



Strategic Airport Master Plan with Supplemental Analyses (2017-2020)

For Miami-Dade County System of Airports | EXECUTIVE SUMMARY



TABLE OF CONTENTS



INTRODUCTION	2	MIA FUTURE FACILITIES.....	23
AIRPORT SYSTEM	3	FUTURE LONG-TERM PLAN FACILITIES: CONCEPT PLAN	24
2019 FACTS AND FIGURES	4	FUTURE LONG-TERM PLAN FACILITIES: REPRESENTATIVE ILLUSTRATIONS	25
2019 ECONOMIC IMPACT.....	5	CAPITAL IMPROVEMENT PROGRAM - TERMINAL FACILITIES: CONCEPT PLAN	26
MIAMI INTERNATIONAL AIRPORT.....	6	CAPITAL IMPROVEMENT PROGRAM - TERMINAL FACILITIES: REPRESENTATIVE ILLUSTRATIONS...	27
GENERAL AVIATION AIRPORTS: KEY CHARACTERISTICS.....	7	FUTURE CARGO FACILITIES: CONCEPT PLAN	28
STUDY APPROACH	9	FUTURE CARGO FACILITIES: REPRESENTATIVE ILLUSTRATIONS.....	29
MASTER PLANNING STUDY APPROACH.....	10	GENERAL AVIATION FUTURE FACILITIES	31
GENERAL AVIATION AIRPORTS STUDY APPROACH	11	OPF	32
MIA FORECASTS & FACILITY REQUIREMENTS	13	TMB	33
AIR CARRIER HISTORICAL AND PROJECTED STATISTICS	14	X51	34
TERMINAL AREA FACILITY REQUIREMENTS	15	TNT	35
CARGO FACILITY REQUIREMENTS SUMMARY	16		
GENERAL AVIATION FORECASTS & FACILITY REQUIREMENTS	17		
OPF	18		
TMB	19		
X51	20		
TNT	21		

ACRONYMS

ALP	Airport Layout Plan	FBO	Fixed Base Operator	MDAD	Miami-Dade Aviation Department	SMP	Strategic Master Plan
ARFF	Aircraft Rescue and Firefighting	FY	Fiscal Year	MIA	Miami International Airport	TMB	Miami Executive Airport
CIP	Capital Improvement Program	GA	General Aviation	OPF	Miami Opa-Locka Executive Airport	TNT	Dade-Collier Training and Transition Airport
FAA	Federal Aviation Administration	GSE	Ground Support Equipment	PAL	Planning Activity Level	X51	Miami Homestead General Aviation Airport

INTRODUCTION

In 2017, the Miami-Dade Aviation Department (MDAD) initiated the Supplemental Airport Master Planning Study (Supplemental Study), which serves as an update to the 2009 Strategic Airport Master Planning Study (SMP). The SMP addressed the 20-year capacity and operational needs for Miami International Airport (MIA or the Airport) and Miami-Dade County's (the County's) four general aviation airports. The SMP also evaluated MIA's longer-range needs for a strategic planning horizon that extended to the 2050 timeframe.

The Supplemental Study refines MDAD's overall approach to implementing the long-term capital needs for its airports to continue providing a high level of service to the surrounding communities. Recommendations from the SMP and the Supplemental Study comprise the following:

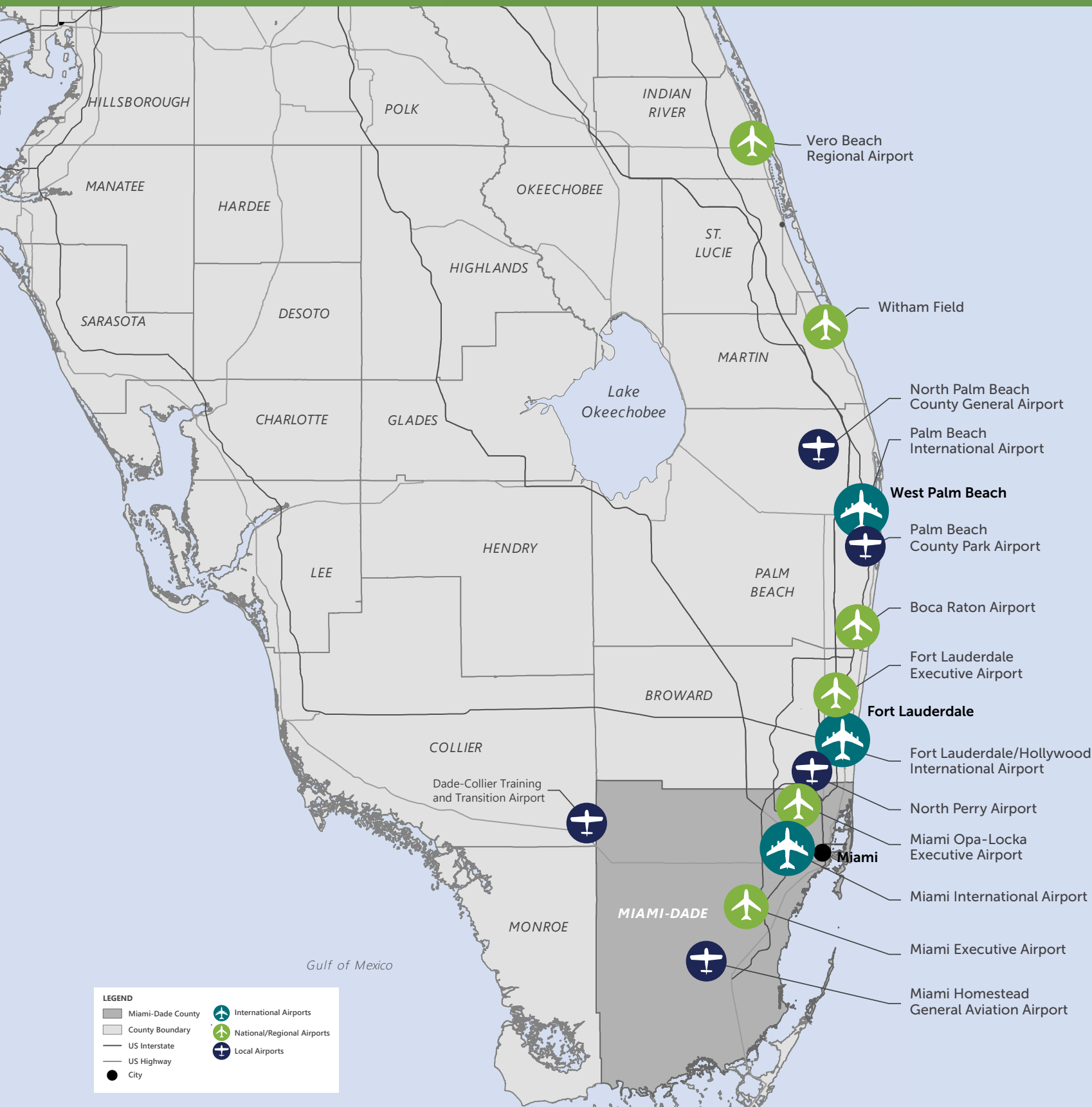
- protection for the buildout of up to 149 aircraft gates in the terminal area, plus additional hardstand/remote aircraft parking positions
- 11,000 additional public parking spaces
- expansion of landside facilities (e.g., additional ingress/egress roadway lanes and expanded ground transportation vehicle and cell phone waiting lots)
- protection for the incremental buildout of up to 4.3 total million square feet of cargo warehouse facilities
- consideration of additional property acquisition as adjacent properties become available to the east and west of MIA

In 2019, with the conclusion of the Supplemental Study, MDAD developed its new Capital Improvement Program (CIP) and presented it to the County Board of Commissioners, which approved the \$5 billion program in May 2019. The new CIP focuses on:

- modernization and optimization of existing assets
- airside and terminal facility maintenance projects
- development of a flexible implementation plan capable of responding to emerging/near-term needs
- strategic acquisition or leasing of available commercial land to enable long-term expansion



AIRPORT SYSTEM



MIA		Miami International Airport <i>Commercial Service</i>
OPF		Miami-Opa Locka Executive Airport <i>Corporate Aviation</i>
TMB		Miami Executive Airport <i>Corporate and Training Aviation</i>
X51		Miami-Homestead General Aviation Airport <i>Recreational Aviation</i>
TNT		Dade-Collier Training and Transition Airport <i>Training Aviation</i>



1.88 million tons
INTERNATIONAL FREIGHT

MIA 1ST  11TH



22.4 million
INTERNATIONAL PASSENGERS

MIA 3RD  45TH



2.31 million tons
TOTAL CARGO

MIA 3RD  100TH



45.9 million
TOTAL PASSENGERS

MIA 14TH  40TH



416,773
TOTAL AIRCRAFT OPERATIONS

MIA 16TH  30TH

MIA RANKING IN THE NATION

 RANKING IN THE WORLD

MIA SERVES **167** MARKETS:
DOMESTIC: **59** INTERNATIONAL: **108**



THE **ECONOMIC IMPACT** FROM MIA AND GENERAL AVIATION AIRPORTS:

\$31.9 billion

275,708

direct and indirect jobs

As of 2019 these markets were served by 54 domestic and foreign airlines

MIA MIAMI INTERNATIONAL AIRPORT



OPF

Miami-Opa Locka Executive Airport

- Primary general aviation reliever airport for MIA
- Three runways (2 parallel, 1 crosswind)
- Tenants include several fixed-base operators, a flight training center, and private/corporate hangars
- 625 acres committed to long term leases with three private developers and two other key tenants
- Home to US Coast Guard Air Station Miami
- County ordinance precludes scheduled air service
- Encompasses 1,810 acres
- Located 11 miles northwest of Miami

TMB

Miami Executive Airport

- Primary general aviation reliever airport for MIA
- Three runways (2 parallel, 1 crosswind)
- Accommodates diverse range of general aviation activity including: business, recreational/sport, flight training, and governmental (police/fire rescue)
- Encompasses 1,380 acres
- Located 13 miles southwest of Miami

X51

Miami Homestead General Aviation Airport

- Nonreliever airport
- Three runways (2 paved 1 turf) (2 parallel, 1 crosswind)
- Primary activity includes: recreational use, flight training, sport aviation use (parachute operations), and business-related aviation activities
- Encompasses 960 acres
- Located 4 miles northwest of Homestead

TNT

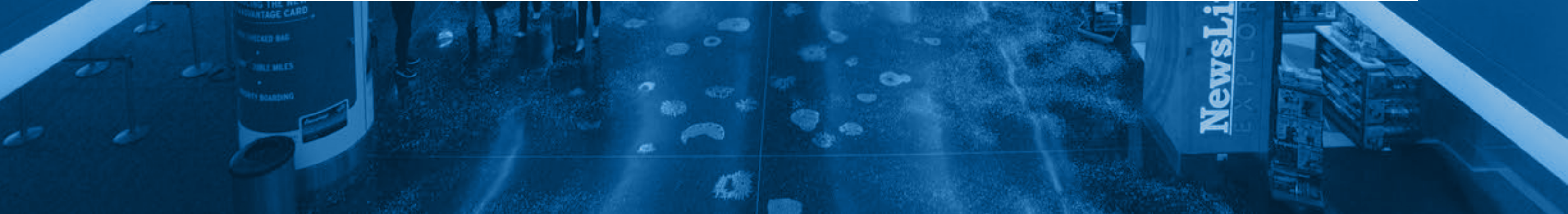
Dade-Collier Training and Transition Airport

- Nonreliever airport
- One paved runway (full instrument approach)
- Originally designated as the "Everglades Jetport" and planned to grow to six runways and be one of the largest commercial air carrier airports to serve southeast Florida
- Environmental concerns halted development in the early 1980s
- Encompasses 24,960 acres with 900 acres developed and operational
- Located within Collier County, 36 miles west of Miami





STUDY APPROACH



LONG-TERM FORECAST



The 2009 SMP Analysis for MIA first derived the long-term forecasts for passenger enplanements, operations, and cargo traffic.

2050 LAND REQUIREMENTS



The forecasts were then used to determine the 2050 land requirements through a demand capacity analysis.

OPPORTUNITIES & CONSTRAINTS



Next, the County's system of airports was evaluated to determine the opportunities and constraints for each airport, the best use of land, and how best to leverage capacity across the system.

STRATEGIC OPTIONS

Three strategic options were considered at MIA, including two that considered the property acquisition potential at the Airport.

STRATEGIC OPTIONS

- 1** Strategic Option 1 maintains the current Airport property and would require maintenance and cargo development to move to another airport, potentially either TMB or OPF.
- 2** Strategic Option 2 would expand the Airport property to NW 72nd Avenue and included moving a portion of the maintenance off-site.
- 3** Strategic Option 3 and would include an unconstrained expansion of MIA's property to the Palmetto Expressway and would be able to accommodate all projected development on the Airport.



PREFERRED LONG RANGE ALTERNATIVE



Strategic Option 2 was selected as the best option and was utilized for further planning.

2020-2035 CAPITAL IMPROVEMENT PLAN

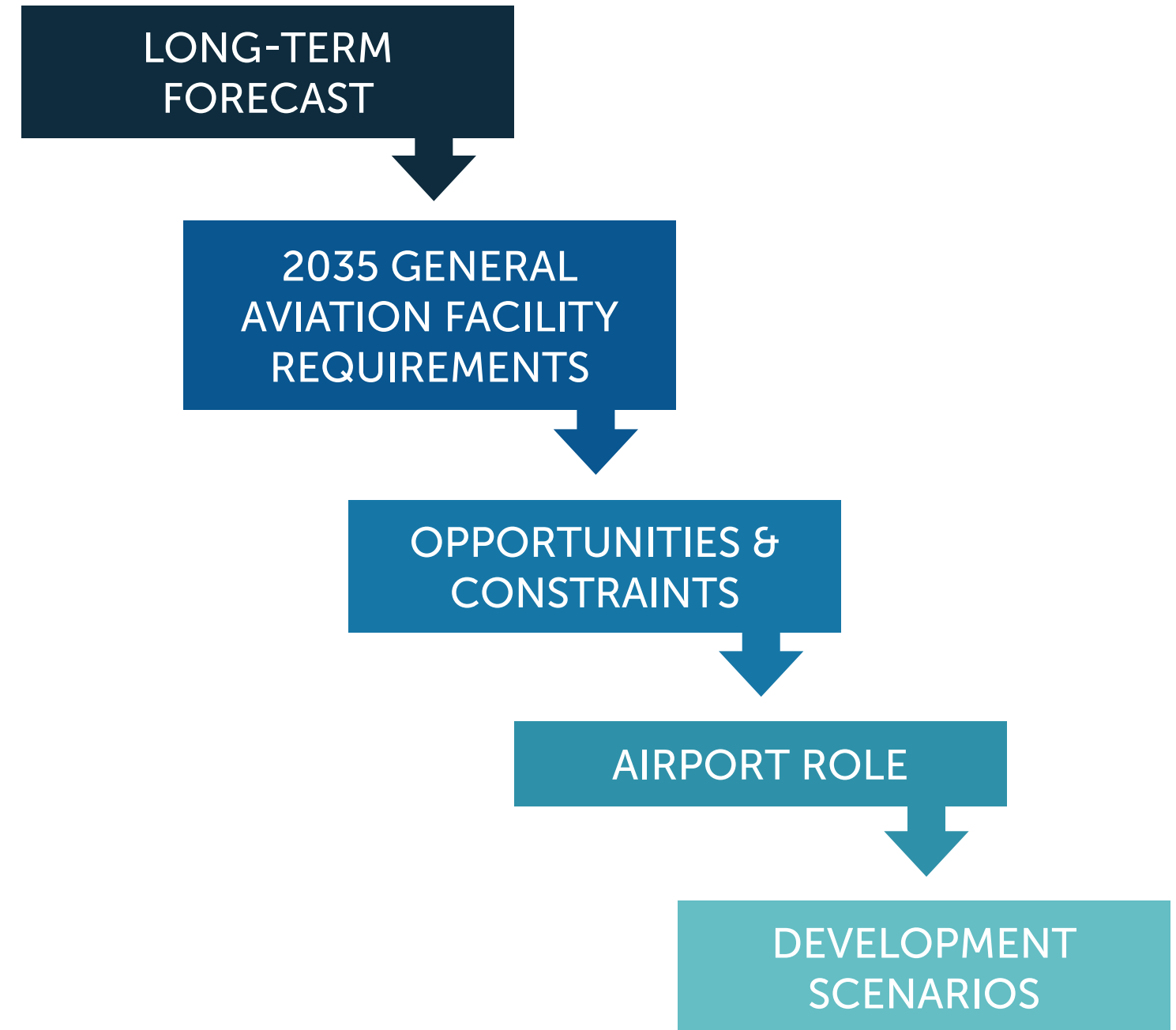
As part of the Supplemental Study, MIA's forecasts for passenger enplanements, operations, and cargo traffic was revised to further define the Airport's 20-year development program. MIA's Airport Layout Plan (ALP) was subsequently updated, and the Federal Aviation Administration (FAA) approved ALP set is now guiding Airport Management in developing its current CIP to meet the Airport's long-term capital needs.

While serving a diverse general aviation market, the County’s general aviation airports play an essential role in allowing MIA to become one of the leading commercial service airports in the world. By providing additional infrastructure to serve the corporate and recreational aviation needs, the County’s four general aviation airports allow MIA to primarily focus on serving the needs of the commercial aviation market (airlines and cargo). The FBO facility at MIA has limited capacity and cannot be expanded without derogating the service offerings to commercial aviation at MIA.

The SMP utilizes a systems approach to defining a long-term vision for the County’s general aviation airports. Specific roles for each airport were defined that would position them to successfully serve the County’s diverse air transportation needs in a financial, environmental, and community sensitive manner through fiscal year (FY) 2035:

- **Miami-Opa Locka Executive Airport** will continue to serve the corporate and recreational market as a dedicated reliever to MIA, while also providing the opportunity to develop other markets including air cargo or aircraft maintenance, repair, and overhaul facilities. Per County Ordinance, commercial airline service is prohibited at this airport.
- **Miami Executive Airport** will continue to serve the corporate and recreational market as a dedicated reliever to MIA; however, the development of cargo and/or heavy aircraft maintenance, repair and overhaul facilities could require significant investment in airfield infrastructure.
- **Miami Homestead General Aviation Airport** primarily serves the recreational and sport aviation market in southern Miami-Dade County, but could be expanded to serve corporate aviation activity as well.
- **Dade-Collier Training and Transition Airport** will remain dedicated to flight training activities only.

A general aviation activity forecast for the entire county was derived, and then demand was distributed among the various airports in accordance with their intended roles. Future facility and infrastructure requirements to serve these projections in accordance with these roles have been identified and are reflected in the SMP’s recommendations for each airport.





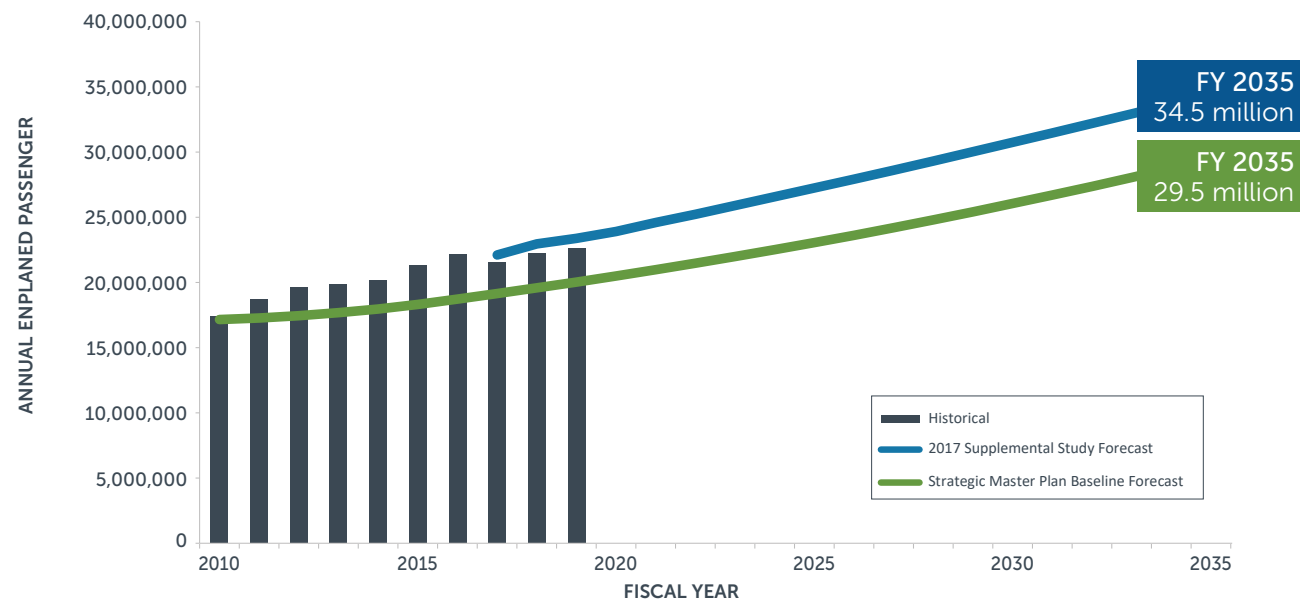


MIA FORECASTS & FACILITY REQUIREMENTS

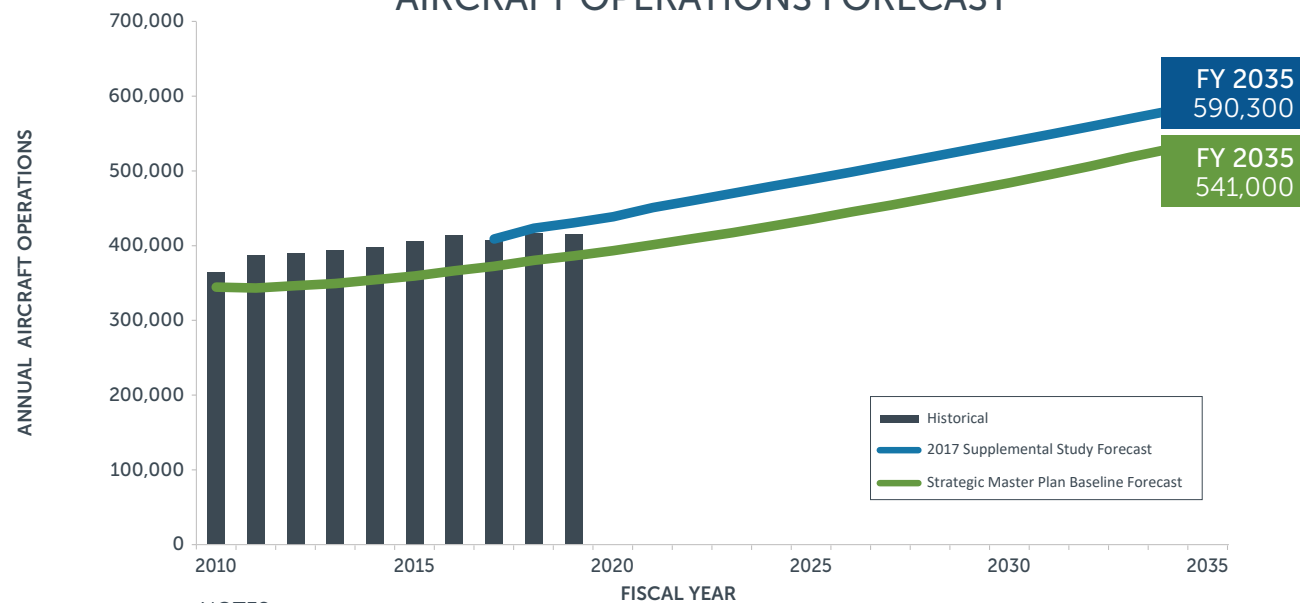
As part of the 2017 Supplemental Study, the MIA forecast was revised to reflect a stronger growth and was approved by the FAA in March 2018.

The forecasts show an average annual growth rate of 2.5 percent for air carrier enplanements and 2.1 percent for air carrier operations from 2017 to 2035.

PASSENGER ENPLANEMENTS FORECASTS



AIRCRAFT OPERATIONS FORECAST



NOTES:

1/ 2017 Supplemental Forecast approved by the FAA in 2018.

2/ Strategic Master Plan Baseline Forecast approved by the FAA in 2011.

PLANNING ACTIVITY LEVELS (PAL)

METRICS	ACTUAL (FY 2019)*	CAPITAL IMPROVEMENT PROGRAM PAL (FY 2035)	LONG-TERM PAL (FY 2050)
Passenger Enplanements (millions)	22.7	34.5	48.7
Total Aircraft Operations	415,032	590,300	785,300
Air Carrier Operations	324,259	482,200	652,800
Cargo Operations	52,063	72,800	97,000
General Aviation and Other Air Taxi Operations	38,710	35,300	35,500

NOTES:

* FY 2019 represents planning activity levels recorded prior to COVID-19 pandemic.

FACILITY REQUIREMENTS SUMMARY

FACILITY COMPONENT	ACTUAL (AS OF FY 2019)	CAPITAL IMPROVEMENT PROGRAM PAL (FY 2035)	LONG-TERM PAL (FY 2050)
TERMINAL			
Terminal Gates	135	149	163
Remote Aircraft Parking Area (acres)	27	50	89
MDAD Facilities (square feet)	281,500	548,000	1,021,000
Terminal Ground Support Equipment Area (square feet)	330,000	1,059,000	1,713,000
LANDSIDE			
Public Parking (stalls)	8,322	10,600	13,300
Public Parking (square feet)	2,912,700	3,714,000	4,663,000
Employee Parking (stalls)	7,906	9,200	10,600
Employee Parking (square feet)	2,767,100	3,220,000	3,711,000

The Airport’s recent development of a pharma hub and foreign trade zone as well as the rapid growth of e-commerce has ensured MIA’s market position as a leading international cargo hub. As such, the cargo tonnage forecast was revised as part of the 2017 Supplemental Study and is expected to grow over the course of the 20-year planning horizon. It is expected that the total cargo tonnage will grow to 4.2 million tons by 2035.

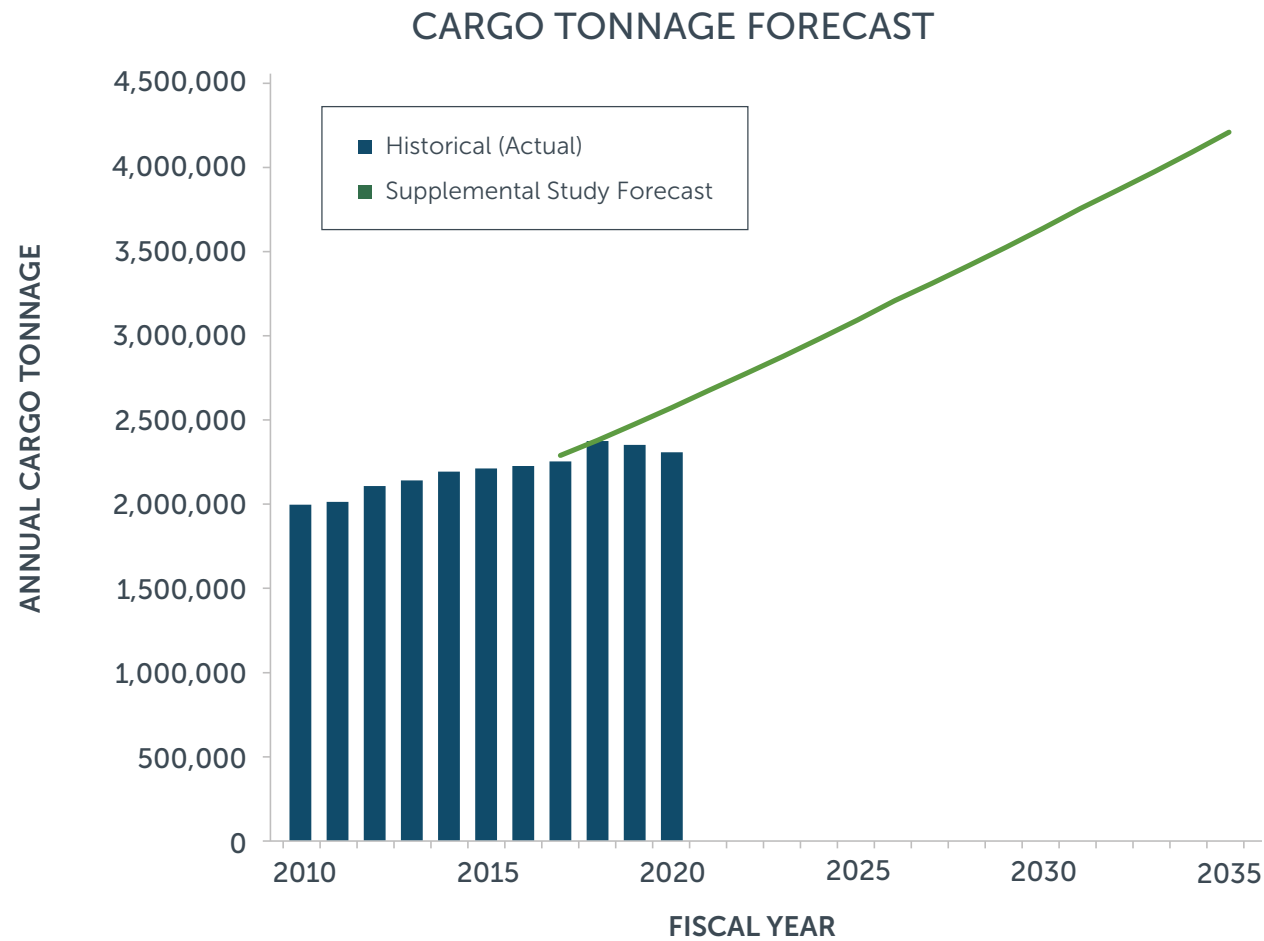
PLANNING ACTIVITY LEVELS

METRICS	ACTUAL (FY 2019)*	CAPITAL IMPROVEMENT PROGRAM PAL (FY 2035)	LONG-TERM PAL (FY 2050)
Total Cargo Enplanements (million annual tons)	2.3	4.2	6.5
Cargo Enplanements: Freight (million annual tons)	1.9	3.4	5.2
Cargo Enplanements: Belly (million annual tons)	0.4	0.8	1.3

NOTES:
* FY 2019 represents planning activity levels recorded prior to COVID-19 pandemic.

CARGO FACILITY REQUIREMENTS SUMMARY (MILLION SQUARE FEET)

FACILITY COMPONENT	EXISTING (AS OF FY 2019)	CAPITAL IMPROVEMENT PROGRAM PAL (FY 2035)	LONG-TERM PAL (FY 2050)
Warehouse	2.65	4.34	6.35
Ramp	4.55	6.56	9.31
Vehicular Parking	2.18	3.91	6.07
Truck Dock Areas	1.87	3.34	5.17
Support Facility Requirements	1.30	2.33	3.62
Landscaping and Drainage	3.14	5.12	7.62
TOTAL	15.70	25.61	38.12



NOTES:
1/ Annual cargo tonnage forecast assumes a 15% domestic share and a 85% international share.

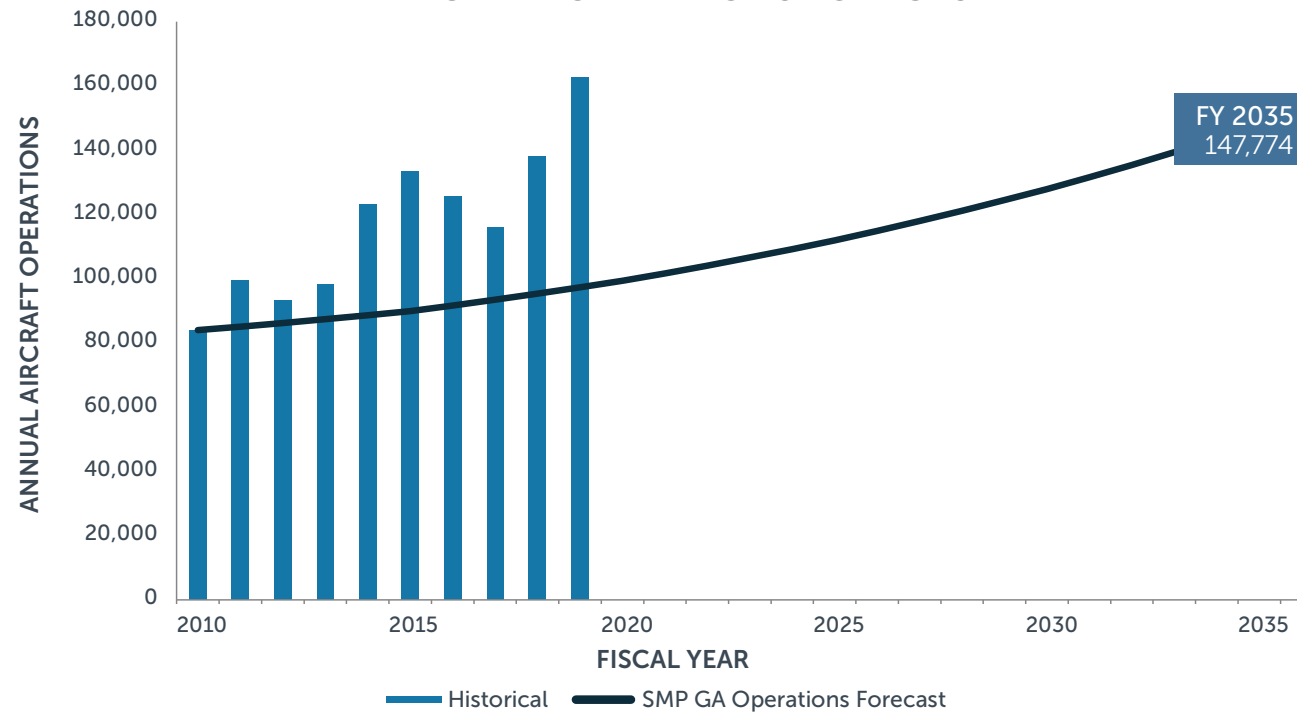




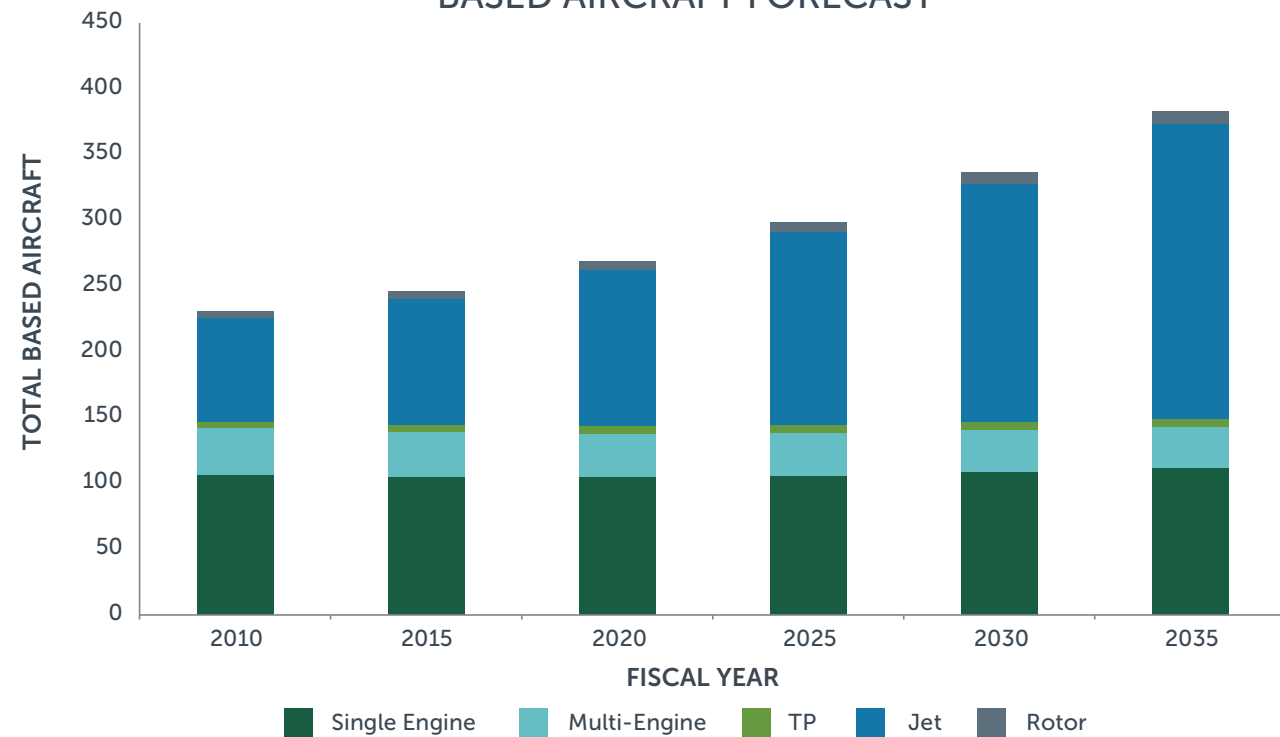
GENERAL AVIATION FORECASTS & FACILITY REQUIREMENTS

OPF FORECAST AND FACILITY REQUIREMENTS

AIRCRAFT OPERATIONS FORECAST



BASED AIRCRAFT FORECAST



FACILITY COMPONENT		EXISTING (AS OF FY 2012)	CAPITAL IMPROVEMENT PROGRAM (FY 2035)	MEETS FUTURE REQUIREMENTS ^{1/}
Aircraft Parking / Storage ^{2/}	T-Hangars (square feet)	10,000	0	✓
	Conventional Hangars (square feet)	503,100	2,170,600	
	Apron/Ramp ^{3/} (square feet)	2,327,100	2,095,100	✓
Automobile Parking (square feet)		215,800	270,950	
Aviation Fuel	100LL/Avgas (gallons)	6,000	6,000	✓
	Jet A (gallons)	12,100	20,350	
Airport Support	MDAD - Maintenance Yard (square feet)	36,725	36,725	✓
	MDAD - Administration/ Maintenance Building (square feet)	9,450	9,450	✓
	MDAD - Maintenance Covered Parking (square feet)	2,250	2,250	✓
	Aircraft Rescue and Firefighting (ARFF) (square feet)	11,250	11,250	✓

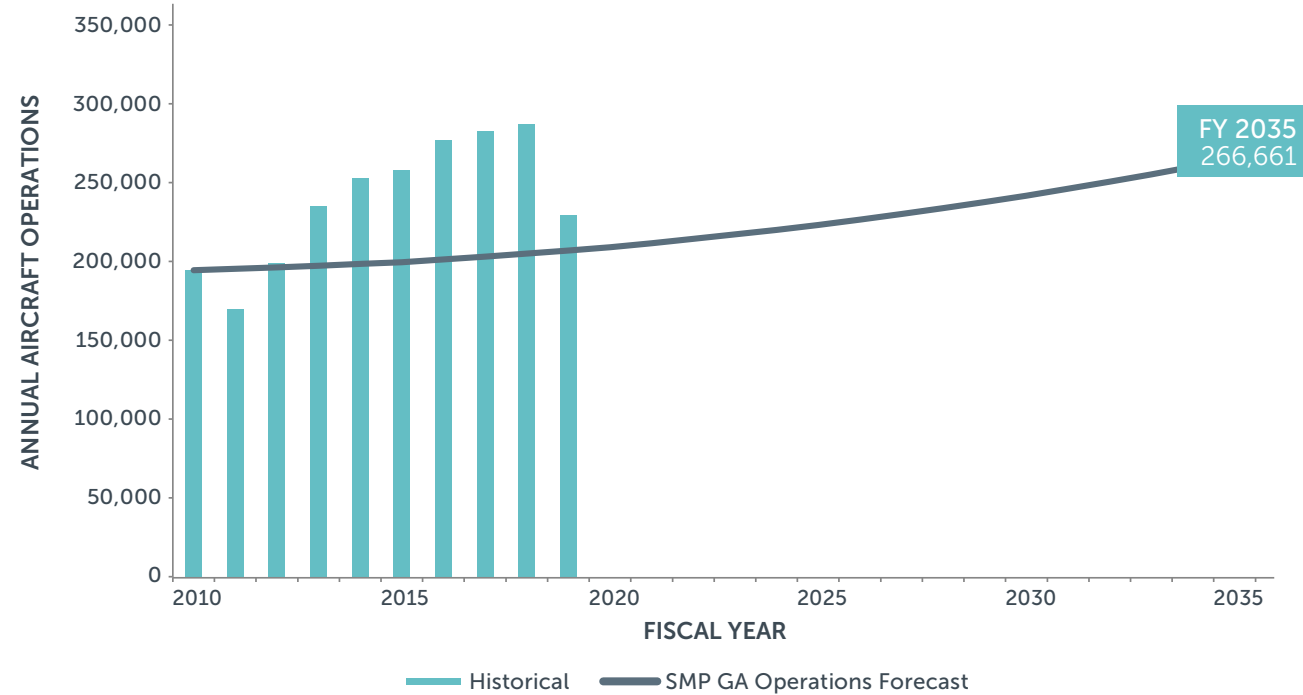
NOTES:

1/ Facility components are sufficient to meet the requirements through FY 2035

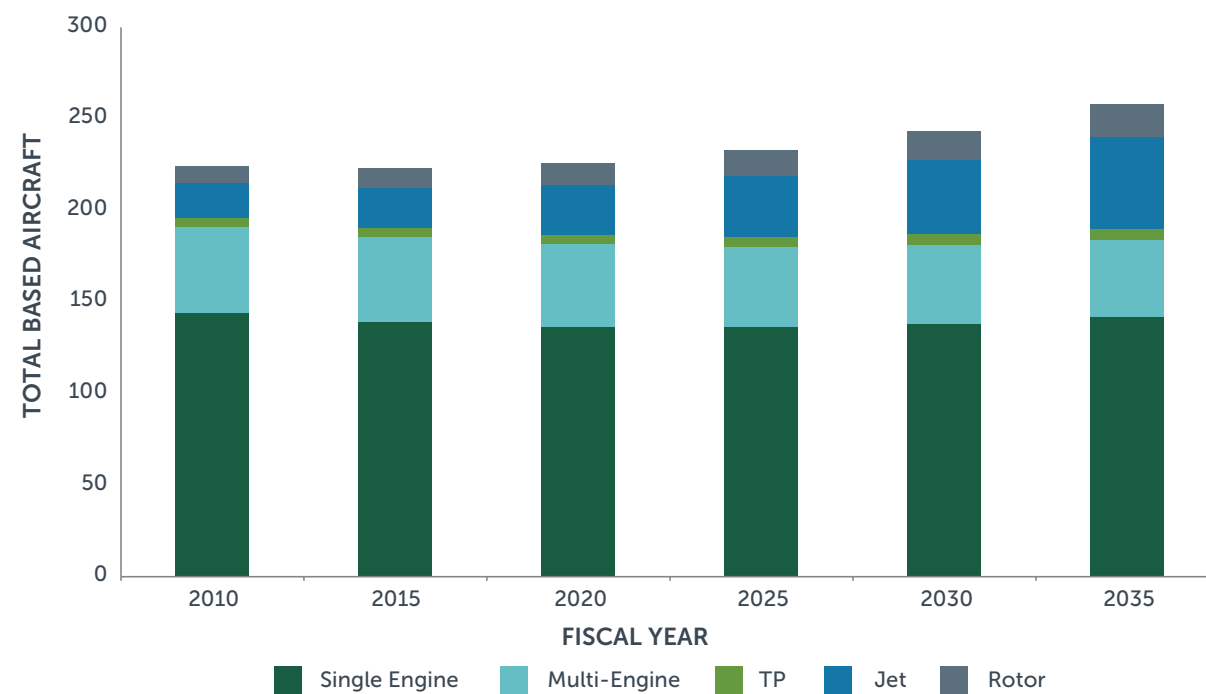
2/ Aircraft parking and storage space estimates do not include aircraft circulation, drainage, or landscaping

3/ Existing apron/ramp square feet includes aircraft maneuvering areas

AIRCRAFT OPERATIONS FORECAST



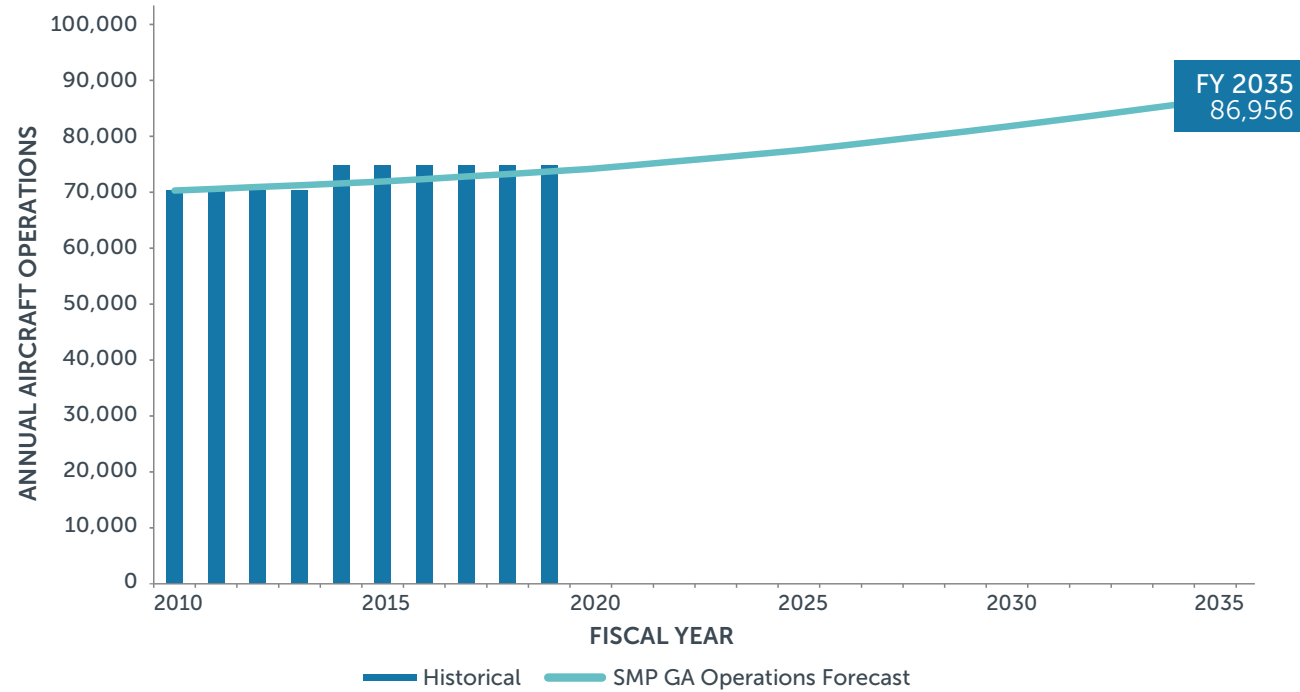
BASED AIRCRAFT FORECAST



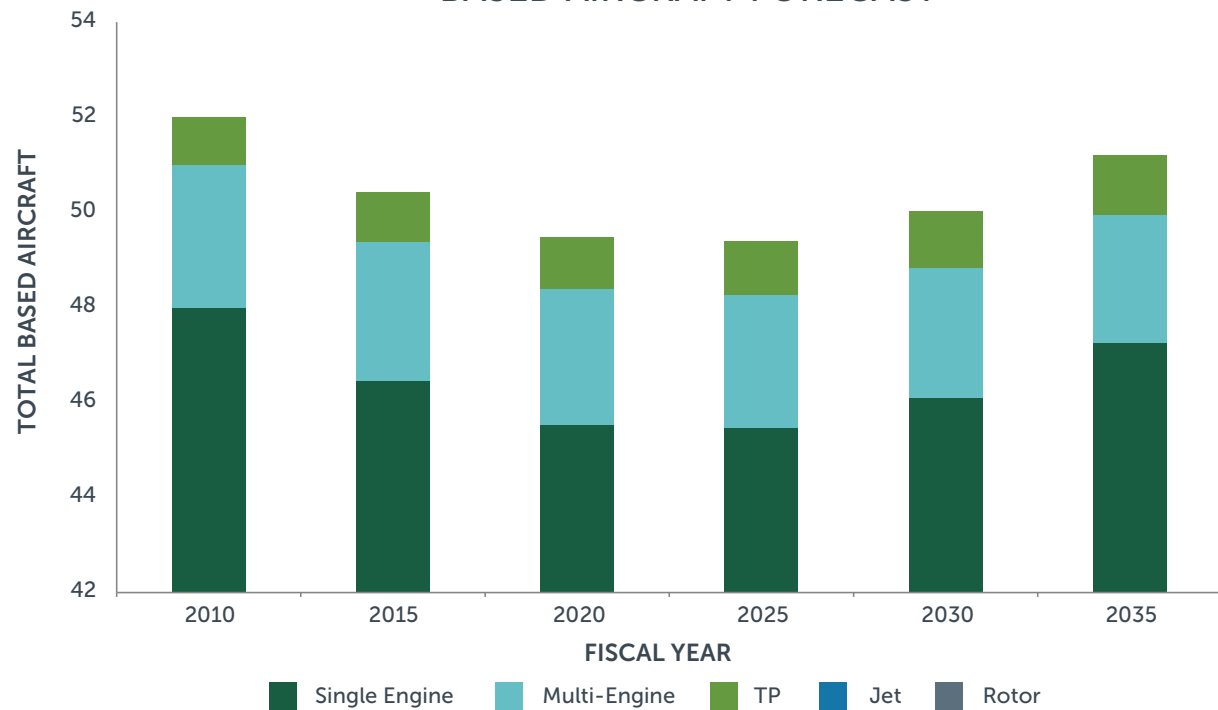
FACILITY COMPONENT		EXISTING (AS OF FY 2012)	CAPITAL IMPROVEMENT PROGRAM (FY 2035)	MEETS FUTURE REQUIREMENTS ^{1/}
Aircraft Parking / Storage ^{2/}	T-Hangars/Box Hangars (square feet)	342,500	266,200	✓
	Conventional Hangars (square feet)	278,300	415,100	
	Apron/Ramp ^{3/} (square feet)	1,132,600	871,800	✓
	Automobile Parking (square feet)	126,750	181,700	
Aviation Fuel	100LL/Avgas (gallons)	4,700	4,200	✓
	Jet A (gallons)	5,000	5,900	
Airport Support	MDAD - Maintenance Yard (square feet)	36,725	36,725	✓
	MDAD - Administration/ Maintenance Building (square feet)	9,450	9,450	✓
	MDAD - Maintenance Covered Parking (square feet)	2,250	2,250	✓
	Aircraft Rescue and Firefighting (ARFF) (square feet)	11,250	11,250	✓

Notes:
 1/ Facility components are sufficient to meet the requirements through FY 2035
 2/ Aircraft parking and storage space estimates do not include aircraft circulation, drainage, or landscaping
 3/ Museum hangar is not included in existing capacity

AIRCRAFT OPERATIONS FORECAST



BASED AIRCRAFT FORECAST

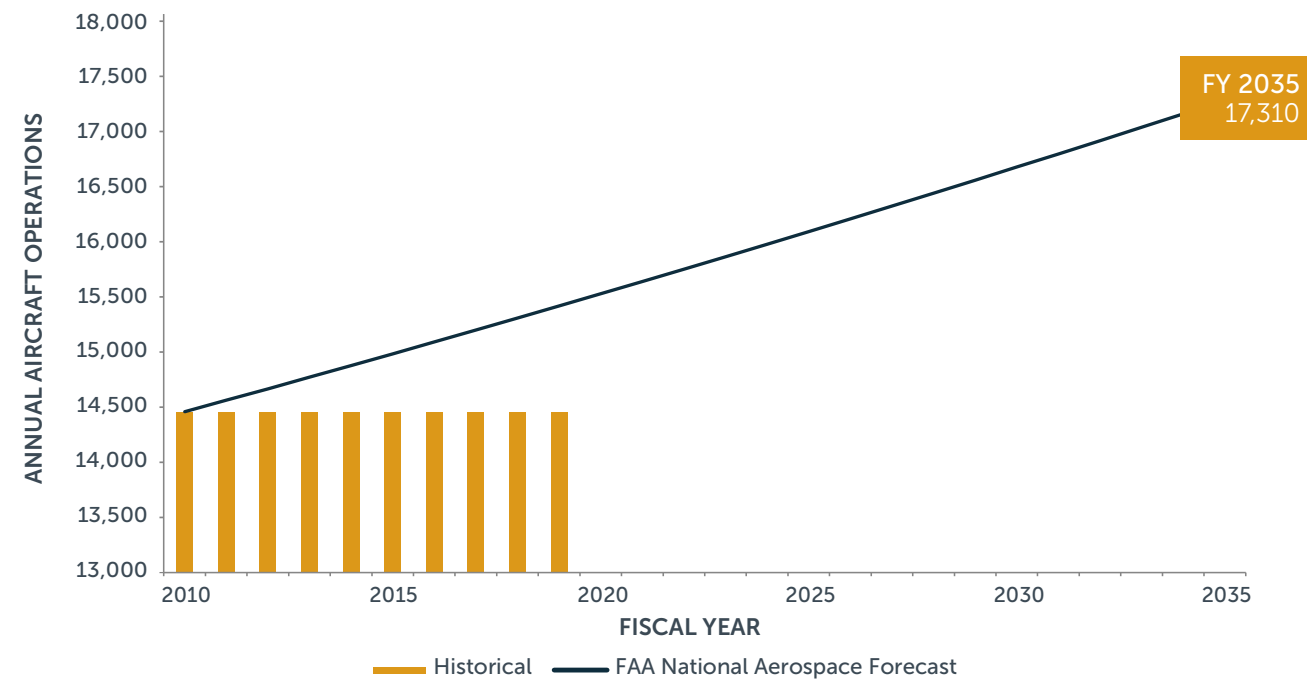


FACILITY COMPONENT		EXISTING (AS OF FY 2012)	CAPITAL IMPROVEMENT PROGRAM (FY 2035)	MEETS FUTURE REQUIREMENTS ^{1/}
Aircraft Parking / Storage ^{2/}	T-Hangars (square feet)	23,550	35,550	
	Conventional Hangars (square feet)	12,750	33,600	
	Apron/Ramp ^{3/} (square feet)	353,000	425,600	
	Automobile Parking (square feet)	27,600	26,800	✓
Aviation Fuel	100LL/Avgas (gallons)	1,550	1,550	✓
	Jet A (gallons)	1,550	1,500	✓
Airport Support	MDAD - Maintenance Yard (square feet)	1,500	1,500	✓
	MDAD - Administration/Maintenance Building (square feet)	1,700	1,700	✓
	MDAD - Maintenance Covered Parking (square feet)	990	990	✓
	Aircraft Rescue and Firefighting (ARFF) (square feet)	N/A	N/A	✓

Notes:
 1/ Facility components are sufficient to meet the requirements through FY 2035
 2/ Aircraft parking and storage space estimates do not include aircraft circulation, drainage, or landscaping
 3/ Existing apron/ramp square feet includes aircraft maneuvering areas

TNT, located in Collier County west of Miami, supports large and small aircraft with precision-instrument landings. The Airport's primary purpose is to provide a precision-instrument landing and training facility in South Florida for commercial pilots, private training, and a small number of military touch-and-goes. It is expected that TNT will continue to serve this purpose and the existing facilities can accommodate the anticipated increase in aircraft operations.

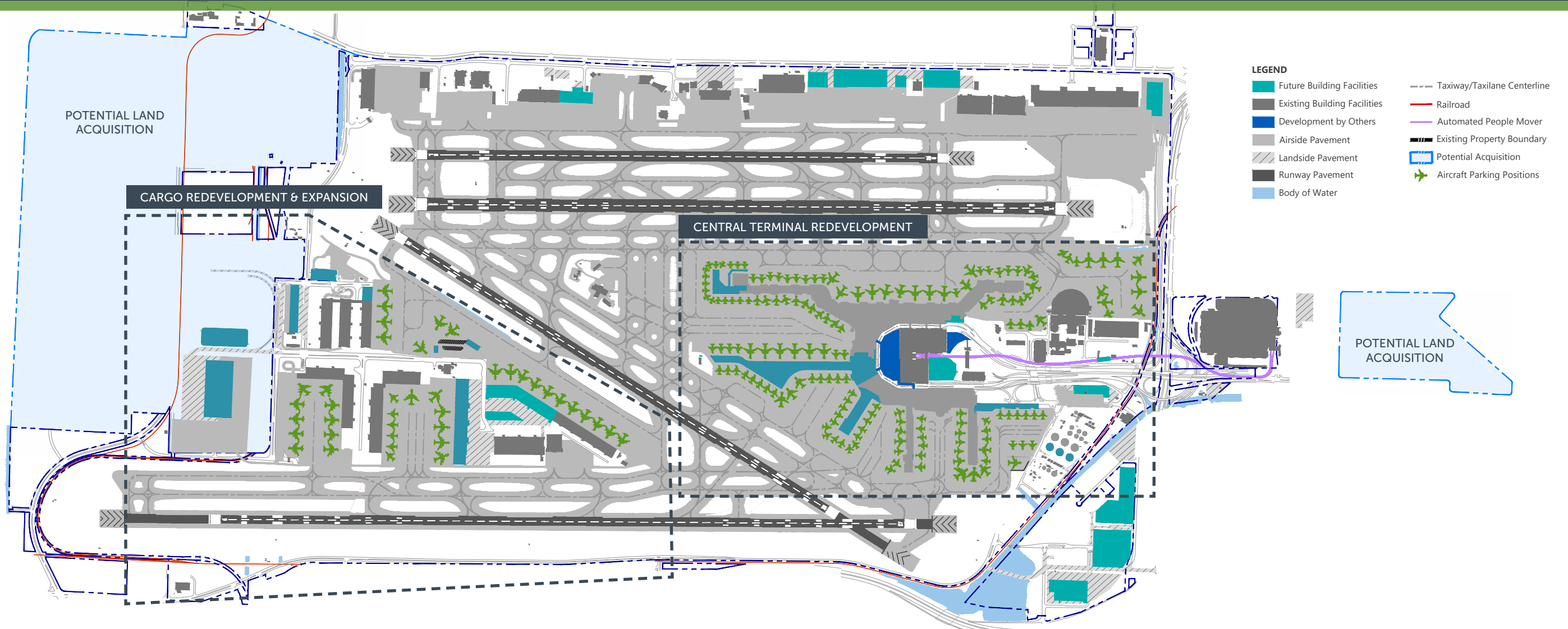
AIRCRAFT OPERATIONS FORECASTS







MIA FUTURE FACILITIES



TERMINAL FACILITIES:

Several large projects are planned for the North, Central, and South Terminals at MIA to help the Airport meet the anticipated demand and allow for further growth.

The North Terminal will undergo gate improvements, including the full redevelopment of Gate D60.

The Central Terminal will be modernized to provide an expanded ticket lobby and a consolidated security screening checkpoint. New Concourses E and F will provide additional contact gate aircraft parking positions, improve airfield circulation, and enhance the passenger experience.

The South Terminal will be expanded to provide additional gate capacity and remote aircraft parking positions.

CARGO FACILITIES:

Projects are planned in the West Cargo Area to increase the Airport's cargo processing capacity. These projects include the extension of Taxiway R to the full length of Runway 12-30, apron expansion to provide additional aircraft parking positions, and the construction of new cargo warehouses, some of which are planned to be multilevel, to accommodate future growth.

SUPPORT FACILITIES:

Additional projects are planned to accommodate the anticipated growth including maintenance, repair and overhaul facilities located north of Runway 8L-26R as well as a ground support equipment storage and maintenance facilities located near the expanded terminal and cargo areas.

For landside access, development projects planned include the construction of a new passenger parking structure in the terminal area. Additionally, taxi and transportation network company staging lots are expected to be relocated to more centralized and accessible locations for access along the Airport Expressway.

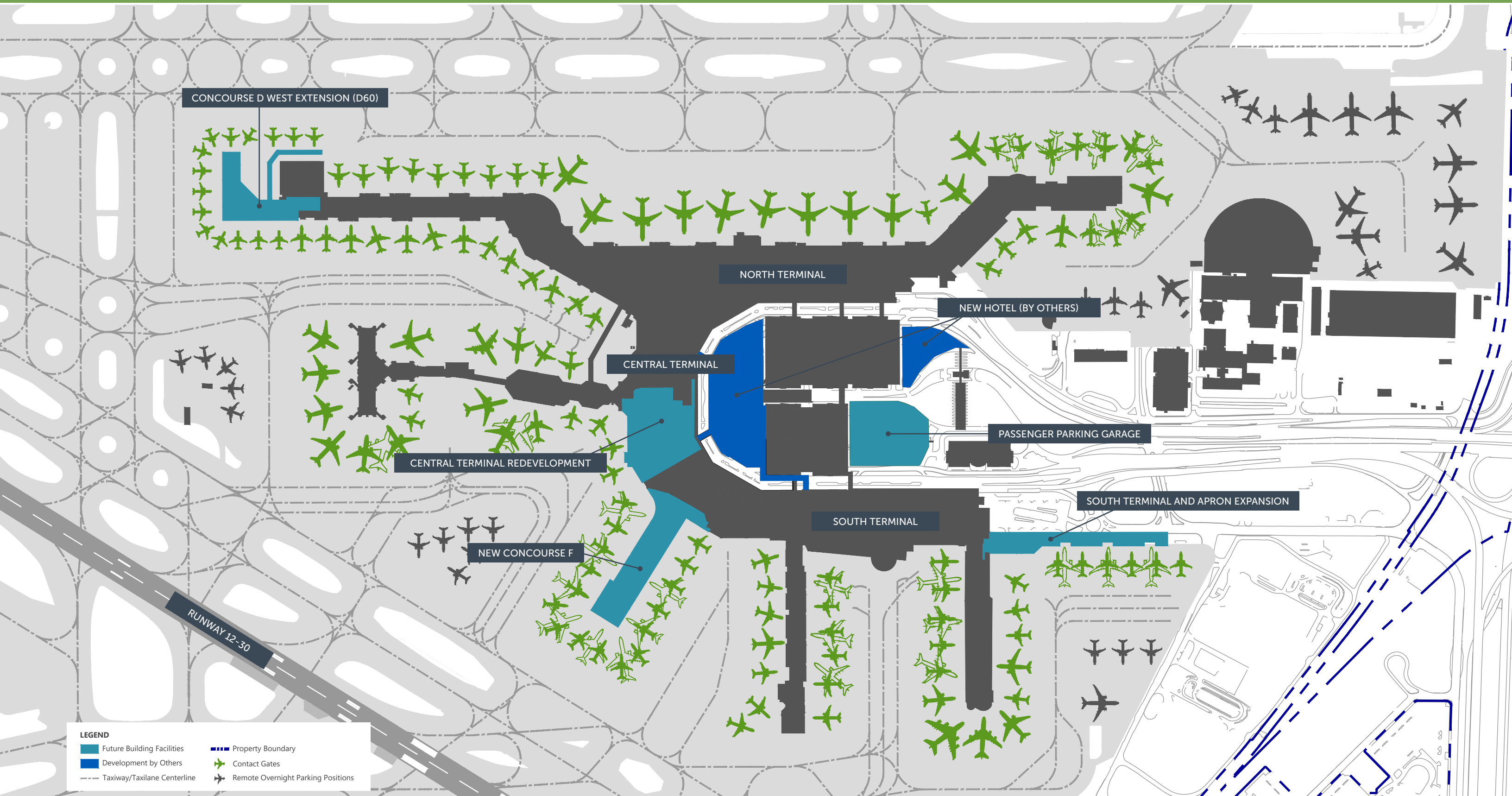
FUTURE LONG-TERM PLAN FACILITIES: REPRESENTATIVE ILLUSTRATIONS

NEW CONCOURSE E

HOTEL (DEVELOPED BY OTHERS)

MRO FACILITIES (NORTH AIRFIELD)





NEW CONCOURSE F

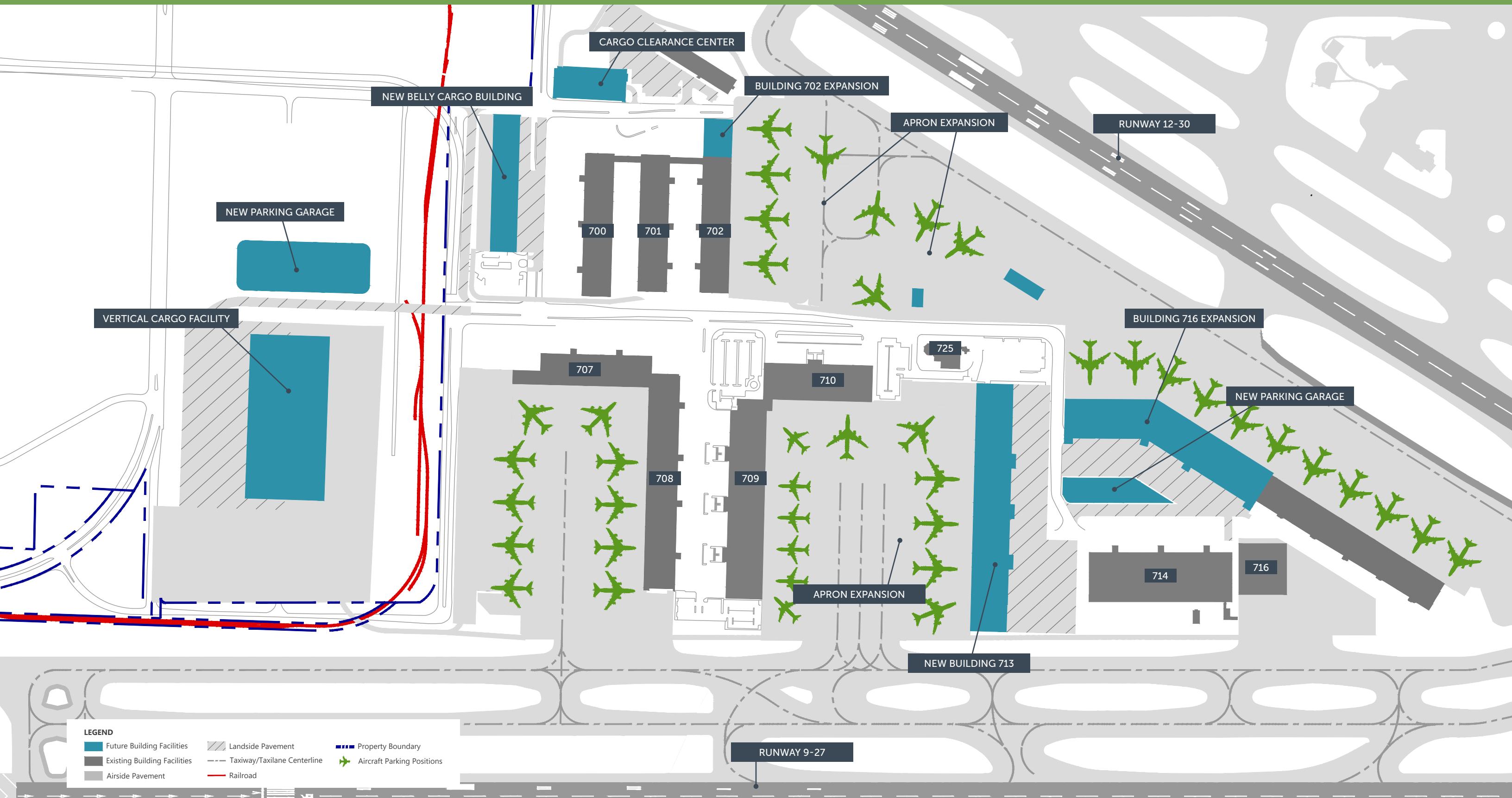


SOUTH TERMINAL EXPANSION



CONCOURSE D WEST EXTENSION (D60)





WEST CARGO AREA REDEVELOPMENT

VERTICAL CARGO FACILITY







GENERAL AVIATION FUTURE FACILITIES

OPF has long-term leasehold agreements with several private developers, who perform most of the tenant facility development at the Airport. MDAD will perform airfield modifications to expand airfield access to the leased areas, but it typically does not fund the apron and building development.

Development initiatives at OPF include:

- New full-length parallel taxiway for Runway 12-30
- New full-length parallel taxiway south of Runway 9R-27L to serve future tenant facilities
- Taxiway modifications to H, T, G, and D to improve safety
- New engine run-up area in the midfield area
- Exit taxiway modifications along Runway 9L-27R to conform with FAA airfield design standards
- Other miscellaneous taxiway pavement geometry modifications to eliminate excessive pavements and/or conform with FAA design standards



LEGEND

- Future Airfield Pavement
- Non-Aeronautical Development
- Future Building
- Pavement Demolition
- Existing Building

Development initiatives at TMB include tenant expansion with airfield access and safety improvements. Apron and building expansion at TMB is generally tenant-driven and funded through the leaseholders. Airfield modifications are often performed to enable the tenants to develop the leasehold.

Development initiatives at TMB include:

- Modifications to Taxiways H, E, and E3
- Modifications to Taxiways A and D, including the construction of a dedicated run-up pad
- Potential extension to Runways 9L-27R and 9R-27L to maximize runway length while keeping safety areas within airport property
- New full-length parallel taxiways for all runways
- Construction of new Air Traffic Control Tower
- Expansion of aircraft storage facilities
- Non-aeronautical development along SW 137th Avenue
- Acquisition of property west of SW 157th Avenue for land use compatibility



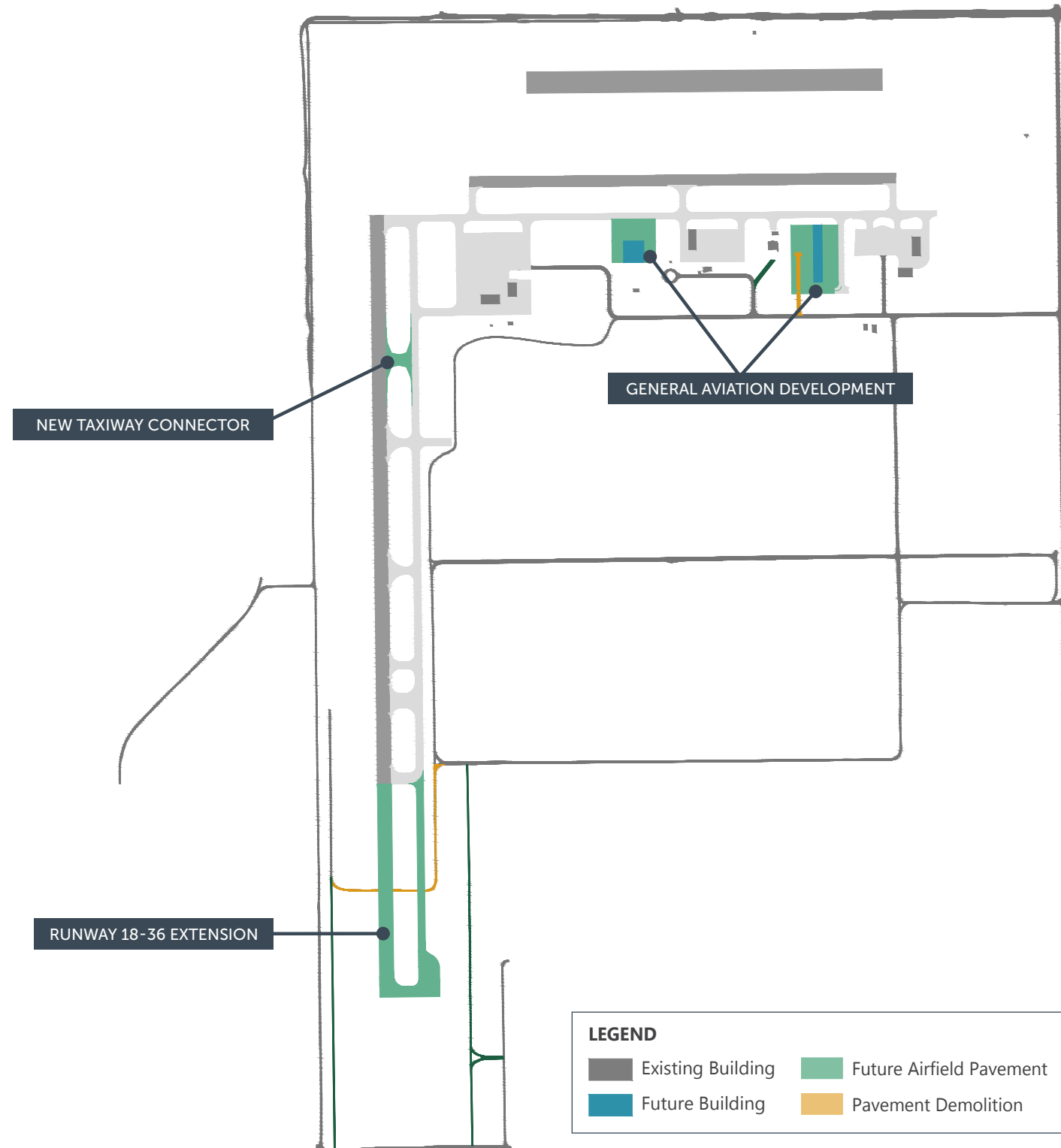
LEGEND

- Existing Building
- Future Airfield Pavement
- Non-Aeronautical Development
- Future Building
- Pavement Demolition

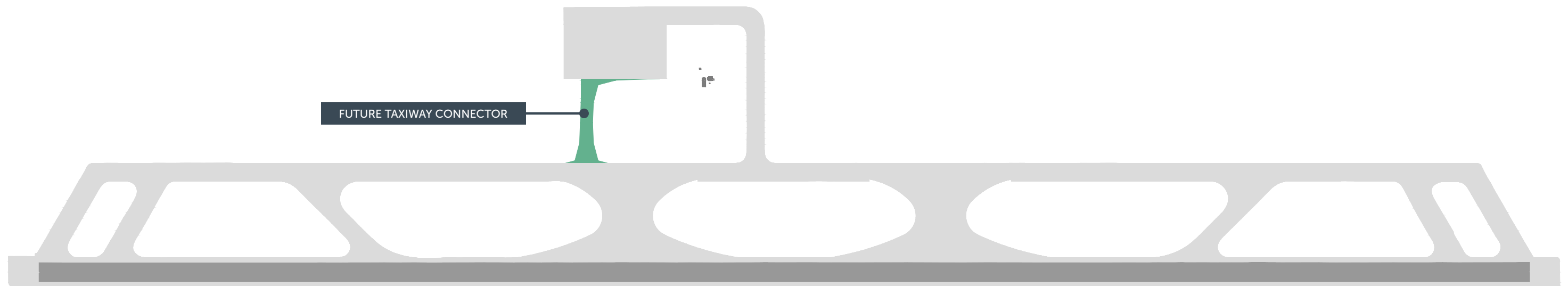
X51 is used mostly for recreational traffic with primary leaseholders that include skydiving and flight training.

Development initiatives at X51 include:

- Runway 18-36 extension to accommodate corporate jet traffic
- New taxiway connector
- T/Box- hangars (GA Development)
- Conventional hangars (GA Development)



The one runway constructed at TNT is still maintained to this day and can accommodate up to Airplane Design Group V aircraft (wingspan up to 214 feet) with a full instrument landing system. Development at TNT is based around maintaining the current airfield with one additional taxiway connector to increase access to tenant facilities.



LEGEND
Future Airfield Pavement







MIA MIAMI-DADE COUNTY
MIAMI INTERNATIONAL AIRPORT