPS, and a few other belly cargo handlers occupy the North Air Cargo Building and Southwest Airlines and Spirit Airlines lease spaces in the East Air Cargo Building. Amazon Air handlers are tenants of both the North and East Air Cargo Buildings.

Combined, these two buildings account for approximately 134,900 square feet of available belly cargo warehouse processing space, which represents approximately 56 percent of the total belly cargo building space (acknowledging the balance is used for office, storage, and other airline support functions).

In FY2019, belly cargo operators processed up to 1.1 tons of cargo per square foot of warehouse space. ACRP Report 143 identifies typical processing rates between 0.32 and 1.28 tons per square foot, based on the type of airport and the type of operator (i.e., domestic or international). For this analysis, the target processing rate of 1.1 was selected for belly cargo operators to acknowledge the historical range of operator efficiencies. In addition, the target processing rate of 1.28 was selected for Amazon Air handlers assuming they will be able to increase their annual throughput with adequate facility upgrades. Table 4.7-4 summarizes the belly cargo warehouse processing space requirements through the planning horizon. Based on the results, there are sufficient facilities to accommodate the forecast belly cargo volumes up to PAL 2 (2037).

TABLE 4.7-4: SUMMARY OF CARGO WAREHOUSE REQUIREMENTS – BASELINE ACTIVITY FORECAST

PLANNING CRITERIA[1]	FY2021	PAL 1 (FY2032)	PAL 2 (FY2037)	PAL 3 (FY2042)
Annual Cargo Tonnage:				
All-Cargo Operators	126,900	175,500	197,900	219,900
E-Commerce Operators	87,300	121,500	137,000	152,200
Passenger Airlines	17,200	24,000	27,000	30,000
Total	**231,400**	**321,000**	**361,900**	**402,100**
Warehouse Requirements (sq ft):				
All-Cargo Facility	56,600	116,900	131,800	146,400
Belly Cargo Facility	133,072	116,900	131,900	146,500
Total	**189,672**	**233,800**	**263,700**	**292,900**
Warehouse Capacity (sq ft):				
All-Cargo Facility	74,000	104,900	104,900	104,900
Belly Cargo Facility	134,900	134,900	134,900	134,900
Total	**208,900**	**239,800**	**239,800**	**135,100**
Surplus/(Deficit) (sq ft):				
All-Cargo Facility	17,400	(12,000)	(26,900)	(41,500)
Belly Cargo Facility	1,828	18,000	3,000	(11,600)
Total	**19,228**	**6,000**	**(23,900)**	**(53,100)**

NOTES: PAL – Planning Activity Level
1 The square footage was rounded to the nearest hundred. Some rows may not sum due to rounding.
2 Some all-cargo operators are currently processing cargo in belly cargo facilities.
3 The UPS Cargo Building is expected to be completed by the middle of 2024. UPS is included as a belly cargo facility user prior to 2024.
SOURCES: Hillsborough County Aviation Authority, *HCAA TAP UPS Cargo Facility Draft CATEX_signed.pdf*, June 2017; Ricondo & Associates, Inc. January 2022 (Forecast).

4.7.5 CARGO APRON AND GROUND SERVICE EQUIPMENT STORAGE/STAGING REQUIREMENTS

4.7.5.1 INTEGRATED AND ALL-CARGO CARRIER APRON

Only apron space associated with the integrated and all-cargo facilities is included in this analysis, as belly cargo is typically loaded and unloaded on the terminal apron and transported to the processing facility by other vehicles. The apron space included in this analysis consists of the FedEx facility and the UPS facility scheduled to open by the end of 2023. It includes 10 ADG IV and 1 ADG VI aircraft positions. The future aircraft parking requirements are based on DDFSs, forecast cargo tonnage, and aircraft payload.

Table 4.7-5 summarizes the cargo apron space requirements through the planning horizon. Based on the results, there is sufficient apron space to accommodate the forecast cargo volumes. This is consistent with information received from FedEx and UPS personnel, who noted the overall apron space is anticipated to be adequate for the foreseeable future.

TABLE 4.7-5: SUMMARY OF APRON AND GROUND SERVICE EQUIPMENT STORAGE/STAGING REQUIREMENTS – BASELINE ACTIVITY FORECAST

PLANNING CRITERIA[1]	2021	PAL 1 (FY2032)	PAL 2 (FY2037)	PAL 3 (FY2042)
Apron Requirements:				
All-Cargo Position Peak Occupancy	3 ADG IV	7 ADG IV	7 ADG IV	8 ADG IV
E-Commerce Position Peak Occupancy	0	0	5 (1 ADG III, 4 ADG IV)	5 (1 ADG III, 4 ADG IV)
Belly Cargo Facility Ground Service Equipment Area (sq ft)	406,600	404,700	75,800	84,200
Apron Capacity:				
All-Cargo Positions	7 ADG IV	11 (10 ADG IV, 1 ADG VI)	11 (10 ADG IV, 1 ADG VI)	11 (10 ADG IV, 1 ADG VI)
E-Commerce Positions	0	0	0	0
Belly Cargo Facility Ground Service Equipment Area (sq ft)	520,000	520,000	213,000	213,000
Surplus/(Deficit):				
All-Cargo Positions	4	4	4	3
E-Commerce Positions	0	0	(5)	(5)
Belly Cargo Facility Ground Service Equipment Area (sq ft)	113,400	115,300	137,200	128,800

NOTES: FY – Fiscal Year; PAL – Planning Activity Level; ADG – Airplane Design Group

1 The square footage was rounded to the nearest hundred. Some rows may not sum due to rounding.

2 Some all-cargo operators are currently processing cargo in belly cargo facilities.

3 The UPS Cargo Building is expected to be completed by the end of 2023. Prior to the opening of the new facility, UPS handles its cargo operations on the Airside D.

4 The Airside D hardstand positions are shared with passenger operations.

SOURCES: Hillsborough County Aviation Authority, *HCAA TAP UPS Cargo Facility Draft CATEX_signed.pdf*, June 2017; Ricondo & Associates, Inc. January 2022 (Forecast).

4.7.5.2 GROUND SERVICE EQUIPMENT STORAGE/STAGING REQUIREMENTS

Integrated, all-cargo, and belly cargo operators require space to store and maintain their cargo-related GSE. Based on tenants' feedback, the current proportion of belly cargo apron to warehouse facilities is adequate. The required future ramp areas were calculated based on the existing GSE storage/staging areas to belly cargo warehouse space utilization ratios.

To calculate GSE space requirements, ACRP Report 143 recommends a range from 0.29 to 2.22 tons of cargo per square foot of GSE space. For belly cargo facilities, a target processing rate of 0.36 tons of cargo per square foot of GSE space was used. This acknowledges historical operational trends and the fact that all the inventoried GSE space may not be used solely for cargo GSE. This also recognizes that some of the GSE space could be reconfigured or that certain functions could be accommodated elsewhere.

Table 4.7-5 summarizes the GSE storage/staging requirements through the planning horizon. Based on the results, there is sufficient cargo GSE storage/staging space to accommodate the forecast cargo volumes.

4.7.6 SUMMARY

Based on the analyses presented in this section, TPA requires additional facilities between PAL 1 (2032) and PAL 3 (2042) to accommodate the forecast cargo volumes. **Table 4.7-6** summarizes the future cargo facility requirements.

TABLE 4.7-6: CARGO FACILITY REQUIREMENTS SUMMARY – BASELINE ACTIVITY FORECAST

PLANNING CRITERIA[1]	PAL 1 (FY2032)	PAL 2 (FY2037)	PAL 3 (FY2042)
Warehouse Requirements (sq ft):			
All-Cargo Facility	116,900	131,800	146,400
Belly Cargo/E-Commerce Facility	116,900	131,900	146,500
Total	**233,800**	**263,700**	**292,900**
Apron Requirements:			
All-Cargo Position Peak Occupancy	7 ADG IV	7 ADG IV	8 ADG IV
E-Commerce Position Peak Occupancy	0	5 (1 ADG III, 4 ADG IV)	5 (1 ADG III, 4 ADG IV)
Belly Cargo Facility Ground Service Equipment Area (sq ft)	404,700	75,800	84,200

NOTES:
ADG – Airplane Design Group
FY – Fiscal Year
PAL – Planning Activity Level
1 – The cargo demand quantified in the Aviation Activity Forecasts includes baseline (FY2022) tonnage from Amazon Air, which has subsequently demobilized and ceased operations at TPA.
SOURCES: Ricondo & Associates, Inc. January 2022 (Forecast).

4.8 FIXED BASE OPERATOR AND GENERAL AVIATION FACILITIES

This section discusses whether the existing FBO facilities and other GA facilities can accommodate the demand levels forecast through PAL 3 (2042). This information will contribute to the evaluation of future Airport facility development alternatives.

4.8.1 HANGAR STORAGE

The quantity and type of GA hangars at an airport are influenced by factors such as aircraft fleet mix, local climate conditions, security, and aircraft owner preferences. Typically, smaller single-engine aircraft and multi-engine aircraft are stored in T-hangar units. Helicopters, larger multi-engine aircraft, and jet aircraft are typically stored in conventional hangars. At TPA, GA jet aircraft account for 82 percent of the based aircraft, while single-engine aircraft account for only 8 percent of the based aircraft. Due to the higher numbers of based GA jet aircraft, the demand for T-hangars does not exist at TPA. **Table 4.8-1** summarizes the existing corporate hangar storage capacity at TPA. The number of aircraft stored in each hangar simultaneously depends on the size of the aircraft; therefore, the planning assumption focuses on the square footage of the hangar capacity instead of the number of parking positions within the hangars.

TABLE 4.8-1: AIRCRAFT HANGAR CAPACITY

OWNER / TENANT	HANGAR TYPE	HANGAR SIZE (SQ FT)
City of Tampa Police	Corporate	10,000
Signature Flight Support	Corporate	120,725
Sheltair Aviation	Corporate	211,850
Jet ICU	Corporate	6,400
Private Aviation	Corporate	15,000
DeBartolo Aviation	Corporate	12,000
Total Hangar Capacity		**375,975**

NOTE: American Infrastructure Development, Inc., July 2022.

The percentage of based aircraft stored at an airport can vary from 20 percent to over 80 percent. Compared to the national average, airports in Florida typically have a higher percentage of owners that store aircraft in hangars. The percentage of based aircraft stored at an airport is from 90 percent to 100 percent. For planning purposes, it was assumed that at TPA 90 percent of the single-engine aircraft are stored in hangars, while 100 percent of the multi-engine, jet, and helicopter aircraft are stored in hangars. It was also assumed that 25 percent of the itinerant jet aircraft will require hangar storage for the duration of their stay at TPA. **Table 4.8-2** estimates the number of aircraft expected to be stored in hangars at TPA. **Table 4.8-3** estimates the square footage of hangar space required to accommodate PAL 1 (2032) through PAL 3 (2042). For planning purposes, the following standards were applied to determine the future GA hangar requirements:

- 1,400 square feet per single-engine aircraft
- 1,900 square feet per multi-engine aircraft
- 4,000 square feet per jet aircraft
- 1,900 square feet per helicopter

TABLE 4.8-2: ESTIMATED HANGAR DEMAND

PAL	NUMBER OF SINGLE-ENGINE AIRCRAFT IN HANGAR	NUMBER OF MULTI-ENGINE AIRCRAFT IN HANGAR	NUMBER OF JET IN HANGAR	NUMBER OF HELICOPTER IN HANGAR	TOTAL NUMBER OF AIRCRAFT AT HANGARS
% Aircraft in Hangars	**90%**	**100%**	**100%**	**100%**	
PAL 1 (FY2032)	7	7	115	6	135
PAL 2 (FY2037)	8	7	127	6	148
PAL 3 (FY2042)	8	7	138	6	159

NOTE:
PAL – Planning Activity Level
SOURCE: American Infrastructure Development, Inc., July 2022.

TABLE 4.8-3: ESTIMATED HANGAR AREA REQUIREMENTS

PAL	SINGLE-ENGINE (SQ FT)	MULTI-ENGINE (SQ FT)	JET (SQ FT)	HELICOPTER (SQ FT)	ESTIMATED HANGAR DEMAND (SQ FT)	ESTIMATED HANGAR CAPACITY (SQ FT)	ESTIMATED HANGAR CAPACITY (FY2024) (SQ FT)[1]	SURPLUS / (DEFICIENCY)
PAL 1 (FY2032)	10,080	13,300	459,500	11,400	494,280	375,975	544,275	49,995
PAL 2 (FY2037)	11,340	13,300	507,500	11,400	543,540	375,975	544,275	735
PAL 3 (FY2042)	11,340	13,300	552,500	11,400	588,540	375,975	544,275	(44,265)[2]

NOTES:
1 As of May 2024, three additional hangars, totaling 168,300 square feet, have been approved by HCAA. This has been added to the estimated hangar capacity of 375,975 (375,975 + 168,300 = 544,275).
2 The PAL 3 hangar deficiency listed in Section 5.7 does not include the 168,300 square feet of hangar development approved for construction. The approximate 200,000 square feet listed in Section 5.7 is calculated as existing hangar demand minus existing hangar capacity (588,400 – 375,975 = 212,565).
PAL – Planning Activity Level
SOURCE: American Infrastructure Development, Inc., July 2022; Ricondo & Associates, Inc., May 2024.

Based on the analysis, the current GA hangar space available at TPA is sufficient through PAL 2 and insufficient through PAL 3 (2024) by approximately 44,000 square feet. In addition to the 375,975 square feet of hangar space listed in Table 4.8-1, HCAA has approved the construction of three additional hangars totaling 168,300 square feet. The analysis above accounts for the hangars currently approved for construction.

4.8.2 APRON STORAGE

The existing apron facilities at TPA consist of 144,000 square yards of paved apron surface, of which 119,400 square yards are used by the FBOs for aircraft parking and tie-down, circulation, aircraft movement, and FBO frontage. The remaining 24,600 square yards of pavement accounts for apron space allocated to other tenant conventional/corporate hangars. Transient GA aircraft are typically parked on the FBO apron areas.

It is estimated that 10 percent of the single-engine based aircraft at the Airport are not stored in hangars and require apron space, and 100 percent of the based multi-engine, jet, and helicopter aircraft are stored within hangars at TPA and require no apron space for long-term storage. Additionally, it is estimated that 75 percent of the total daily itinerant aircraft would be on the apron at any given time. At TPA, transient operators typically limited to the FBO areas will drive apron requirements. For planning purposes, the following standards were applied to determine the future GA apron space requirements:

- 400 square yards per single-engine aircraft
- 420 square yards per multi-engine aircraft
- 2,500 square yards per jet aircraft
- 400 square yards per helicopter

Table 4.8-4 presents the apron area requirements and shows a deficiency of 120,144 square yards by PAL 3 (FY2042).

4.8.3 FIXED BASE OPERATOR / GENERAL AVIATION TERMINAL BUILDING

Facility requirements for the FBO/GA terminal were determined by applying the planning factors contained in ACRP Report 113, *Guidebook on General Aviation Facility Planning*. ACRP Report 113 specifies that the allocation of 100 to 150 square feet per peak-hour passenger should be used to estimate the appropriate FBO/GA terminal area. For this study, the maximum planning area of 150 square feet was used to estimate FBO/GA terminal requirements. The assumption is that 2 pilots and 4 passengers per peak-hour operations will use FBO/GA terminal spaces.

Table 4.8-5 presents the resulting space estimates based on this methodology. Currently, Signature and Sheltair have a combined total of 24,000 square feet of FBO space. It is estimated that 6,664 square feet of additional FBO/GA terminal areas will be required by PAL 3 (2042).

4.8.4 AUTOMOBILE PARKING

Adequate automobile parking is required to provide convenient and efficient access to GA facilities, such as hangars and FBOs. A methodology similar to the one used to determine FBO/GA terminal requirements was used to determine vehicle parking requirements. This methodology estimates the number of required parking spaces based on peak-hour aircraft operations and the amount of office space in the FBO buildings. ACRP Report 113 recommends that the number of parking spaces should be calculated using the following planning factors: 2.5 spaces per peak-hour operations, 1 space per 200 square feet of office space, and 1 space per 1,000 square feet of hangar space.

As listed in **Table 4.8-6**, the FBO/GA automobile parking requirements are estimated to be 1,094 spaces by PAL 1 (2032) and 1,111 spaces by PAL 3 (2042). Currently, there are 936 automobile parking spaces dedicated to FBO/GA facilities at TPA. As a result, existing GA automobile parking is deficient and does not meet the estimated required number of parking spaces.

4.9 AIRCRAFT FUEL STORAGE

Signature and Sheltair operate and maintain fuel storage and manage fuel sales. Combined, the FBO fuel storage capacity at the Airport is currently 100,000 gallons of Jet A fuel and 32,000 gallons of aviation gasoline (Avgas). Corporate and government tenants, such as Jet ICU, Private Aviation, Debartolo Aviation, and the City of Tampa Police, have their own dedicated fuel tanks, which are exclusively used for their individual operations and are not available for sale to other tenants or operators.

An analysis of HCAA-provided fuel flowage data for 2017 to 2020 identified an average of 159 gallons of fuel dispensed per operation. By applying this ratio to forecast activity, the future fuel requirements were determined. It was estimated that Avgas represents 3.0 percent of total fuel sales, with jet fuel representing 97.0 percent of total fuel sales. **Table 4.8-7** presents the fuel storage requirements for each PAL. Based on the assumption that the combined FBO Avgas fuel farm storage capacity is 32,000 gallons (three tanks) and the Jet A fuel farm storage capacity is 100,000 gallons (five tanks), the PAL 3 (2042) demand will require a minimum of one Avgas tank and four Jet A tanks. These are the minimum requirements to maintain 14 days of fuel reserves within the fuel farm tanks. The existing fuel storage capacity of Avgas and Jet A is sufficient to accommodate PAL 3 (2042).

TABLE 4.8-4: ESTIMATED AIRCRAFT APRON REQUIREMENTS

PAL	SINGLE-ENGINE (SQ YD)		MULTI-ENGINE (SQ YD)		JET (SQ YD)		HELICOPTER (SQ YD)		HANGAR DEMAND (SQ YD)			DEFICIENCY (SQ YD)
	BASED AIRCRAFT	ITINERANT AIRCRAFT	BASED AIRCRAFT	ITINERANT AIRCRAFT	BASED AIRCRAFT	ITINERANT AIRCRAFT	BASED AIRCRAFT	ITINERANT AIRCRAFT	BASED AIRCRAFT	ITINERANT AIRCRAFT	TOTAL	
PAL 1 (FY2032)	4,040	2,093	0	3,076	0	211,866	0	2,930	4,040	219,964	**224,004**	***80,004***
PAL 2 (FY2037)	4,440	2,273	0	3,341	0	230,091	0	3,182	4,440	238,885	**243,325**	***99,325***
PAL 3 (FY2042)	4,760	2,468	0	3,627	0	249,834	0	3,455	4,760	259,384	**264,144**	***120,144***

NOTE:
PAL – Planning Activity Level
SOURCE: American Infrastructure Development, Inc., July 2022.

TABLE 4.8-5: FIXED BASE OPERATOR / GENERAL AVIATION TERMINAL BUILDING SPACE REQUIREMENTS

PAL	PEAK HOUR OPERATIONS	PEAK-HOUR PASSENGERS[1]	PASSENGER UTILIZATION	SPACE REQUIREMENTS (SQ FT)	SPACE CAPACITY (SQ FT)	DEFICIENCY (SQ FT)
PAL 1 (FY2032)	36	217	173	26,004	24,000	2,004
PAL 2 (FY2037)	39	235	188	28,241	24,000	4,241
PAL 3 (FY2042)	43	256	204	30,664	24,000	6,664

NOTE:
PAL – Planning Activity Level
SOURCE: American Infrastructure Development, Inc., July 2022.

TABLE 4.8-6: FIXED BASE OPERATOR / GENERAL AVIATION AUTOMOBILE PARKING REQUIREMENTS

	FOR FBO OPERATIONS		FOR OFFICE USE				
PAL	PEAK-HOUR AIRCRAFT OPERATIONS	AUTOMOBILE PARKING SPACES REQUIRED[1]	ESTIMATED FBO OFFICE SPACE (SQ FT)	AUTOMOBILE PARKING SPACES REQUIRED[2]	HANGAR PARKING SPACE REQUIRED[3]	TOTAL PARKING SPACE REQUIRED	DEFICIENCY
PAL 1 (FY2032)	36	90	83,955	420	584	1,094	158
PAL 2 (FY2037)	39	98	83,955	420	584	1,102	166
PAL 3 (FY2042)	43	106	83,955	420	584	1,111	175

NOTES:
FBO – Fixed Base Operator
PAL – Planning Activity Level
1 Assumes 2.0 spaces per peak-hour passenger.
2 Based on 1.0 parking space per 200 square feet of office space.
3 Based on 1.5 parking spaces per 1,000 square feet of hangar space.
SOURCE: American Infrastructure Development, Inc., July 2022.

TABLE 4.8-7: AIRCRAFT FUEL FARM STORAGE REQUIREMENTS

		ANNUAL DEMAND			WEEKLY DEMAND			STORAGE TANK REQUIREMENTS	
PAL	TOTAL GA AIRCRAFT OPERATIONS	AVGAS	JET A	TOTAL	AVGAS	JET A	TOTAL	AVGAS TANKS[1]	JET A TANKS[2]
PAL 1 (FY2032)	55,800	266,523	8,617,570	8,884,093	5,125	165,723	170,848	***0.3***	***3.3***
PAL 2 (FY2037)	60,700	289,927	9,374,311	9,664,238	5,576	180,275	185,851	***0.4***	***3.6***
PAL 3 (FY2042)	65,800	314,287	10,161,938	10,476,225	6,044	195,422	201,466	***0.4***	***3.9***

NOTES:
Avgas – Aviation Gasoline
GA – General Aviation
PAL – Planning Activity Level
1 Assumes the combined fixed base operator Avgas fuel farm storage capacity is 32,000 gallons (3 tanks).
2 Assumes the combined fixed base operator Jet A fuel farm storage capacity is 100,000 gallons (5 tanks).
SOURCES: Hillsborough County Aviation Authority, (historical fuel flowage data); American infrastructure Development, Inc., July 2022.

4.10 ADVANCED AIR MOBILITY FACILITIES

Advanced air mobility (AAM) is defined as an aviation transportation system that uses highly automated aircraft to transport passengers or cargo at lower altitudes within or between urban and suburban areas. The AAM concept has captured the aviation industry's attention as electric vertical takeoff and landing (eVTOL) aircraft have quickly advanced in the last 5 years and are expected to be certified as early as 2024. eVTOL aircraft include a variety of designs and propulsion systems using energy sources such as electric, hydrogen, and hybrid.

The transport of passengers could occur as a scheduled or an on-demand service between an on-Airport vertiport and other vertiports distributed within the Tampa Bay area or the Central and South Florida regions. The early implementation of AAM has been considered at airports due to the opportunity to leverage existing infrastructure that is already regulated. The development of a vertiport facility at TPA was evaluated for passenger transport, including Airport shuttle and air taxi uses, and for cargo transport.

4.10.1 ASSUMPTIONS AND METHODOLOGY

Since eVTOL flights are not yet commercially available and related technologies, regulations, and market are in the early stages of development, requirements for a future facility were estimated with high-level assumptions by reviewing past studies describing the travelers who are expected to first use these services.

This section summarizes the process for developing infrastructure requirements. The components required for the operation of a vertiport include eVTOL takeoff and landing pads, hold pads / MRO positions, parking positions, charging stations, and a passenger processing facility with waiting areas. Once general components of the site were understood, the size and quantity of the components were determined based on the TPA passenger forecast, FAA regulations, and industry insights, including the following regulatory documentation:

- Engineering Brief 105, *Vertiport Design* (September 2022; provides guidance to design vertiports specifically constructed to serve eVTOL aircraft operating with a pilot under VFR)
- AC 150/390-2D, *Heliport Design* (January 2023)
- ACRP Report 113, *Guidebook on General Aviation Facility Planning* (September 2014)

The first step toward finalizing footprint requirements was understanding the passenger demand the vertiport would need to accommodate. It was assumed that business travelers landing/departing at/from TPA would be the major users of this facility. At the early stage of development, this service is projected to cost the price of a commercial airline first/business class fare. In the long-term horizon, the fares are expected to decrease as the technology becomes fully deployed and operates at a high density.

To estimate the vertiport passenger demand, the following assumptions were made:

- Percentage of origin and destination (O&D) first/business class enplaned passengers who are anticipated to use the vertiport: 10 percent
- Average number of passengers per departure: 3 passengers (based on a 5-seat eVTOL aircraft with a 75 percent load factor)
- Expected operating hours (7:00 a.m. to 9:00 p.m.): 14 hours
- Minutes required to complete a takeoff or landing: 2 minutes
- Minutes required to process passengers and service an eVTOL aircraft: 20 minutes

- Terminal area (square feet) required per person (including passengers, pilots): 100 square feet based on the recommendation in ACRP Report 113

4.10.2 VERTIPORT REQUIREMENTS

Table 4.10-1 shows how the forecasts of enplaned passengers at TPA were used to determine annual vertiport enplaned passengers, peak-hour enplaned passengers, number of takeoff and landing pads, eVTOL aircraft parking requirements, and terminal requirements.

Because business travelers are anticipated to be the primary users of this type of operation, the planning criteria commonly used for FBO terminals, the traditional business traveler terminals, were used for this analysis. The planning factors were obtained from ACRP Report 113, which specifies that the allocation of 100 to 150 square feet per person (passenger and pilot) should be used to estimate the appropriate GA terminal building area requirements. For this assessment, 100 square feet per person during the peak hour was used to estimate the future facility requirements. Before applying the 100 square feet per person metric, the maximum number of people expected at the facility during the peak hour was calculated, including passengers, pilots, and other support staff.

4.10.3 CONCLUSION

Table 4.10-2 summarizes the facility requirements for passenger and cargo vertiports. Due to the limited availability of guidelines for cargo vertiports, it was assumed they would have the same requirements as passenger vertiports, excluding the terminal area. Based on the results, a vertiport facility at TPA would require 1 takeoff and landing pad, up to 6 eVTOL aircraft parking positions, and a terminal facility or a GSE staging area up to approximately 12,000 square feet. Overall, the vertiport facility would require a total footprint of approximately 13 acres.

TABLE 4.10-1: METHODOLOGY FOR DETERMINING VERTIPORT FACILITY REQUIREMENTS

CALCULATION STEPS	INPUT	PAL 1 (2032)	PAL 2 (2042)
Annual Passenger Demand			
[A]	TPA Enplaned Passengers (latest approved forecast)	14,462,000	18,535,000
[B]	O&D Enplaned Passengers	13,753,362	17,626,785
[C]	Share of First/Business Class Enplaned Passengers	10%	15%
[B] X [C] = [D]	O&D First/Business Class Enplaned Passengers	1,375,336	2,644,018
[E]	Percentage of O&D First/Business Class Enplaned Passengers using the Vertiport	10%	10%
[D] X [E] = [F]	**Annual Vertiport Enplaned Passengers**	**137,534**	**264,402**
Hourly Passenger Demand			
[G]	Expected Operating Hours (7:00 a.m. – 9:00 p.m.)	14	14
[H]	Average Number of Passengers per Departure	3	3
[F] / 365 / [G] = [I]	**Average Hourly Vertiport Enplaned Passengers**	**27**	**52**
[I] / [H] = [J]	**Average Hourly Vertiport Departures**	**9**	**17**
Facility Requirements – Takeoff and Landing Pads			
[K]	Minutes Required per Takeoff or Landing	2	2
60 / [K] = [L]	Average Number of Operations per Hour	30	30
2 [J] / [L] = [M]	**Number of Takeoff and Landing Pads Required**	**1**	**1**
Facility Requirements – Parking Positions			
[N]	Minutes Required to Turn Around eVTOL Aircraft	20	20
60 / [N] = [O]	Average Number of Departures per Parking Position per Hour	3	3
[J] / [O] = [P]	**Number of Parking Positions Required**	**3**	**6**
Facility Requirements – Terminal Building			
[Q]	Terminal Area (sq ft) Required per Person (including passengers, pilots)	100	100
[Q] X 2([I] + [J])	**Total Terminal Area (sq ft) Required**	**6,000**	**12,000**

NOTES:
eVTOL – Electric Vertical Takeoff and Landing
O&D – Origin and Destination
1 Historically, 10 percent of total enplaned passengers at the Airport have been business travelers. This distribution was also assumed for eVTOL operations, since no metric on initial eVTOL users exists. This may be subject to change.
3 The hours of operation were assumed based on expected business user work schedules.
4 The average number of passengers per hour was based on the known passenger capacities of eVTOL models that may be certified.
5 The hourly eVTOL aircraft departure capacity assumes eVTOL aircraft require 20 minutes to board passengers, taxi to the takeoff pad, and exit the pad. This results in 3 departures per hour.
6 Since these calculations determine the average activity per hour, the parking positions required were rounded up to the next whole number to accommodate peaks in operations.
SOURCES: US Department of Transportation, Federal Aviation Administration, *Terminal Area Forecast*, February 2022; Cirium Diio, US Department of Transportation, T-100, October 2022 (origin and destination passenger share for 12-month period ending in December 2021); Transportation Research Board, Airport Cooperative Research Program, Report 113, *Guidebook on General Aviation Facility Planning*, September 2011; Ricondo & Associates, Inc., January 2023 (analysis).

TABLE 4.10-2: SUMMARY OF VERTIPORT REQUIREMENTS

FUNCTIONAL AREA	FACILITY REQUIREMENTS	
	PASSENGER TRANSPORT	CARGO TRANSPORT
Number of Takeoff and Landing Pads	1	1
Number of eVTOL Aircraft Parking Positions	3–6	3–6
Terminal Area (sq ft)	6,000–12,000	0

NOTE:
eVTOL – Electric Vertical Takeoff and Landing
SOURCES: US Department of Transportation, Federal Aviation Administration, *Terminal Area Forecast*, February 2022; Cirium Diio, US Department of Transportation, T-100, October 2022 (origin and destination passenger share for 12-month period ending in December 2021); Transportation Research Board, Airport Cooperative Research Program, Report 113, *Guidebook on General Aviation Facility Planning*, September 2011; Ricondo & Associates, Inc., January 2023 (analysis).

4.11 SUPPORT FACILITIES

Support facilities are vital to the overall operation and maintenance of the Airport. It is important to identify facility requirements and other airfield improvements as the Airport expands in the future.

4.11.1 GROUND SERVICE EQUIPMENT MAINTENANCE FACILITY

The GSE Storage and Maintenance Facility is located south of West Cayuga Street and north of the Belly Cargo Building. The GSE building is used for servicing and storage of GSE. The building hosts multiple tenants at TPA, including both airlines and third-party ground handling providers.

The GSE building is approximately 90-feet deep by 420-feet long and is sited along an east–west orientation. The building is located behind and northeast of the north MRO hangar and east of North Westshore Boulevard, and it is connected to the airside via a 25-foot-wide bi-directional airfield access/tug drive.

The existing GSE building is 36,000 square feet and can be expanded to the west by approximately 22,000 square feet to accommodate long-term demand. The airside area (located on the south side of the building) would be extended to the west concurrent with the building extension, which would require the realignment of the airside vehicle access road. It is recommended that the area west of the existing GSE building be preserved to accommodate the building expansion.

4.11.2 AIRPORT MAINTENANCE AND EQUIPMENT STORAGE

The Airport maintenance complex is in the northern portion of the eastside aviation development area, along the west side of North Westshore Boulevard at the intersection with West South Avenue. This campus houses the staff and equipment associated with the following functions:

- landscaping
- projects
- airfield maintenance
- warehouse

All facilities appear to be in good operating condition, and the maintenance area site could be expanded to accommodate additional covered storage; however, these facilities should be situated to the south or south/southeast of current covered storage units, since a major stormwater drainage channel borders the site to the west. In addition, a design effort is currently underway for a major refurbishment of the airfield maintenance facility.

4.11.3 AIRPORT CENTRAL WAREHOUSE

The Central Warehouse was built in 2009. This warehouse plays a vital role in the day-to-day operations of the Airport and is managed by the Authority Materials Management team. Materials being stored include day-to-day inventory, attic stock, receiving items, and used items. The Central Warehouse is well organized, especially given the large quantity and variety of materials being stored. However, the warehouse has reached its maximum capacity in its current configuration, and actions must be taken to accommodate existing and future demand within the current building and/or expand it to meet future material storage requirements.

An analysis was performed in 2018 as part of an overall study of the Central Warehouse to evaluate reasonable options to meet long-term material storage requirements. Construction of new HCAA-managed facilities on Airside D is expected to generate a need to store additional attic stock materials. In addition to meeting the storage requirements at the completion of Phase 3 of the previous Master Plan, consideration was also given to size a warehouse expansion to accommodate reasonable growth beyond that time. Therefore, the projected 10- and 20-year storage requirements were estimated.

The analysis identified opportunities to minimize or defer capital investment in a warehouse expansion by better utilizing the existing building. For example, large amounts of materials are temporarily stored on the ground due to the lack of storage racks and shelves. Items temporarily stored on the ground take up valuable floor space that could otherwise be used to install additional racks, which would then increase the available storage space. The study observed numerous similar inefficiencies in building utilization, which, if improved, would defer capital expenditures for several years.

The analysis considered various opportunities to optimize the current storage area. Several ideas for optimization were identified, including the following:

- reconfiguring the layout of some racks
- installing a mezzanine-level floor for easily moved items
- standardizing the types of racks being used by replacing inefficient racks
- establishing a retention policy to limit the length of time used materials are stored
- disposing of obsolete attic stock
- disposing of damaged, unused, and unwanted surplus items
- salvaging component parts from larger items that take space

A 2,500-square-foot mezzanine floor expansion is currently underway to better accommodate the current warehouse stock and to offset demand. Optimizing the existing warehouse would likely delay the need to expand the building. The 2018 study found that if the warehouse is expanded, then the expansion should be approximately 13,500 square feet to meet material storage demand through the year 2040. Several options were evaluated to determine the preferred dimensions and orientation for a possible warehouse expansion. Selection of the preferred orientation for the building expansion considered various factors such as potential impacts to adjacent facilities, user access, integration with the existing building, interior space configuration, and interior circulation.

4.11.4 AIRCRAFT RESCUE AND FIREFIGHTING FACILITY

A new ARFF facility was opened in 2006, replacing two separate facilities with a single consolidated state-of-the-art midfield facility. The facility is located airside in a triangular tract of land adjacent to the southwest corner of the aircraft ramp serving Airside A. The facility is bordered by Taxiway J to the south, the Airside A ramp to the east, and George J. Bean Parkway to the west. In relation to primary airfield circulation routes, the station is just north of the intersection of Taxiways L and J, with Taxiway J providing access to both parallel runways, as well as the crosswind runway.

4.11.4.1 AIRCRAFT RESCUE AND FIREFIGHTING INDEX

As part of this analysis, the existing and future ARFF index was verified regarding the requirements in CFR Part 139. Based on the FAA-approved aviation activity forecast and subsequent DDFSs developed for the MPU, the ARFF index was projected by reviewing the forecast average daily departures of the projected aircraft. The length of the longest air carrier aircraft with five average daily departures forms the basis of the ARFF index determination. Based on this review, Index E is the current and projected ARFF index at TPA.

4.11.4.2 EQUIPMENT AND EXTINGUISHING AGENT

The basic equipment and extinguishing agent requirements of an Index E ARFF facility is three crash response trucks with the following:

- One vehicle must carry either 500 pounds of sodium-based dry chemical, Halon 1211, or clean agent; or 450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFFF application.
- Two other vehicles must carry an amount of water and a commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 6,000 gallons. Each ARFF vehicle used to comply with Index E requirements with a capacity of at least 500 gallons of water for foam production must be equipped with a turret.

The vehicle turret discharge capacity must be as follows:

- Each vehicle with a minimum-rated vehicle water tank capacity of at least 500 gallons, but less than 2,000 gallons, must have a turret discharge rate of at least 500 gallons per minute, but not more than 1,000 gallons per minute.
- Each vehicle with a minimum-rated vehicle water tank capacity of at least 2,000 gallons must have a turret discharge rate of at least 600 gallons per minute, but not more than 1,200 gallons per minute.
- Each ARFF vehicle that is required to carry dry chemical, Halon 1211, or clean agent for compliance with the Index E requirements must also meet one of the following minimum discharge rates for the equipment installed:
  - Dry chemical, Halon 1211, or clean agent through a hand line: 5 pounds per second
  - Dry chemical, Halon 1211, or clean agent through a turret: 16 pounds per second

Based on a review of the existing ARFF truck inventory provided by HCAA ARFF staff, the existing number of vehicles and their associated discharge capabilities will remain adequate throughout the planning horizon. While the vehicles are well maintained and have excellent operational capability, the HCAA should develop a replacement program for the oldest ARFF vehicles.

4.11.4.3 BUILDING

The existing ARFF facility, which was built in 2006, is reported to be in excellent condition and is designed in accordance with the immediate and future needs of ARFF support at the Airport. During the inventory and facility requirements phase of this MPU, discussions were held with the HCAA ARFF department. Based on these discussions, it was established that the existing ARFF station provides enough space for all elements of ARFF capability, including employee parking and functional space.

Should the HCAA consider the purchase of additional vehicles, it is recommended that the area north of the ARFF station be preserved to allow for the expansion of the existing ARFF station. The area provides sufficient space to accommodate a 2-bay expansion to the north and additional dorms. However, this expansion may require the relocation of utilities, including two aboveground electrical junction boxes, and it provides limited airside parking in front of the bays due to the existing apron taxilane.

4.11.4.4 BUILDING LOCATION AND RESPONSE TIME

The position of the midfield ARFF station meets the FAA response time requirements to be at the midpoint of the farthest runway within 3 minutes. Additionally, with its location in the Main Terminal complex, this also provides response coverage to the landside complex and all the airside concourses without having to cross an active runway.

A methodology to estimate the expected travel times to meet response time requirements considered both the route of travel between the ARFF station and runway midpoints and the number and types of turns along the shortest travel route as a means to estimate the average speed along that route. The number and types of turns along the traveled route are noteworthy as they require response vehicles to slow down, necessitating a longer response time. Three types of turns were considered as equivalent 90-degree turns:

- 45 degree – moderate speed reduction = one-half 90-degree turn
- 90 degree – limited speed reduction = one 90-degree turn
- 180 degree – significant speed reduction = two 90-degree turns

For these turns, each was reduced to an equivalent number of 90-degree turns, where each 90-degree turn represents a speed reduction of 5 miles per hour over a given route. The greater the number of turns along a given route, the slower the speed over the route.

Other key assumptions included to define the average route speed and response time are as follows:

- 45 seconds to depart ARFF station from alarm
- 15 seconds to initiate dispense of extinguishing agent
- maximum average speed is 50 miles per hour

Table 4.11-1 presents the estimated travel distances to the existing runway midpoints. An airfield expansion is proposed that adds a fourth runway to the west of existing Runway 1L-19R and an extension to runway end 19R. The new runway (Runway 17-35) is proposed to have a length of 10,200 feet and a lateral separation of 800 feet from the existing Runway 1L-19R. In addition, a 2,200-foot extension is proposed to be added to runway end 19R. As noted in **Table 4.11-2**, the current ARFF facility will meet critical ARFF response requirements in the ultimate conditions.

TABLE 4.11-1: ESTIMATED TRAVEL DISTANCES TO RUNWAY MIDPOINTS – EXISTING CONDITIONS

RUNWAY END	19R-1L	19L-1R	10-28
Distance (ft)	4,350	2,500	4,100
Route	**Station**	**Station**	**Station**
	TWY L	TWY G	TWY G
	TWY J	TWY G1	TWY G1
	TWY V2	TWY C	TWY C
	TWY W	TWY C4	RWY TO MP
	TWY W4	RWY TO MP	
Turns			
180 Degree	1		
90 Degree	1	1	2
Dual 90 Degree		1	
45 Degree	2		
Effective 90 Degree	4	3	2
Estimated Average Route Speed			
MPH	30	35	40
FPS	44	51	59
Route Response Time (Alarm to Dispense)			
Depart Station	45	45	45
Route Time	85	49	69
Dispense (in seconds)	15	15	15
Total Seconds	145	109	129
Total Minutes	2.4	1.8	2.2

NOTES:
FPS – Foot per Second
MPH – Miles per Hour
TWY – Taxiway
RWY – Runway
SOURCE: Newhouse and Associates, LLC, 2022.

TABLE 4.11-2: ESTIMATED TRAVEL DISTANCES TO RUNWAY MIDPOINTS – ULTIMATE CONDITIONS

RUNWAY END	19R-1L	19L-1R (FUTURE)	17-35 (FUTURE)	10-28
Distance (ft)	4,250	3,600	5,400	4,100
Route	STATION	STATION	STATION	STATION
	TWY L	TWY A3	TWY L	TWY G
	TWY J	TWY C	TWY J	TWY G1
	TWY V2	HSE	NEW VSR	TWY C
	TWY W	RWY TO MP	TWY Z	RWY TO MP
	TWY W4		NEW HSE	
	RWY TO MP		RWY TO MP	
Turns				
180 Degree	1		1	
90 Degree	1	1	1	2
Dual 90 Degree		1	1	
45 Degree	2			
Effective 90 Degree	**4**	**3**	**4**	**2**
Distance Credit	**1**	**0**	**1**	**0**
Estimated Average Route Speed				
MPH	35	35	35	40
FPS	44	51	51	59
Route Response Time (Alarm to Dispense)				
Depart Station	45	45	45	45
Route Time	83	71	106	69
Dispense (in seconds)	15	15	15	15
Total Seconds	143	131	166	129
Total Minutes	**2.4**	**2.2**	**2.8**	**2.2**

NOTES:
FPS – Foot per Second
MPH – Miles per Hour
TWY – Taxiway
RWY – Runway
SOURCE: Newhouse and Associates, LLC, 2022.

4.11.5 AIRCRAFT RESCUE AND FIREFIGHTING TRAINING FACILITY

The current ARFF training facility is a large circular area consisting of a replicated fuselage cross section (aircraft mockup), encircled by a 120-foot diameter "burn area" comprising crushed stone and a 12-foot-wide circular concrete apron around the burn area. Beyond the burn area and concrete apron is a large vehicle maneuvering area that is clear out to 150 feet from the center of the circle (300-foot diameter). Outside of that area are the typical support systems, which are sheltered behind a protective burn wall. The support systems consist of a control center, fuel and water storage tanks, and a fuel/water separator. The existing ARFF training facility, although weathered, is reported as being adequate for continued use within the planning period.

However, Airport management has identified a near-term need to initiate improvements to the current ARFF training facility:

- Expansion of the crushed gravel portions of the training area is desired to improve the current vehicle maneuvering area in the training facility.
- The existing aircraft fuselage mockup is more than 20 years old and needs replacement. The current mockup has extensive rust, and the fuselage has separated from the wing. Ideally, it would be replaced with a larger fuselage for additional training opportunities.

Additional improvements desired by HCAA staff include the following:

- additional aircraft section mockups to allow expanded training opportunities (A single mockup is currently located at the HCAA ARFF training facility. Additional aircraft section mockups would be desirable to allow expanded training opportunities.)
- larger piercing prop that has a better reinforced stand
- interior training prop and tail cone prop stand
- extrication area (large concrete pad that can also be used with piercing and tail cone prop)
- small propane/water fire pit for extinguisher training
- small training tower
- large concrete pad for a possible donated aircraft
- large storage container for donated aircraft seats, aircraft skins, and piercing panel replacements
- 20-person classroom area for pre- and post-action assessments
- gravel paths and staging areas for better drainage when training with water
- in-ground hydrant for training
- stadium-style light for night drills

4.11.6 AIRPORT SURVEILLANCE RADAR

The Airport is also equipped with an ASR-9 to enable the detection of aircraft in various weather conditions. The radar was installed in 2011 approximately 2,500 feet east of (and in line with) the Runway 19L threshold. The ASR site is approximately 300-feet wide by 200-feet deep, with a small parking area, a card-activated access gate, and perimeter fencing. No additional improvements to the radar are anticipated through the MPU planning horizon (2042).

4.11.7 AIRPORT SECURITY, AIRPORT POLICE AND RANGE, AND CANINE TRAINING FACILITY

Several facilities across the Airport house operations related to Airport Security and Airport Police. The need for additional Airport Security and Police facilities will be determined by the TPA Police Department, including those related to patrol, canine, special investigations, crime prevention, bicycle patrol, traffic, administration, lost and found, and the Airport Operations Center. The requirements are not predictable based solely on changes in activity levels; therefore, this section provides an overview of the anticipated needs associated with these facilities based on interviews with staff.

4.11.7.1 POLICE CANINE AND TRAINING FACILITY

This facility is reported to generally meet the needs of the staff, except for the need for additional training facilities and administrative space as they are currently operating over capacity. Both the training facilities and the administrative areas need to be expanded by at least 50 percent to meet the demand over the planning period. Expansion of the canine facility by two kennels and dog runs is also identified as a need prior to the opening of the Terminal D expansion. Storage space for baggage training devices is currently also over capacity with a need for an expansion of at least 100 percent over the current space. The facility also needs an HVAC system upgrade, and the existing faulty water heater needs to be replaced with an on-demand hot water system.

4.11.7.2 SHOOTING RANGE

The police have an 11,500-square-foot firing range that is situated just north of the canine training facility. The firing range is a standalone building that is open on the west end. The open side provides fenced-in access to 6 firing lanes; 2 firing lanes are currently being used for storage.

Ideally, all storage could be removed from the existing building to allow for the use of 10 firing lanes. To accomplish this, a new storage facility could be built to the north of the existing building. This additional facility could also house a simulation facility for police training. The simulation facility would allow for a fully immersive 300-degree environment, real-life scenarios and marksmanship training capability, seamless high-resolution video, and multi-directional surround sound for unsurpassed audio realism. The simulation facility would need to be at least 1,500 square feet to house the simulator, projectors, and training staff and officers using the system, as well as an office area.

Airport Police reported the facility is more than 15 years old and will need rehabilitation within the planning period. The ventilation system for the range should also be upgraded within the planning horizon.

4.11.8 GROUND RUN-UP ENCLOSURE

The existing ground run-up enclosure (GRE) is a three-sided structure with acoustical absorbent panels to deflect and muffle engine noise. The structure partially encloses an apron approximately 250-feet wide and 250-feet deep, which is capable of accommodating ADG V aircraft. The GRE is a common-use facility aimed at decreasing aircraft noise, while allowing for necessary engine maintenance run-ups. The GRE is situated between the north and south MRO hangars and is located approximately 960 feet east of Runway 1R-19L and 430 feet east of Taxiway E. The facility has a separate taxilane that provides direct access to the south-facing facility, which comprises a large ramp and the GRE structure itself.

Based on information provided from the Airport Noise Office, the GRE is reported as being in excellent condition. No specific facility improvements or requirements were identified for the facility. However, some portions of the facilities may need to receive minor maintenance or replacement during the planning period as the facility ages.

4.11.9 AIR TRAFFIC CONTROL TOWER

The ATCT is nearing 50 years old and is near the end of its useful life. Although a renovation was initiated in 2015, the conditions in the tower have deteriorated. A letter from Florida District 14 US Representative Kathy Castor sent on August 31, 2021, to the US Department of Transportation (USDOT) included several documented concerns:

- water intrusion issues resulting from old and broken pipes, some near electrical wiring
- black and brown water in toilets and sinks
- sewage and wastewater odors so pungent they have resulted in controllers taking sick leave
- unreliable and dirty HVAC system; often not adequately controlling the climate in Florida's hot and humid weather
- outdated and inadequate safety procedures, including a lack of required emergency exit routes
- unreliable elevator transportation to the tower
- cracked windows and rust on the surrounding support beams

The FAA has identified a site for the construction of a replacement facility. The location of the proposed ATCT / terminal radar approach control (TRACON) facility is to the north/northwest airside of the existing terminal building, south of former Airside D. In its October 2018 siting report, the FAA noted the tower shaft should be constructed of pre-cast concrete with a 12-sided non-functional shaft and a 12-sided steel cab, approximately 650 square feet in size. The proposed base building with the TRACON facility is anticipated to be 21,000 square feet.

The proposed tower cab floor elevation is 222 feet above mean sea level (AMSL), with an overall structure height of 257 feet AMSL to the top of lightning protection. This provides an air traffic personnel eye height at 209 feet above ground level, or 227 feet AMSL

4.11.10 FUEL FARM

Table 4.11-3 shows the existing fuel storage tank capacities. The fuel farm currently has 6 storage tanks with a gross total storage capacity of 3,486,000 gallons. The reference to a gross tank capacity is relevant capacity descriptive measure but in operational practice, a net tank capacity is considered as the more relevant capacity descriptor by the fuel farm operator. Also shown in Table 4.3-11 is a net usable fuel tank capacity definition. The net capacity definition reflects the capacity that the operator reports as the usable fuel capacity, excludes the "bottoms" (fuel in the bottom of the tank). This is due in part to the potential for particulate matter and other contaminates that settle to the bottom of the tanks. It was estimated that the "usable or net" tank capacity (excluding the bottoms) is on the order of 2,910,000 gallons, or about 83.5 percent of the gross tank capacity. The net tank capacity is shown in Table 4.3-11 as "Usable" for each tank.

TABLE 4.11-3: FUEL FARM TANK CAPACITY

TANK NUMBER	GROSS (GALLONS)	NET (USABLE) GALLONS	TANK AREA (SF)
Tank 1	1,050,000	850,000	12,200
Tank 2	1,050,000	850,000	12,200
Tank 3	630,000	550,000	10,200
Tank 4	630,000	550,000	10,200
Tank 5	63,000	55,000	2,250
Tank 6	63,000	55,000	2,250
Total	**3,486,000**	**2,910,000**	**51,300**

SOURCE: Newhouse and Associates, LLC, 2022.

The adequacy of the existing and future fuel farm is estimated in terms of the number of days of supply maintained in on-airport storage capacity. Typically, a minimum of 3-4 day supply is maintained but a 7-day supply is preferred. The on-airport fuel storage is maintained for multiple days as a contingency for the potential interruption of fuel supply from external sources. The references to the "number of days' supply" are considered here-in on the basis of average day of the year versus the typical "peak month average day". The reason is that having the maximum desired supply available during peak month results in an excessive supply in all other months of the year. Using the average day of the year versus the peak month average day

At the present time, fuel is supplied from external sources both by pipeline (approximately 80 percent) and by truck (approximately 20 percent). The number of days of desired on-site capacity is a variable value but the 7-day parameter is accepted as a rational basis and is used herein as the basis for the Fuel Farm tank adequacy and capacity requirements.

The annual fuel flow history as well as the annual aircraft departures at TPA are shown in **Table 4.11-13** below. As shown, the data is limited to the years 2017 to 2021. The data reflect the impact of the COVID Pandemic where aircraft operations declined dramatically in April 2020, remained well below typical levels but recovered gradually through 2021. The last full year of unaffected operations was in 2019. Also shown in Table 4.3-12 is a correlation of annual fuel flow to annual commercial aircraft departures to define the average fuel up lifted per departure. This metric reflects an aggregate of many factors typically related to Airline fuel up-lifts at an airport including size of aircraft and length of haul, as well as any tankering practices for shorter haul flights.

TABLE 4.11-3: HISOTRIC FUEL CONSUMPTION

YEAR	NET ANNUAL FUEL UPLIFT [1]	ANNUAL DEPARTURES	AVERAGE FUEL PER DEPARTURE
2017	146,201,599	81,309	1,798
2018	165,920,036	87,010	1,907
2019	175,845,334	87,985	1,999
2020	99,744,965	57,009	1,750
2021	144,391,595	75,752	1,906

1 – Menzies Aviation (Net Fuel Uplifts)
SOURCE: Newhouse and Associates, LLC, 2022.

As shown, the average fuel per departure increased from 1,798 gallons per departure in 2017 to 1,999 gallons in 2019. In 2021, the ratio was 1,906 gallons per departure with operations lagging slightly behind the prior peak year of 2019. During the COVID Pandemic, many older less fuel-efficient aircraft in the Airline fleets were taken out of service to more closely balance aircraft seat capacity with the decreased demand. The drop in fuel per departure is believed to reflect choices to operate the newer more fuel-efficient aircraft during this period of reduced demand. As a result, the 2021 fuel per departure ratio is used as a basis for considering future growth in this ratio.

The trend in the average up-lifted fuel per departure metric offers a factor for estimating future fuel uplift demand when correlated to forecast departing aircraft. For the years in the future, an increase in the fuel per departure metric is expected. This reflects a projected increase in larger narrowbody aircraft, increased widebody aircraft, as well as an increase in the average flight length from TPA. The assumed increase in fuel per departure is shown to increase from the 2021 level of 1,906 gallons per departure to 2,400 gallons per departure at the end of the forecast period in 2042. The assumed increase in fuel per departure over the forecast period is moderated by the fact that the specific fuel consumption for newer more fuel-efficient aircraft engines will be offset by increases in the aircraft size and range of flights from TPA over the forecast period.

Peak Month Average Day vs Average Annual Day

It is traditional that future facilities be defined for the peak month average day. In the case of the Fuel Farm, it is recommended that average annual day be used rather than the peak month average day because of the nature of fuel purchase, storage and usage. Providing storage capacity for the peak month average day means that all other months of the year would have substantially more fuel than needed, that is to say that more than a 7-day supply would be available. Using an average annual day as the basis for the 7-day supply means that in months with demand greater than the average day, the supply would be less than 7 days and in months where demand was less than the average day, the supply would be greater than 7 days. In the case of TPA, planning for the average annual day would provide a 5.73-day supply in the peak month (typically March) and a 10.14-day supply in the lowest demand month (typically September. The average annual day meets the operator expressed interest in between 5- and 7-day supply as the key metric for facilitation of the Fuel Farm.

Future year fuel consumption is estimated in **Table 4.11-4**. As shown, average fuel per departure is multiplied by the forecast number of "jet" departures forecast for TPA to estimate future annual fuel uplift. The "jet" reference reflects that the piston aircraft operations use AvGas and have been factored out of the departures forecast.

TABLE 4.11-4: FUTURE FUEL ANNUAL CONSUMPTION

YEAR	FORECAST DEPARTURES [1]	FUTURE FUEL PER DEPARTURE [2]	FUTURE ANNUAL FUEL CONSUMPTION	AVERAGE DAY FUEL CONSUMPTION[3]	AVERAGE FUEL SUPPLY (DAYS)	FUTURE PEAK MONTH AVERAGE DAY FUEL CONSUMPTION[4]	PMAD FUEL SUPPLY (DAYS)
2019	87,985	1999	175,845,334	481,768	6.0	572,915	5.1
2021	75,752	1906	144,383,312	395,571	7.4	470,410	6.2
PAL 1 (2032)	139,100	2200	306,020,000	838,411	3.5	997,033	2.9
PAL 2 (2037)	153,675	2300	353,452,500	968,363	3.0	1,156,320	2.5
PAL 3 (2042)	168,250	2400	403,800,000	1,106,301	2.6	1,315,606	2.2

1 – TPA MP Update Forecast 2022; Table 2.7-2
2 – Fuel per departure projection is an assumed growth rate reflection the characteristics of flight services over time
3 – Average Day reflects an average day of the year
4 – The Peak Month Average Day (PMAD) reflects an average day of the peak month of the year, estimated to be 10.1 percent of annual.
SOURCE: Newhouse and Associates, LLC, 2022.

As shown, the total annual future fuel uplift or consumption or future fuel demand is estimated to grow to as much as 403,800,000 annual gallons by PAL 3. This represents an estimated 280 percent increase from the existing levels over the 20-year forecast period. On an average annual daily basis, this represents the consumption of approximately 1,106,300 gallons per day. Relative to the existing net Fuel Farm tank capacity, the 2021 demand provides more than the desired 7 supply. This in part reflects the fact that aircraft operations have yet to reach the pre-Pandemic peak observed in 2019. By PAL 3, the existing fuel farm tank capacity if not expanded will only offer 2.6 days of fuel supply making ongoing flight operations highly vulnerable to fuel supply disruptions.

The future fuel tank capacity is calculated in **Table 4.11-5**. As shown, a future fuel storage demand for a 7-day supply is estimated to be 7,744,110 gallons by PAL 3. This volume of fuel reflects the increase in flight operations as well as the increase in average fuel consumption per departure.

TABLE 4.11-5: FUTURE FUEL DEMAND

YEAR	DEPARTURES	FUEL PER DEPARTURE	FUTURE ANNUAL UPLIFTED FUEL DEMAND (GALS)	FUTURE AVERAGE DAY UPLIFTED FUEL (GALS)	FUTURE NET STORAGE DEMAND FOR 7 DAY SUPPLY (GALS)	FUTURE NET PMAD DAY UPLIFTED FUEL (GALS)	FUTURE NET STORAGE DEMAND FOR 7 DAY SUPPLY (GALS)
2019	87,985	1999	175,845,334	481,768	3,372,376	572,915	4,010,408
2021	75,752	1906	144,383,312	395,571	2,768,995	486,090	3,402,633
							-
PAL 1 (2032)	139,100	2200	306,020,000	838,411	5,868,877	1,030,267	7,211,871
PAL 2 (2037)							
PAL 3 (2042)	168,250	2400	403,800,000	1,106,301	7,744,110	1,359,460	9,516,220

Source: Newhouse and Associates Analysis, 2022

Table 4.11-6 present the future fuel storage capacity for the future years. In Table 4.11-6, the fuel consumption reflective of the net Fuel Farm tank storage requirement is converted to the gross fuel tank storage capacity to reflect the inclusion of bottoms in the tank capacity.

TABLE 4.11-6: FUTURE FUEL STORAGE CAPACITY REQUIREMENTS

FUTURE ANNUAL UPLIFTED FUEL DEMAND (GALS)	FUTURE NET AVERAGE DAY UPLIFTED FUEL (GALS)	FUTURE NET TOTAL STORAGE FOR 7 DAY SUPPLY (GALS)	FUTURE GROSS AVERAGE DAY TOTAL STORAGE FOR 7 DAY SUPPLY (GALS)	EXISTING TANK CAPACITY GROSS (GALLONS)	ADDITIONAL TANK AVERAGE DAY GROSS STORAGE CAPACITY REQUIRED (GALS)	FUTURE NET PMAD DAY UPLIFTED FUEL (GALS)	FUTURE NET PEAK MONTH AVERAGE DAY TOTAL STORAGE FOR 7 DAY SUPPLY (GALS)	FUTURE GROSS PEAK MONTH AVERAGE DAY TOTAL STORAGE FOR 7 DAY SUPPLY (GALS)	ADDITIONAL TANK PMAD GROSS STORAGE CAPACITY REQUIRED (GALS)
	AVERAGE ANNUAL DAY					PEAK MONTH AVERAGE DAY			
2019	481,869	3,373,080	4,044,460		180,460	572,915	4,010,408	4,808,643	962,643
2021	395,571	2,768,995	3,320,138		(543,862)	486,090	3,402,633	4,079,896	233,896
PAL 1 (2032)	838,411	5,868,877	7,037,022	3,486,000	3,173,022	1,030,267	7,211,871	8,647,328	4,801,328
PAL 2 (2037)	968,363	6,778,541	8,127,747	3,486,000	4,263,747				
PAL 3 (2042)	1,106,301	7,744,110	9,285,503	3,486,000	5,421,503	1,359,460	9,516,220	11,410,336	7,564,336

Source: Newhouse and Associates Analysis, 2022

As shown, the net fuel storage requirement increases to a gross capacity of 9,285,500 gallons by PAL 3 for an average annual day. Considering the existing tank capacity is 3,486,00 gallons, a minimum of 3 tanks with a capacity of 2,000,000 gallons would be required by PAL 3 to accommodate the average annual day demand.

Terminal Area Fuel System

New airsides and gates are proposed for the Future. These developments are proposed to provide underground fueling to all gates. A supply line connecting these new airsides to the fuel farm will be required. The alignment for this feeder line remains to be defined. It will however originate from either the existing or the future manifold systems at the fuel farm.

The underground fuel facilities at the existing airsides and gates are aged, portions of which are over 40 years old. These systems are presumed usable for the foreseeable future. In the absence of gate expansion at each airside, the supply lines connecting the fuel farm to each airside should remain adequate as increased volume of fuel per aircraft and more aircraft per gate per day will result in increased utilization of the existing fuel lines and fuel pits.