



Technical Advisory Committee HWO Master Plan Update

June 21, 2018

TAC Committee



Role:

To provide input on the master planning analysis from the technical and operational perspectives.

Meeting Objectives



- Provide Status Update on Master Plan Update
- Review Activity Forecasts/Demand Scenarios
- Discuss Capacity of Existing Facilities
- Quantify Current and Future Facility Needs
- Identify Development Opportunities and Constraints

Agenda

- Introduction/Status Update
- Meeting #1 Recap
- Baseline Forecast Review
- Alternative Demand Scenario
- Facility Requirements
- Future Development Considerations
- Next Steps

Introduction



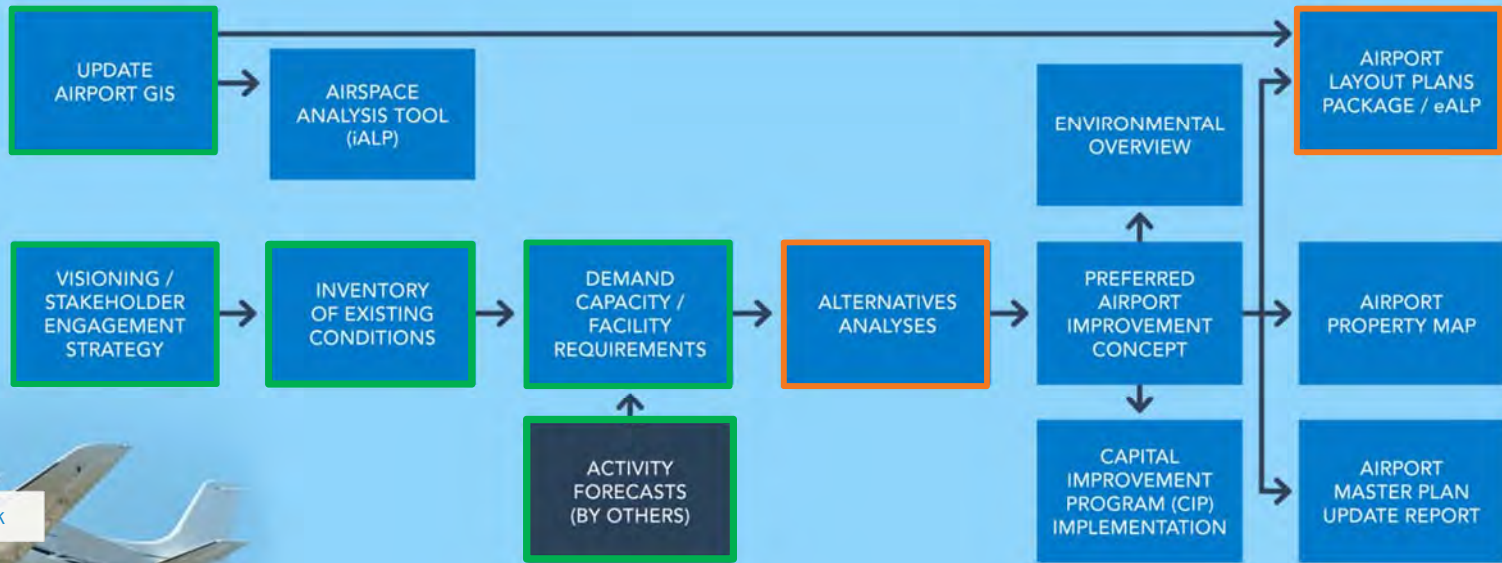
- “An airport master plan is a comprehensive study of an airport and usually describes the short-, medium-, and long-term development plans to meet future aviation demand.” – FAA Advisory Circular 150/5070 – 6B Airport Master Plans
- Plans focus on addressing long-term (20+ years) needs by establishing a roadmap for incremental development to meet future demand
- Planning methods vary depending on the size and complexity of the airport but include the following key elements: inventory of existing conditions, forecasting, demand/capacity, alternatives, environmental/sustainability and financial
- Other considerations may include the highest and best use of existing infrastructure given long term development plans


HWO Master Planning Process



PHASE 1

PHASE 2



-  Completed Task
-  Task in Progress

Stakeholder engagement throughout the Study to occur through Master Plan Committee Meetings, Stakeholder briefings, and Public meetings

HWO Current Conditions



- Airport Size: 536 Acres
- Designated as a General Aviation Reliever Facility
- Classified as a Regional Airport Asset in the FAA's National Plan of Integrated Airport Systems (NPIAS)
- Restricted to aircraft of 12,500 pounds or less MTOW
- Four paved runways and affiliated taxiways
 - Runway 1L/19R – 3,350 ft. X 100 ft. (Visual)
 - Runway 1R/19L – 3,260 ft. X 100 ft. (Visual)
 - Runway 10L/28R - 3,240 ft. X 100 ft. (Non-precision instrument – 28R)
 - Runway 10R/28L – 3,255 ft. X 100 ft. (Non-precision instrument – 10R)
- Contract Air Traffic Control Tower

Existing Conditions



SOURCE: Kimley-Horn & Associates, Inc. HWO Airfield Safety and Operational Enhancements Study, April, 2017

General Themes for the Airport



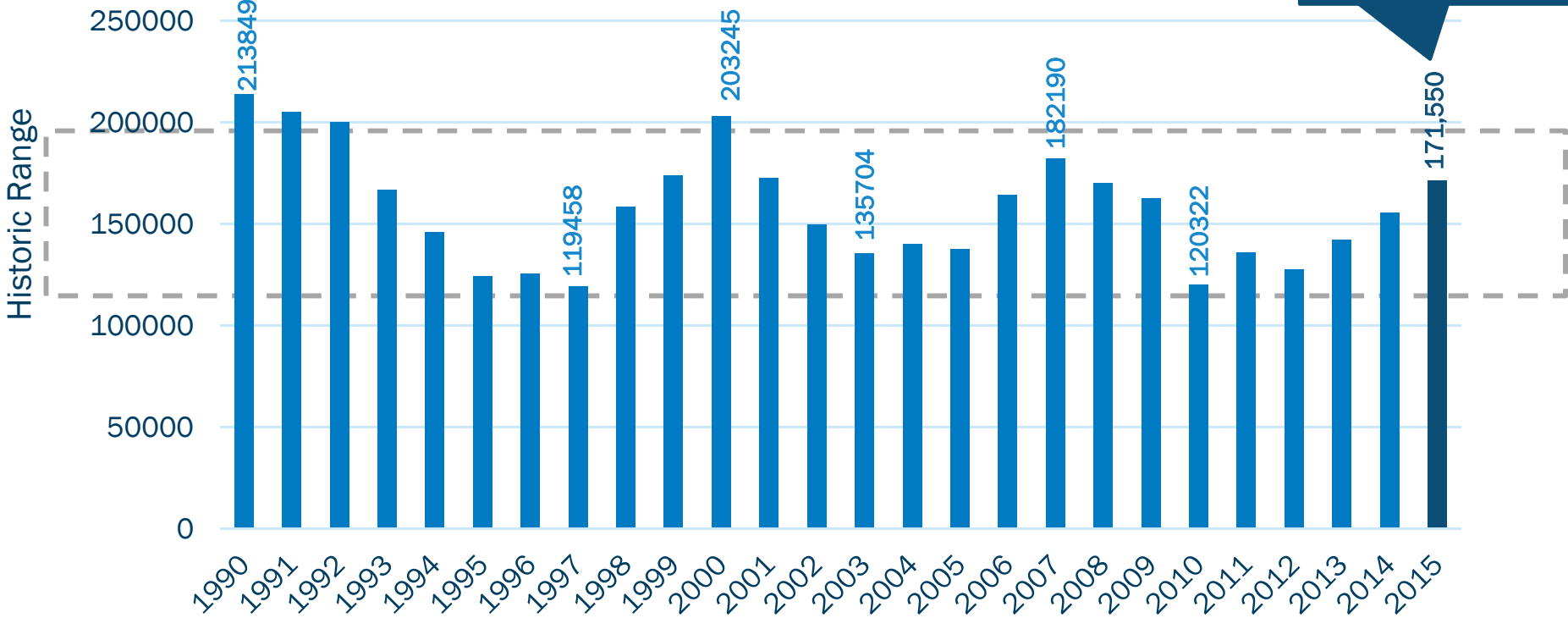
- Continue positioning HWO as a “Community” airport.
- Surplus land at HWO creates opportunities to diversify the revenue base through non-aeronautical development.
- Current infrastructure limitations (runway length, pavement limitations, and airspace constraints) and community sensitivities (noise) will influence future opportunities.
- Opportunities to explore: revenue generating development that is community friendly; light manufacturing; other development that yield benefits for the community.

Historic Operations



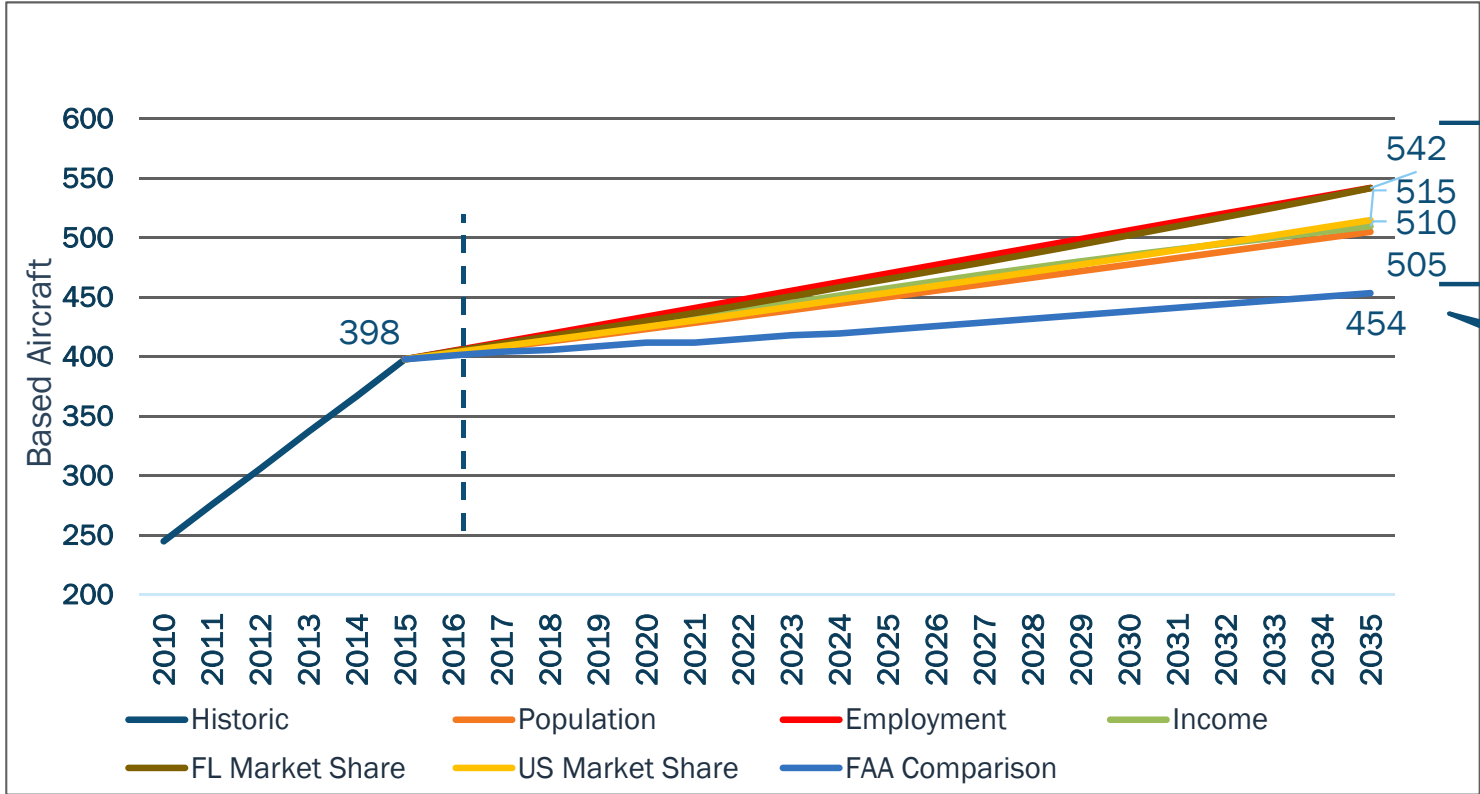
Total Annual Operations

Forecast Base Year



Source: FAA ATADS which is consistent with ATC Tower Counts

Based Aircraft Forecast Comparison

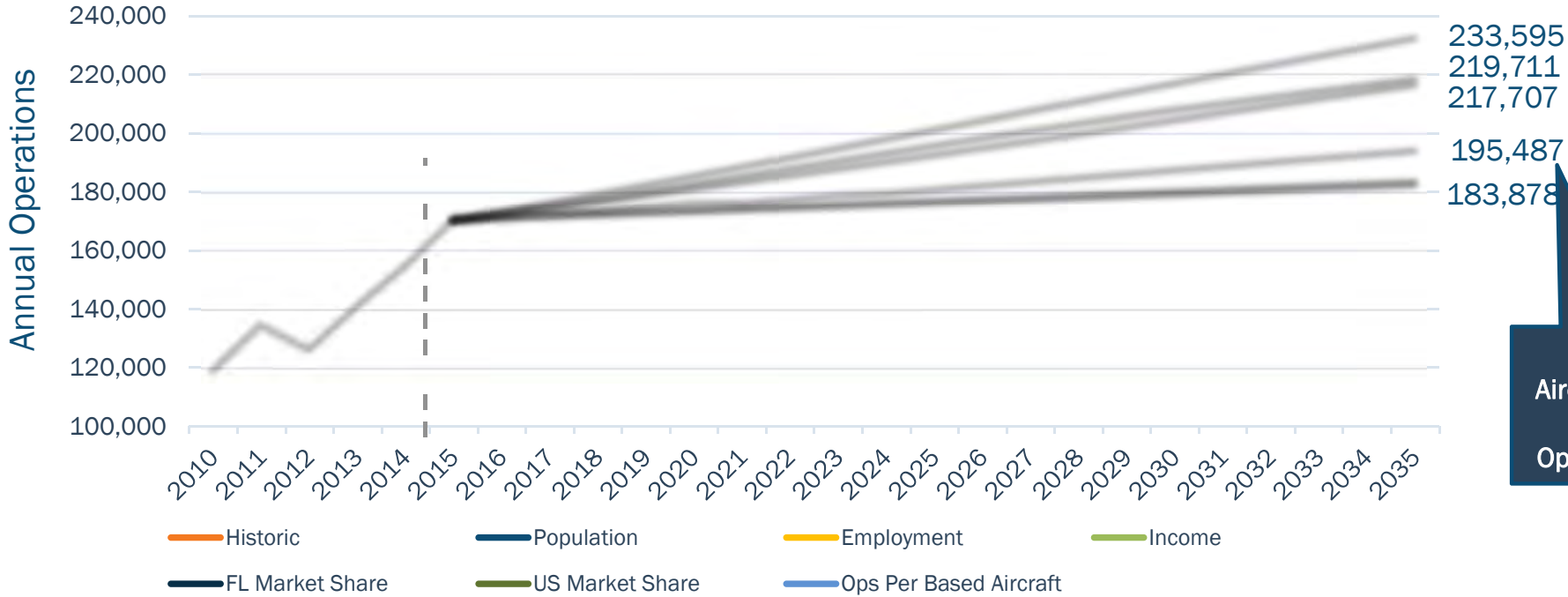


Socioeconomic and market share forecasts continue historic trend but do not acknowledge local limitations.

FAA Comparison Recommend as Baseline Based Aircraft Forecast

SOURCE: Kimley Horn & Associates, Inc., Airfield Safety Enhancement and Geometry Study, April 2017.

Operations Forecast Comparison



Ops per Based Aircraft Recommend as Baseline Operations Forecast

233,595
219,711
217,707
195,487
183,878

- Socioeconomic and market share forecasts do not draw strong correlations.
- OPBA pairs current activity levels with based aircraft forecast.

SOURCE: Kimley Horn & Associates, Inc., *Airfield Safety Enhancement and Geometry Study*, April 2017.

FAA Approved Baseline Forecast

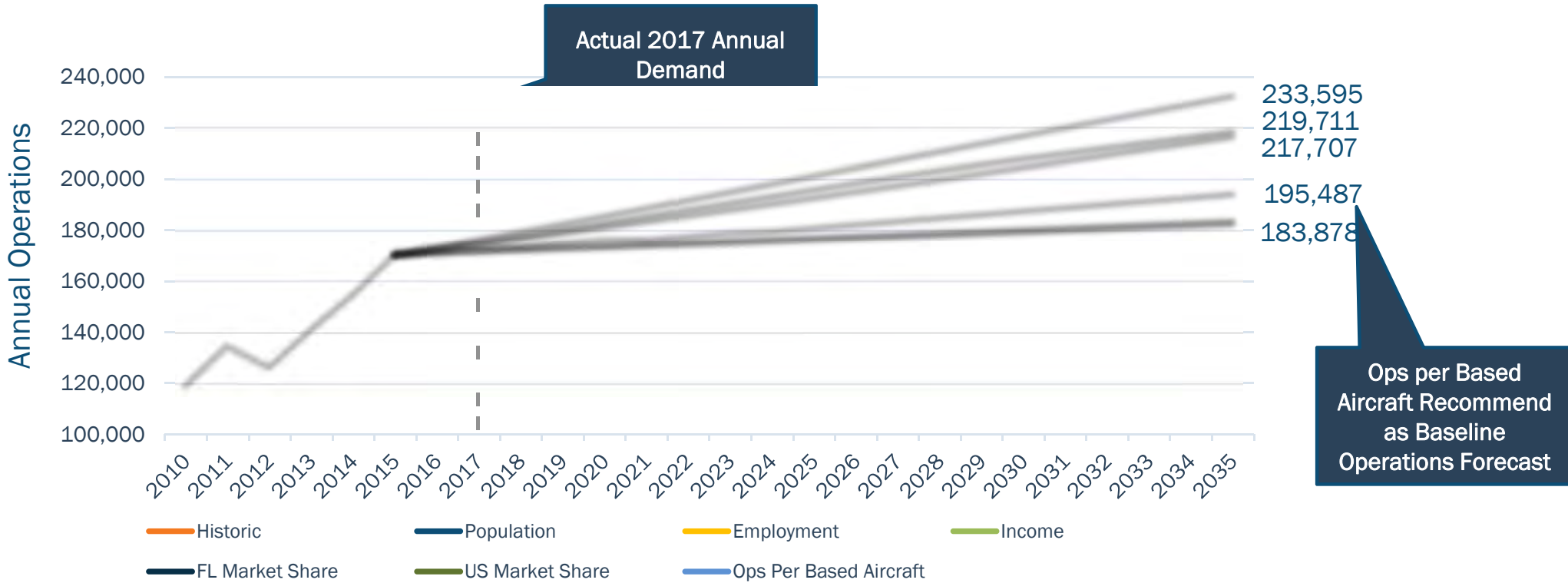


Category	2015	Projected		
		2020	2025	2035
Total Aircraft Operations	171,550	177,534	182,189	195,487
Itinerant	58,886	63,729	65,400	70,174
Local	112,664	113,805	116,789	125,314
Total Based Aircraft	398	412	423	454
Single-Engine Piston	335	347	356	382
Multi-Engine Piston	41	42	43	45
Jet	1	1	2	3
Helicopter	21	22	22	24

Net Increases
of 14.0 %
Since 2015

SOURCE: Kimley-Horn & Associates, Inc., Draft HWO Activity Forecasts, April, 2016;

Operations Forecast Comparison + 2017 Actuals



- Socioeconomic and market share forecasts do not draw strong correlations.
- OPBA pairs current activity levels with based aircraft forecast.

SOURCE: Kimley Horn & Associates, Inc., *Airfield Safety Enhancement and Geometry Study*, April 2017.

South Florida General Aviation Airport Traffic Trends



Airport Name	2015	2017	Difference	Net Change
North Perry Airport ^{1/}	171,550	226,379	54,829	32.0%
Miami Executive Airport ^{1/}	262,166	297,403	35,237	13.4%
Boca Raton Airport ^{1/}	62,441	70,067	7,626	12.2%
Fort Lauderdale Executive Airport ^{1/}	160,065	179,023	18,985	11.8%
Pompano Beach Air Park	140,716	132,486	(8,230)	(5.8%)
Miami-Opa Locka Executive ^{1/}	143,088	131,544	(11,544)	(8.1%)

Notes:

^{1/} Denotes airports that are designated as a reliever airport in the Federal Aviation Administration's National Plan of Integrated Airport Systems (NPIAS).

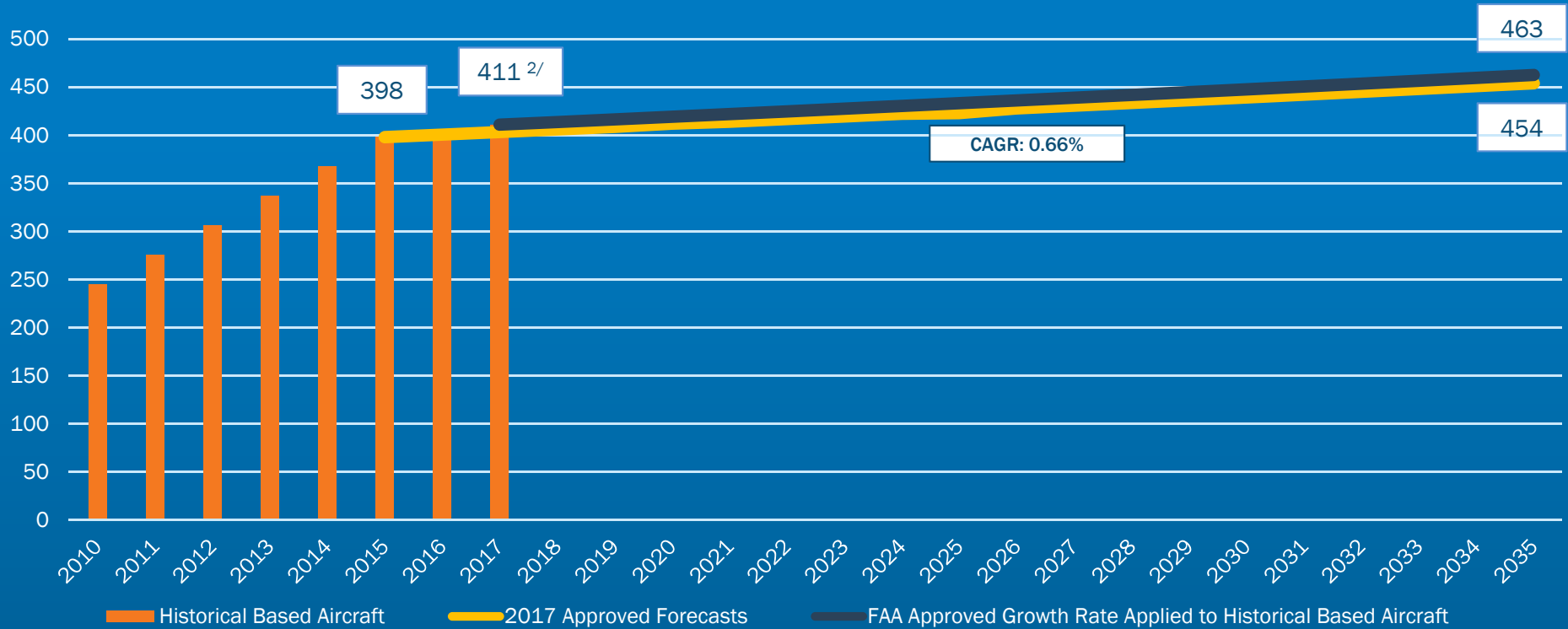
SOURCES: Federal Aviation Administration, Air Traffic Activity Data System (ATADS), Accessed June 20, 2018.

Alternative Demand Scenario for Sensitivity Analysis



- Aircraft operational demand levels for 2016 and 2017 have exceeded those projected under the FAA Approved Baseline Forecast.
 - CY2017 actual demand = 226,379 operations
 - FAA Approved operations forecast: 177,534 (2020) – 195,487 (2035)
- The existing based aircraft also exceed those projected under the FAA Approved Baseline Forecasts, but to less of an extent.
 - Existing based aircraft: 411 aircraft
 - FAA Approved based aircraft forecast: 412 (2020) – 454 (2035)
- An Alternative Demand Scenario was derived that applies the CAGR for the FAA Approved Baseline Forecast to the projected 2017 operational demand levels.

Based Aircraft Projections (Baseline & Sensitivity Analysis)

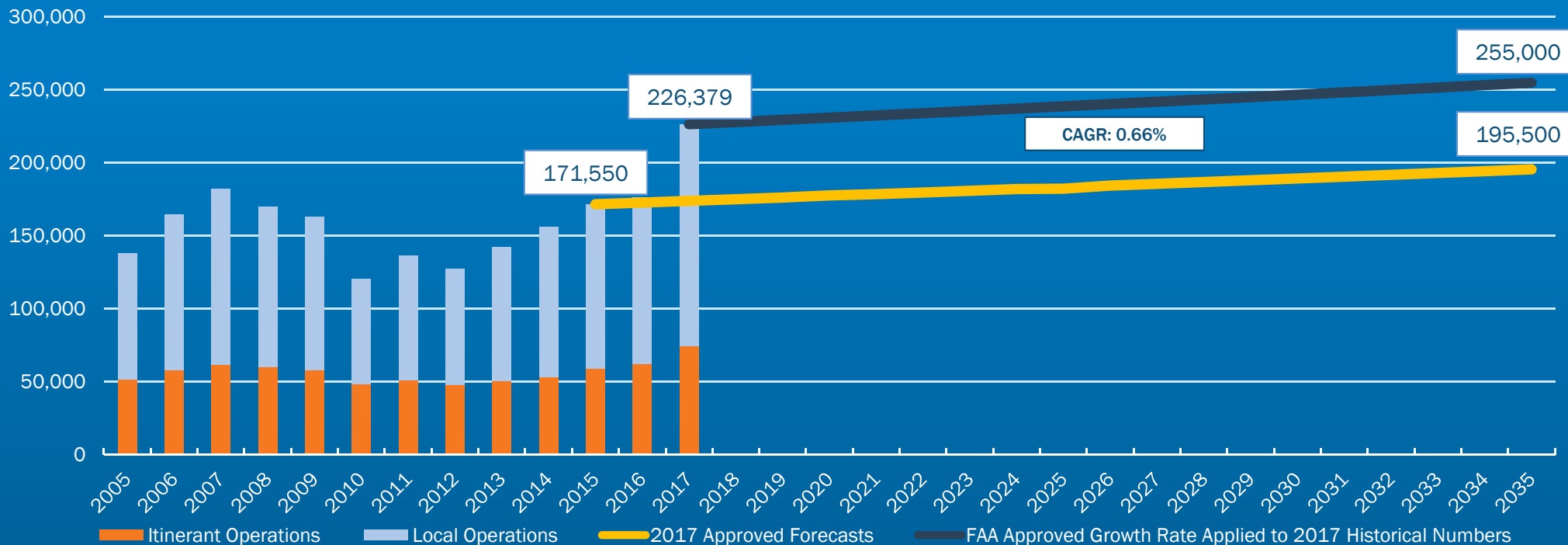


NOTES:

- 1 CAGR = Compound Annual Growth Rate
- 2 2017 Based aircraft estimate provided by Broward County Aviation Department (BCAD)
- 3 Historical and forecast based aircraft based upon calendar year (CY)

SOURCES: Broward County Aviation Department (historical); Innovata; FAA Air Traffic Activity Systems; FAA Terminal Area Forecasts; Kimley-Horn and Associates, Inc.

Aircraft Operations Projections (Baseline & Sensitivity Analysis)

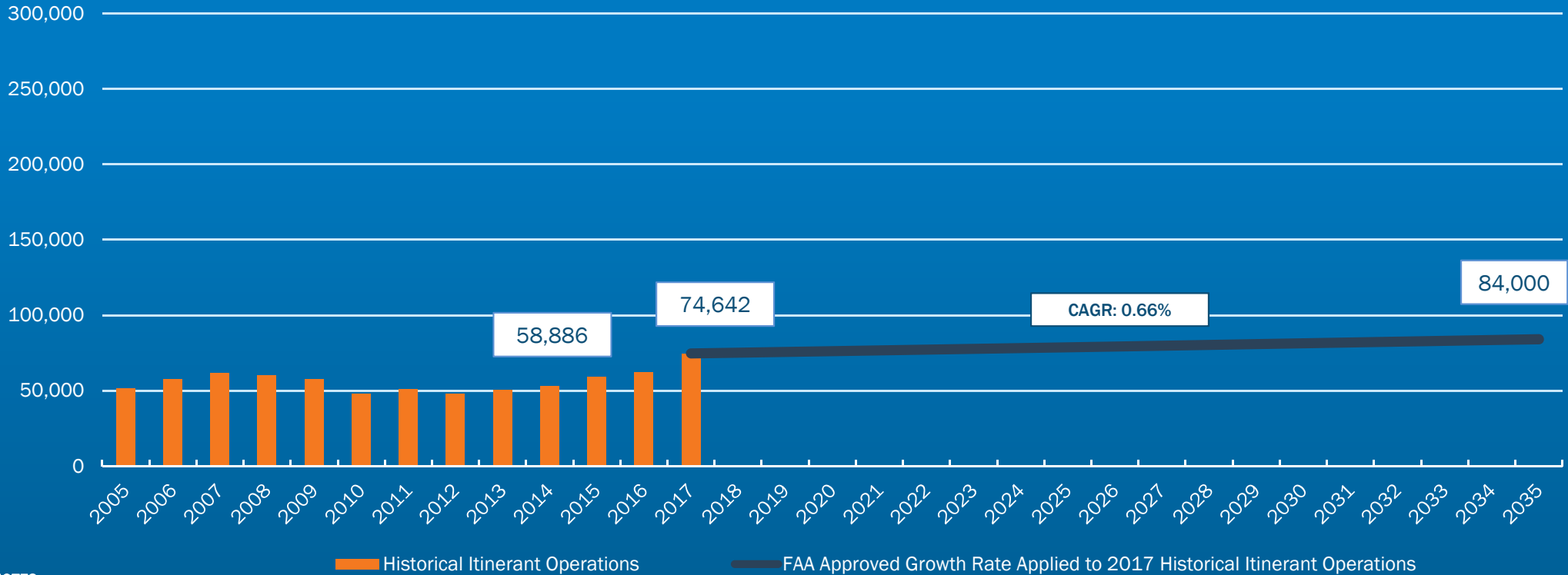


NOTES:

1. CAGR = Compound Annual Growth Rate
2. Historical and forecast operations are based upon calendar year (CY)

SOURCES: Historical information from FAA Air Traffic Activity System (ATADS); Approved forecasts from Kimley-Horn and Associates, Inc.

Aircraft Operations Projections (Itinerant Operations)



NOTES:

1. CAGR = Compound Annual Growth Rate
2. Historical and forecast operations are based upon calendar year (CY)

SOURCES: Historical information from FAA Air Traffic Activity System (ATADS); Approved forecasts CAGR from Kimley-Horn and Associates, Inc.

Alternative Demand Scenario – Sensitivity Analyses



Category	2015	Projected			
		2020	2025	2030	2035
Total Aircraft Operations	171,550	230,900	238,600	246,600	255,000
Itinerant	58,886	76,100	78,600	81,250	84,000
Local	112,664	154,800	160,000	165,350	171,000
Total Based Aircraft	398	419	433	448	463
Single-Engine Piston	335	353	364	337	390
Multi-Engine Piston	41	43	45	46	48
Jet	1	1	1	1	1
Helicopter	21	22	23	24	24

Net Increases
of 42.6 %
Since 2015

Net Increases
of 16.4 %
Since 2015

SOURCE: Airfield Safety Enhancement and Geometry Study, Kimley-Horn and Associates, Inc.; April, 2017; Ricondo, Inc. May 2018

Planning Activity Levels and Sensitivity Levels



- Due to the recent deviation from the FAA Approved Baseline Forecast, the Master Plan Update will utilize Planning Activity Levels (PALs) and Sensitivity Levels (SLs) in lieu of forecast years:
 - PAL 1: Coincides with 2025 demand levels from Baseline Forecast
 - PAL 2: Coincides with 2035 demand levels from Baseline Forecast
 - SL 1: Coincides with the 2025 demand levels from the Alternative Demand Scenario
 - SL 2: Coincides with the 2035 demand levels from the Alternative Demand Scenario
- Due to the inherent uncertainty to the growth and timing of future activity at HWO, the use of PALs and SLs will ensure that future facility development correlates to activity demand levels rather than specific years that may be subject to change.

Planning Activity Levels and Sensitivity Levels



Category	2015	Projected			
		PAL 1 ^{1/}	PAL 2 ^{2/}	SL 1 ^{3/}	SL 2 ^{4/}
Total Aircraft Operations	171,550	177,500	195,500	238,600	255,000
Itinerant	58,886	63,700	70,200	78,600	84,000
Local	112,664	113,800	125,300	160,000	171,000
Total Based Aircraft	398	412	454	433	463
Single-Engine Piston	335	347	382	364	390
Multi-Engine Piston	41	42	45	45	48
Jet	1	1	3	1	1
Helicopter	21	22	24	23	24

Net Increases of 19.7 % Over PAL 2

Net Increases of 2.0 % Over PAL 2

Notes:

1/ PAL 1: Coincides with 2025 demand levels from Baseline Forecast

2/ PAL 2: Coincides with 2035 demand levels from Baseline Forecast

3/ SL 1: Coincides with the 2025 demand levels from the Sensitivity Analysis

4/ SL 2: Coincides with the 2035 demand levels from the Sensitivity Analysis

SOURCE: Airfield Safety Enhancement and Geometry Study, Kimley-Horn and Associates, Inc., April, 2017; Ricondo, Inc. October 2017.

Airfield Capacity



- Airfield capacity is adequate to accommodate forecast demand
 - Annual Service Volume (ASV) = 255,000 – 355,000 operations/year
 - Hourly Capacity
 - Visual Conditions = 178 operations/hour
 - Poor Weather Conditions = 67 operations/hour
- 2035 Annual Operational Demand Projections
 - PAL 2 = 195,500 operations
 - SL 2 = 255,000 operations
- Conclusion:
 - HWO could reach its ASV at SL 2
 - Additional airfield capacity could be achieved without modifying the airfield (i.e, demand management strategies)

SOURCE: Airfield Safety Enhancement and Geometry Study, Kimley-Horn and Associates, Inc., April, 2017.



General Aviation Aircraft Storage Requirements Summary ^{1/}

	Existing	PAL 1 ^{2/}	PAL 2 ^{3/}	SL 1 ^{4/}	SL 2 ^{5/}
Aircraft Storage Facilities:					
Hangars ^{6/}	355,200	406,100	435,800	415,700	444,500
Apron ^{6/}	1,445,900	1,573,000	1,682,200	1,692,400	1,803,100
Subtotal	1,801,100	1,979,100	2,118,000	2,108,100	2,247,600
Estimated Capacity ^{7/}	425	465	5000	495	520

Notes:

- 1/ Unless noted otherwise, all values are express in units of square feet.
- 2/ PAL 1: Coincides with 2025 demand levels from Baseline Forecast
- 3/ PAL 2: Coincides with 2035 demand levels from Baseline Forecast
- 4/ SL 1: Coincides with the 2025 demand levels from the Sensitivity Analysis
- 5/ SL 2: Coincides with the 2035 demand levels from the Sensitivity Analysis
- 6/ Assumes 60 percent of based aircraft require hangars
- 7/ Assumes an average of 4,250 sq. ft. of storage per aircraft.

SOURCES: American Infrastructure Development, Inc., Demand Capacity Analysis, July 2017; Kimley Horn & Associates, Inc. Airfield Safety Enhancement and Geometry Study, Forecast of Aviation Activity, April 2017.

General Aviation Facility Requirements Summary ^{1/}



	Existing	PAL 1 ^{2/}	PAL 2 ^{3/}	SL 1 ^{4/}	SL 2 ^{5/}
Aircraft Storage Facilities:					
Hangars ^{6/}	355,200	406,100	435,800	415,700	444,500
Apron ^{6/}	1,445,900	1,573,000	1,682,200	1,692,400	1,803,100
Subtotal (Aircraft Storage)	1,801,100	1,979,100	2,118,000	2,108,100	2,247,600
Terminal/Other Buildings ^{7/}	52,100	77,900	81,900	85,300	88,600
Vehicle Parking	371,500	428,600	458,800	456,500	486,800
Landscaping/Drainage	785,400	870,000	930,500	927,500	988,100
Total s.f. (acres)	3,010,100 (69.1)	3,335,600 (77.0)	3,589,200 (82.4)	3,557,400 (82.1)	3,811,100 (87.5)

Notes:

- 1/ Unless noted otherwise, all values are express in units of square feet.
- 2/ PAL 1: Coincides with 2025 demand levels from Baseline Forecast
- 3/ PAL 2: Coincides with 2035 demand levels from Baseline Forecast
- 4/ SL 1: Coincides with the 2025 demand levels from the Sensitivity Analysis
- 5/ SL 2: Coincides with the 2035 demand levels from the Sensitivity Analysis
- 6/ Assumes 60 percent of based aircraft require hangars
- 7/ Other buildings in administrative offices, classrooms, restaurants, and enclosed storage

SOURCES: American Infrastructure Development, Inc., Demand Capacity Analysis, July 2017; Kimley Horn & Associates, Inc. Airfield Safety Enhancement and Geometry Study, Forecast of Aviation Activity, April 2017.

General Aviation Facility Deficiency Summary ^{1/}



	PAL 1 ^{2/}	PAL 2 ^{3/}	SL 1 ^{4/}	SL 2 ^{5/}
Aircraft Storage Facilities:				
Hangars ^{6/}	50,900	80,600	60,500	89,300
Apron ^{6/}	127,100	236,300	246,500	357,200
Subtotal (Aircraft Storage)	178,000	316,900	307,000	446,500
Terminal/Other Buildings ^{7/}	26,600	30,600	33,200	36,500
Vehicle Parking	57,100	87,300	85,000	115,300
Landscaping/Drainage	84,600	145,100	142,100	202,700
Grand Total (sq. ft) (acres)	345,500 (7.9)	579,100 (12.6)	567,830 (13.0)	801,000 (18.4)
Net Increase in Requirements	11.5	19.2%	18.8%	26.6%

Notes:

- 1/ Unless noted otherwise, all values are express in units of square feet.
- 2/ PAL 1: Coincides with 2025 demand levels from Baseline Forecast
- 3/ PAL 2: Coincides with 2035 demand levels from Baseline Forecast
- 4/ SL 1: Coincides with the 2025 demand levels from the Sensitivity Analysis
- 5/ SL 2: Coincides with the 2035 demand levels from the Sensitivity Analysis

6/ Assumes 60 percent of based aircraft require hangars

7/ Other buildings in administrative offices, classrooms, restaurants, and enclosed storage

SOURCES: American Infrastructure Development, Inc., Demand Capacity Analysis, July 2017; Kimley Horn & Associates, Inc. Airfield Safety Enhancement and Geometry Study, Forecast of Aviation Activity, April 2017.

Aviation Support Facility Requirements



Facility Type	Existing	Baseline		Sensitivity Analysis	
		PAL 2 (2035)	Deficiency	SL 2 (2035)	Deficiency
Fuel Farm	55,200 (Avgas) 23,000 (Jet A)	6,829/wk (AvGas) 4,553/wk (Jet A)	None	8,903/wk (Avgas) 5,935/wk (Jet A)	None
Fire Station	11,900	11,900	None	11,900	None
ATC Tower Site:	37,980	25,000	None 4/	25,000	None 4/
Airfield Electrical Vault	1	1	None 5/	1	None 5/
BCAD Facilities:					
Airport Administration	1,600	3,100	1,500	3,100	1,500
Airport Maintenance	2,800	4,200	1,400	4,200	1,400
Subtotal (BCAD Facilities)	4,400	7,300	2,900	7,300	2,900

NOTES:

1/ Unless noted otherwise, all values are expressed in square feet.

2/ PAL 2: Coincides with 2035 demand levels from Baseline Forecast

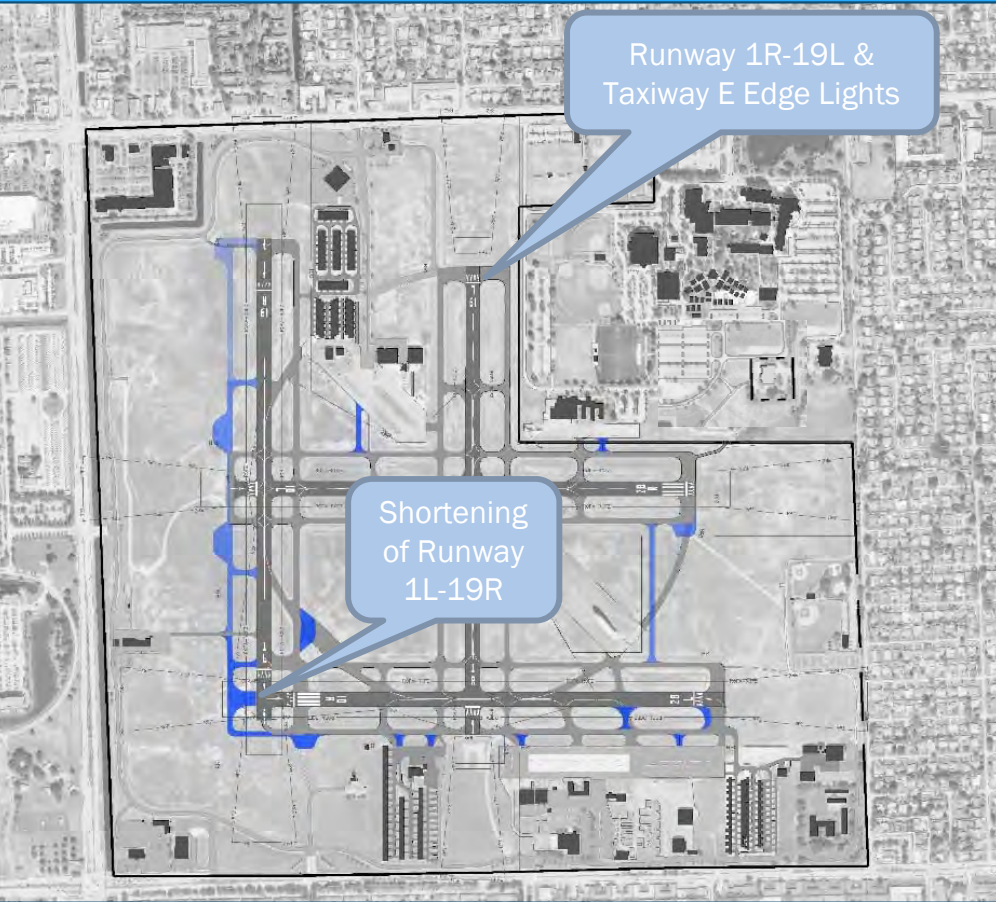
3/ SL 2: Coincides with the 2035 demand levels from the Sensitivity Analysis

4/ Due to the age and condition of the existing ATC tower, a replacement ATC tower is anticipated during the 20-year planning horizon

5/ Due to the age and condition of the existing airfield electrical vault, a replacement vault is anticipated during the 20-year planning horizon.

SOURCE: American Infrastructure Development, Inc., Demand Capacity Analysis, July 2017.

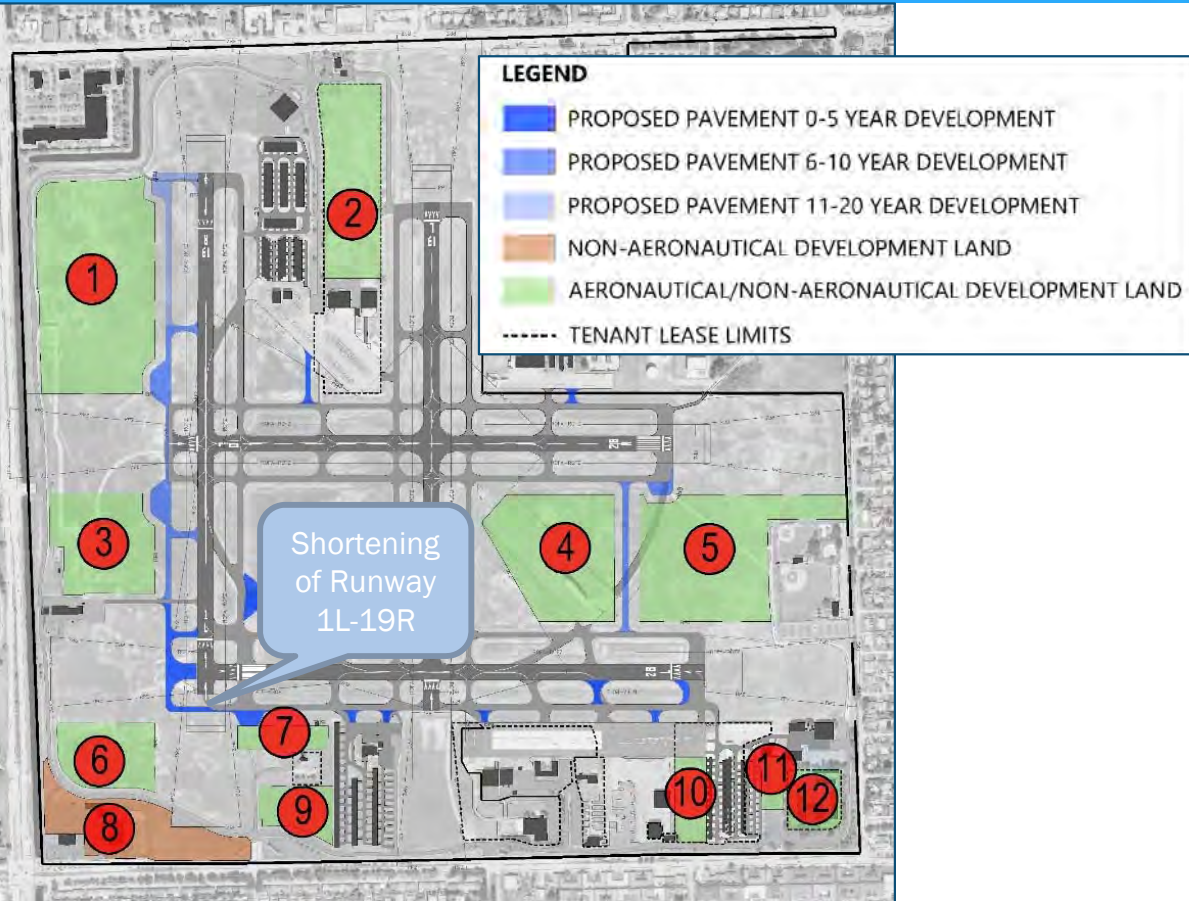
Airfield Safety Enhancements Study Recommendations



- Study Completed in April 2017
 - Basis for Airfield Development Initiatives for Master Plan Update
- Development planning horizons:
 - Near-term: 0 - 5 years
 - Mid-Term: 6 - 10 years
 - Long-term: 11 - 20 years

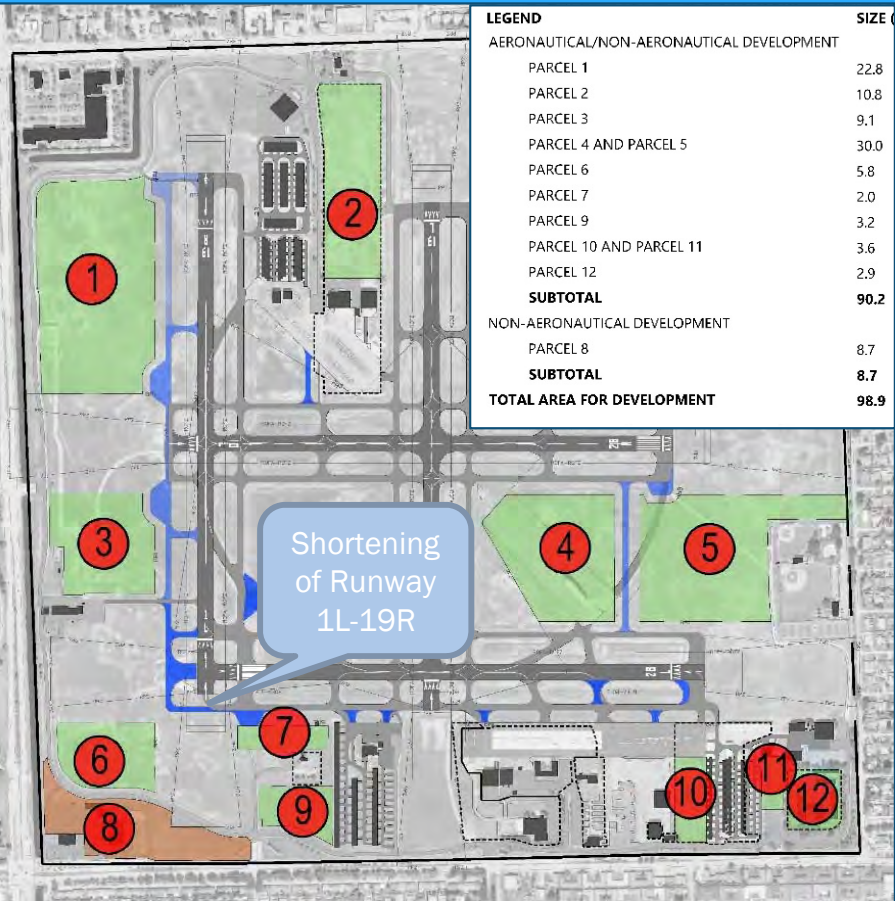
LEGEND	
	PROPOSED PAVEMENT 0-5 YEAR DEVELOPMENT
	PROPOSED PAVEMENT 6-10 YEAR DEVELOPMENT
	PROPOSED PAVEMENT 11-20 YEAR DEVELOPMENT

Future Facility Development Opportunities

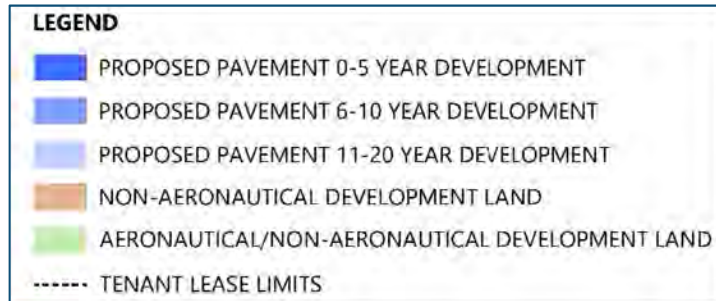


<u>Parcel ID/Potential Use</u>	<u>Acres</u>
Aeronautical/Non-Aeronautical:	
Parcel 1	22.8
Parcel 2	10.8
Parcel 3	9.1
Parcels 4 & 5	30.0
Parcel 6	5.8
Parcel 7	2.0
Parcel 9	3.2
Parcels 10 & 11	3.6
Parcel 12	2.9
Subtotal	90.2
Non Aeronautical:	
Parcel 8	8.7
Total Area for Development	98.9

Future Facility Development Opportunities



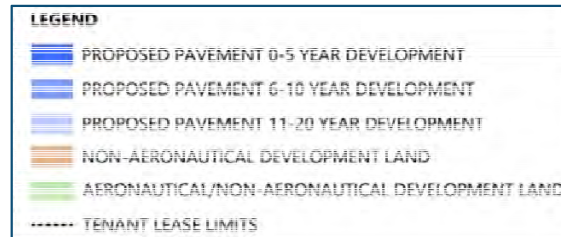
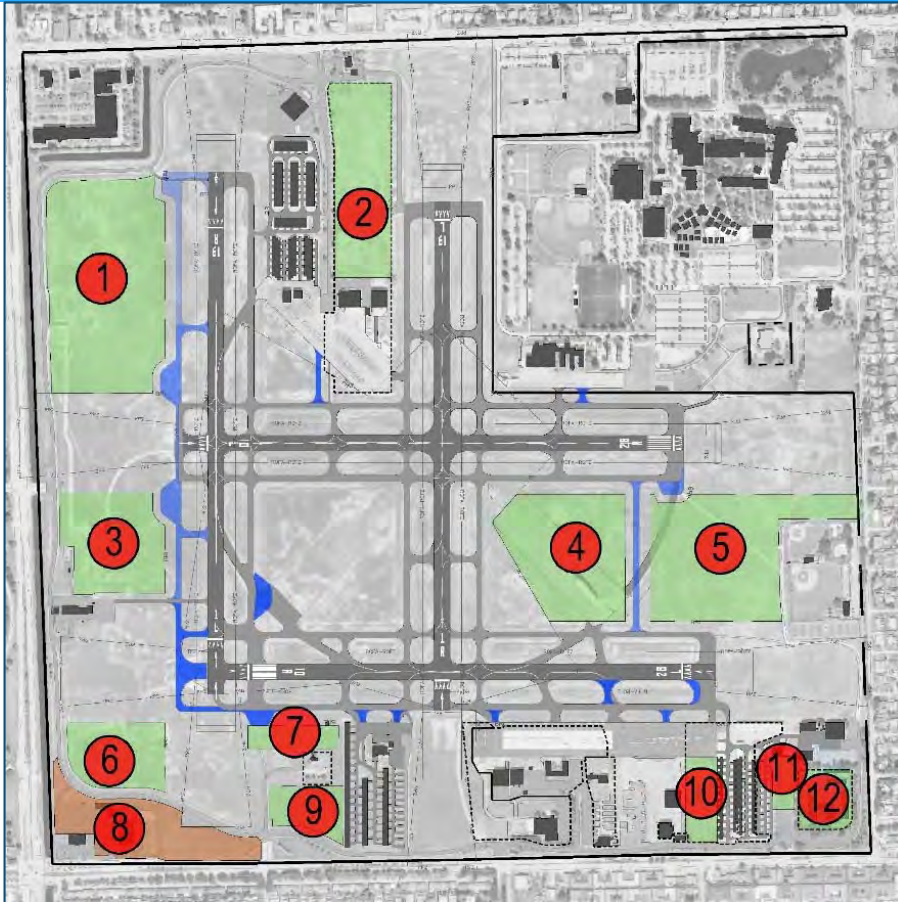
- Aeronautical / Non-Aeronautical Development
 - 90.2 acres of undeveloped land
 - 78.2 acres has airfield and surface road access
 - 12 acres is limited to airfield access only (Parcel 4)
- Non-Aeronautical Development
 - 8.7 acres of developed and undeveloped land
 - Existing Park & Ride Facilities
 - Surplus land not required for aeronautical development
- Approximately 20 acres required for future aeronautical facility development



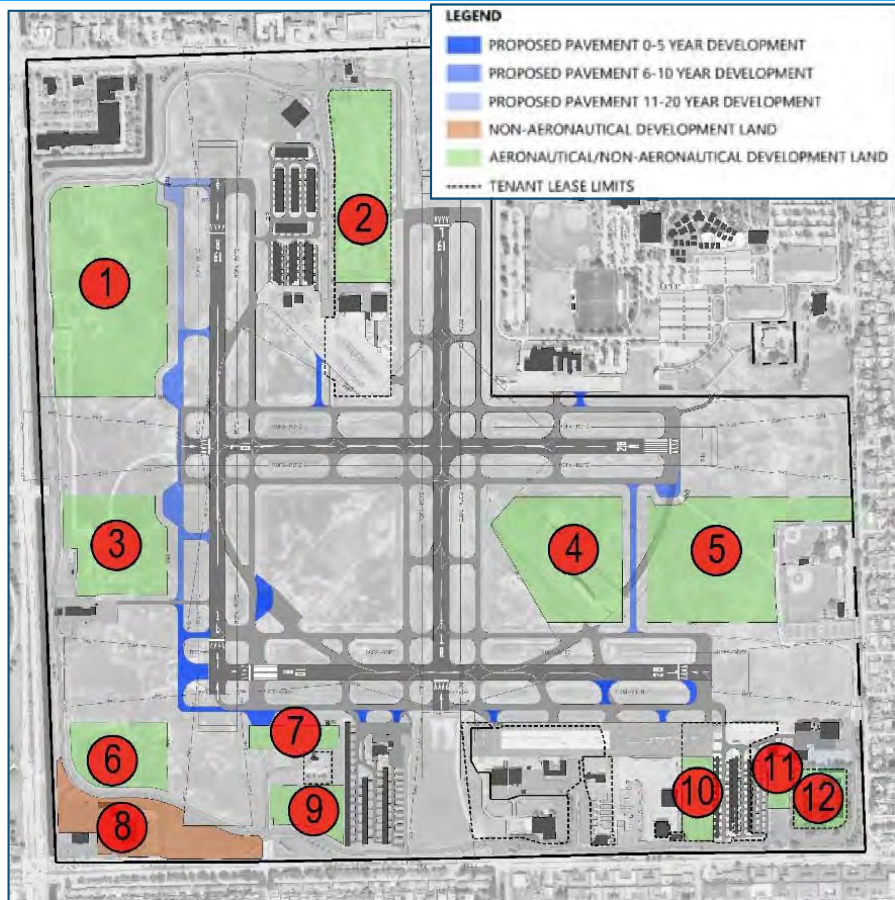
Potential Tenant Facility Development Initiatives



- Current Tenant Development Initiatives
 - Parcel 2: GA/FBO facility expansion
 - Parcels 10 & 11: GA/FBO facility expansion

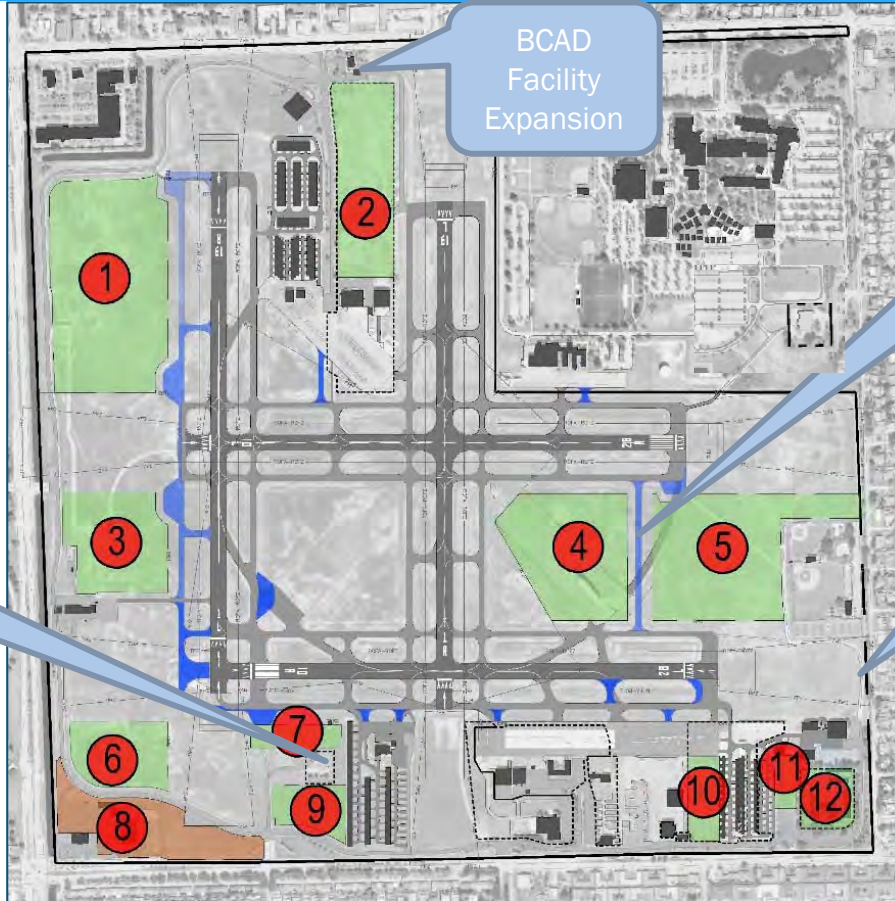


Potential Tenant Facility Development Initiatives



- Other Potential Development Initiatives
 - Parcel 1: retain for banner towing operations
 - Parcel 3: GA/FBO tenant development (potential development limitations)
 - Parcel 4: dependent on cross-field taxiway construction/alignment
 - Parcel 5: GA/FBO and/or non-aeronautical
 - Parcel 6: GA facility development or non-aeronautical
 - Parcel 7: likely limited to aircraft parking apron
 - Parcels 8: non-aeronautical development
 - Parcel 9: GA/FBO and/or non-aeronautical
 - Parcel 12: non-aeronautical development

Other Potential Facility Development Initiatives



Dedicated Helipad with Adjacent Helicopter Parking/Storage Facilities (Location TBD)

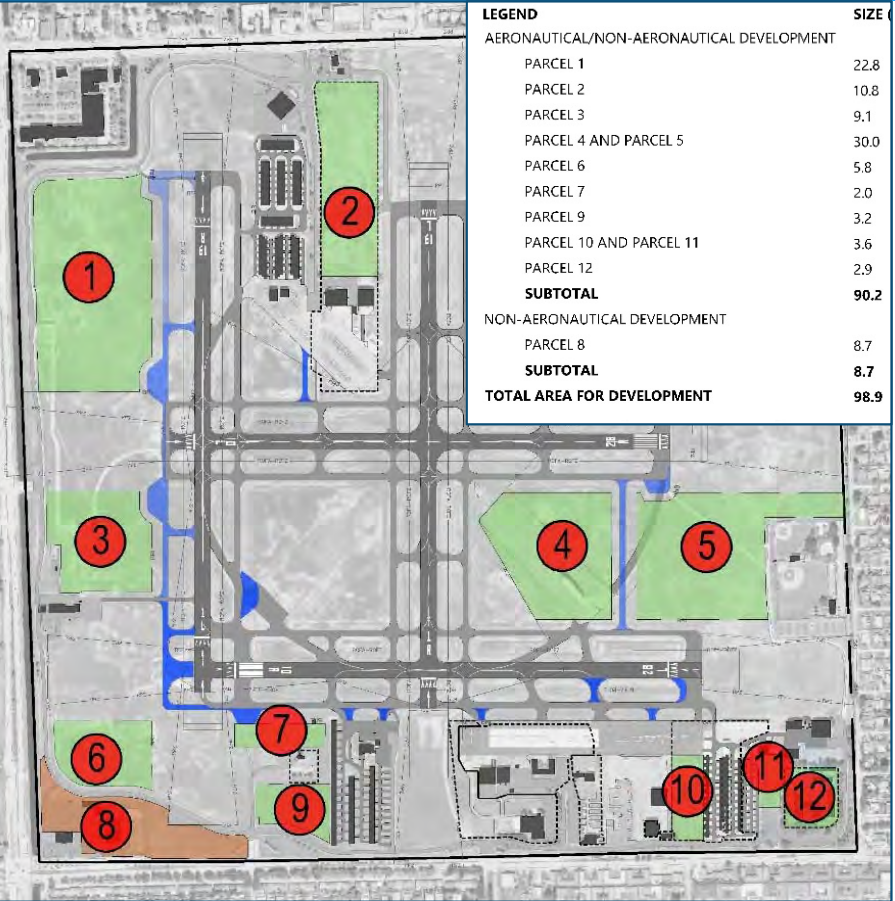
BCAD Facility Expansion

Confirmation of Need and/or Alignment of Crossfield Taxiway

Replacement ATC Tower & Airfield Electrical Vault

Dedicated On-Airport Access Road to Parcels 4 and/or 5

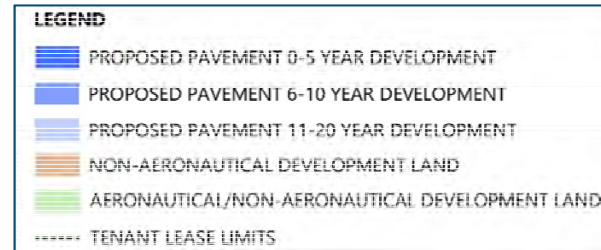
Surplus Property Available for Non-Aeronautical Use



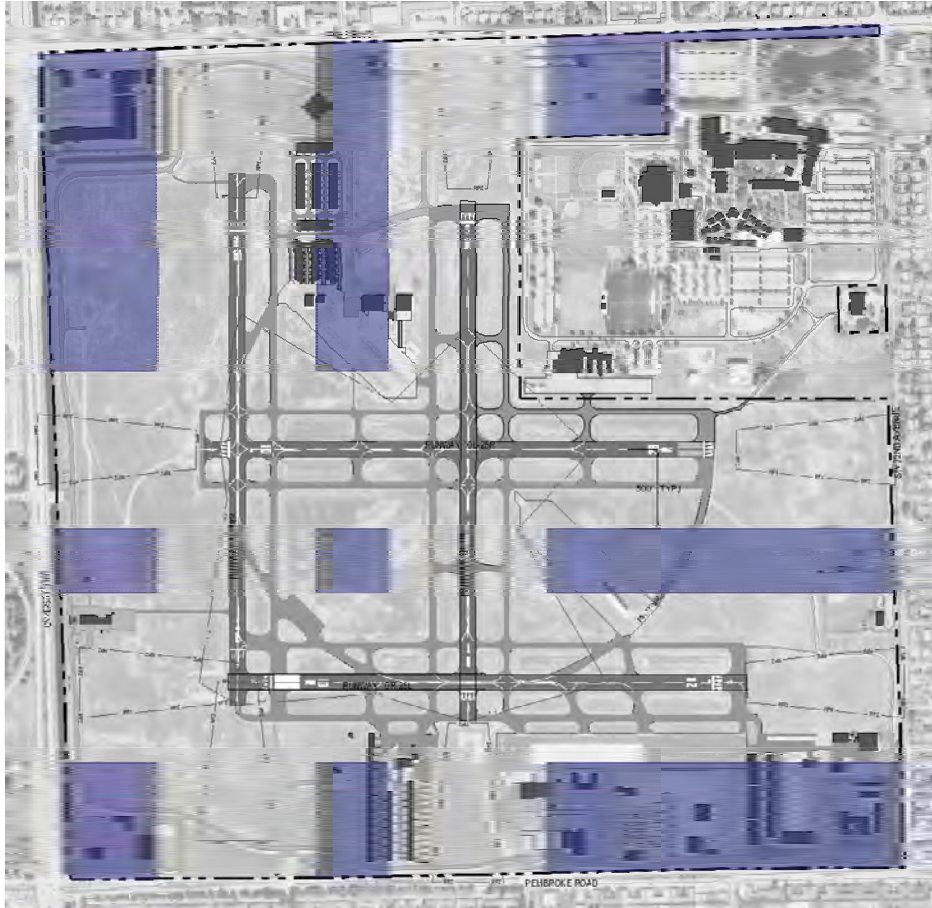
Parcel 8	8.7
<u>Other Surplus Property ^{1/}</u>	<u>70.2</u>
Total	78.9

Note:

1/ Other surplus property includes consideration for Parcel 4 (12 acres)



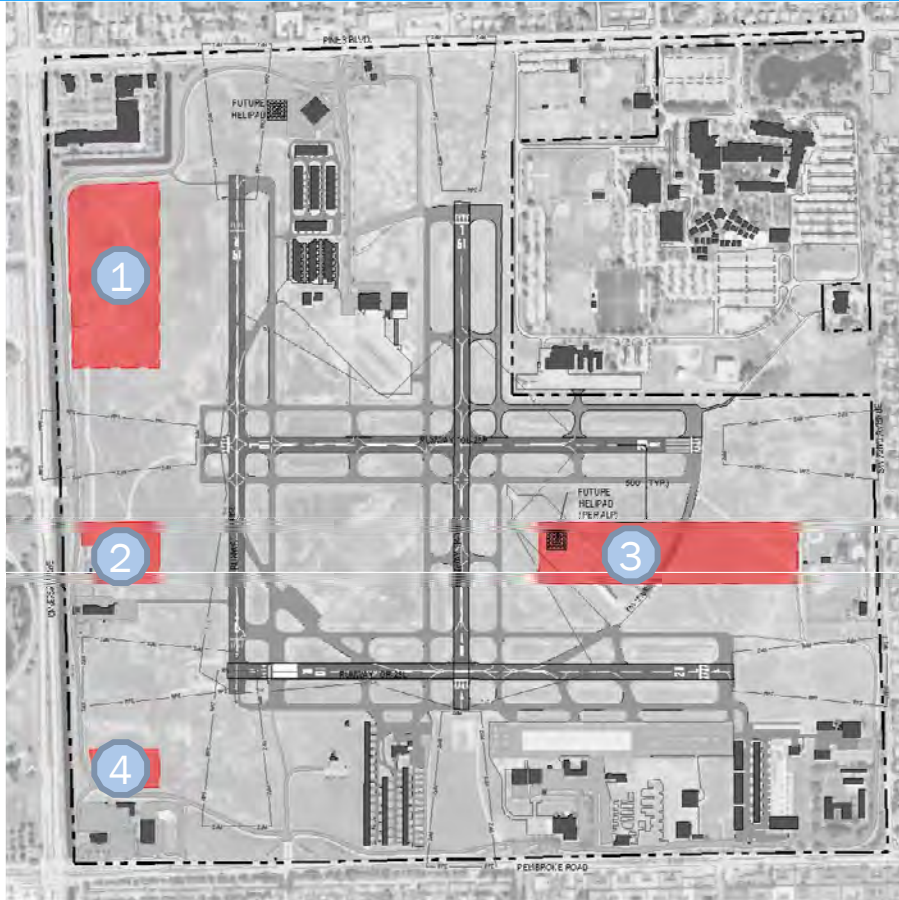
Candidate Helipad Sites



- Current Helicopter Operations:
 - Approximately 750 feet from residential areas
- Siting Considerations:
 - Community Impacts – Opportunities to minimize noise exposure
 - 500 feet from nearest runway
 - Accessibility (roadway and airfield)
 - Segregation from fixed wing aircraft

Legend
Candidate Helipad Sites

Shortlisted Helipad Sites



- Option 1 (Parcel 1)
 - Designated banner tower area
 - Existing accessibility
 - 2,500 feet from residential area
- Option 2 (Parcel 3)
 - Existing accessibility
 - Potential impacts to banner towing operations
 - 3,000 feet from residential area
- Option 3 (Parcel 4/5)
 - Requires roadway access
 - 2,000 feet from residential areas
- Option 4 (Parcel 6)
 - Existing accessibility
 - 800 feet from residential areas

Next Steps

- HWO Tenant Briefing
- Complete Alternatives Development Evaluation
- Public Workshop(s)
- BOCC Briefing/Workshop(s)
- Final PAC/TAC Meetings

Note: Sequence of activities subject to change

THANK YOU!

