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BROWARD COUNTY, FLORIDA

3.   Aviation Activity Forecasts

This section summarizes historical aviation activity and trends at HWO and presents the forecasts of aviation activity through calendar year (CY) 2035 used in the master planning analyses. Future Airport activity forecasts provide the basis for determining facility requirements and defining the type, extent, and timing of future Airport enhancements and capacity needs. Airport activity forecasts generally focus on based aircraft and total operations, as defined below:

- Based aircraft are aircraft that reside primarily at the Airport and are stored in hangars or on the aircraft parking apron. In addition to aircraft storage requirements, based aircraft numbers influence aircraft maintenance and other supporting aeronautical service offerings.

- Aircraft operations are defined as either a takeoff or a landing on one of HWO's runways. Touch and go operations, which are associated with flight training activities, are considered two operations: one landing and one takeoff. Aircraft operations dictate the need for airfield infrastructure, aircraft fuel storage, and transient aircraft storage.

As previously discussed, in 2015 BCAD commissioned the ASEG Study[1] to expedite the environmental review and design process associated with airfield modifications previously recommended as part of the 2009 Master Plan Update (MPU). The Study commenced concurrently with the MPU and was completed in April 2017. The Study included information that was also relevant to the MPU, including the preparation of activity forecasts for HWO. Therefore, to avoid duplication of planning analyses between the ASEG Study and the HWO MPU, the Airport activity forecasts (following the FAA's review and approval) were adopted for use in the MPU. In addition, an aeronautical market assessment was conducted to better understand the GA market served by HWO and the surrounding airports. A copy of the aeronautical market assessment can be found at **Appendix I.**

3.1   Forecasting Approach

The ASEG Study forecasts for based aircraft and aircraft operations were developed for CY 2016 through CY 2035 (which represents a 20-year planning horizon). The forecasts concluded that a compound annual growth rate (CAGR) of 0.66 percent for both based aircraft and aircraft operations would be adopted. The ASEG Study forecasts were reviewed by the FAA and approved on April 28, 2017. A copy of the ASEG Study forecasts, along with the FAA's approval letter can be found in **Appendix C.**

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[1]   Kimley-Horn and Associates, Inc., *Airfield Safety Enhancement and Geometry Study*, April 2017.

While the ASEG Study forecasts identified gradual growth throughout the 20-year planning horizon, the actual aircraft operations experienced at HWO during CY 2017 exceeded the demand levels forecast for CY 2035. The upswing in aircraft operations has been attributed to increased flight training activities, partially driven by the relocation of flight schools from nearby airports. To ensure the MPU's activity forecasts (and resulting facility requirements) reflected the recent surge in activity and potential growth beyond the activity levels experienced at HWO in CY 2017, an MPU Sensitivity Analysis forecast was developed. The MPU Sensitivity Analysis forecast reflects the FAA-approved CAGR of 0.66 percent to the Airport's CY 2017 actual based aircraft and aircraft operational demand levels. The higher airport activity levels associated with the MPU's Sensitivity Analysis forecast form the basis for long-range planning during the MPU. The MPU Sensitivity Analysis forecast was discussed and accepted by the FAA during an MPU progress update conference call in October 2017.

3.2　Summary of Results

This section summarizes the forecasts developed as part of the ASEG Study and the MPU Sensitivity Analysis forecast.

3.2.1　BASED AIRCRAFT FORECASTS

Several methodologies were considered for the forecasting of based aircraft at HWO during the ASEG Study. These methodologies included: a regression analysis based upon socioeconomic activity, a market share projection, as well as the application of the FAA's growth rate published in the 2016 Terminal Area Forecast (TAF) for HWO. The growth rate associated with the FAA's TAF was identified as the preferred forecast methodology for based aircraft at HWO. The TAF is prepared on an annual basis and is the official FAA forecast of aviation activity for U.S. airports. The TAF is prepared to meet the budgetary and planning needs of the FAA and provides information for use by state and local authorities, the aviation industry, and the public.

HWO's based aircraft inventory for CY 2015, totaling 398 based aircraft, serves as the baseline activity level for the ASEG forecasts, and the FAA forecast growth rate of 0.66 percent was used to forecast based aircraft over the planning horizon. This was chosen by the ASEG Study as the most appropriate methodology because the regression analysis and market share methodologies do not provide consideration for HWO's constraints in airspace, runway length, and operational limitations. The FAA's growth is the most conservative forecast evaluated for the ASEG Study based aircraft forecast.

In consultation with the FAA, the MPU Sensitivity Analysis forecast also applied the FAA forecast growth rate of 0.66 percent to the actual based aircraft count for CY 2017. The adjustment of the baseline aircraft count and the application of the FAA growth rate is deemed appropriate as it acknowledges the recent increase in based aircraft at HWO. The actual based aircraft total of 411 aircraft for CY 2017 was used. **Table 3.2-1** compares the historical based aircraft since CY 2010 at HWO, the ASEG Study forecast, and the MPU Sensitivity Analysis forecast developed for this planning study. **Exhibit 3.2-1** provides a graphical comparison of both based aircraft forecasts utilized for the MPU.

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BROWARD COUNTY, FLORIDA

|	Table 3.2-1: HWO Historical and Forecast Based Aircraft		
CALENDAR YEAR	HISTORICAL BASED AIRCRAFT	ASEG STUDY FORECAST 1/	MPU SENSITIVITY ANALYSIS FORECAST
2010	245	--	--
2011	276	--	--
2012	306	--	--
2013	337	--	--
2014	367	--	--
2015	398	398	--
2016	396	401	--
2017 2/	411	403	411
FORECAST			
2020	--	412	419
2025	--	423	433
2035	--	454	463
CAGR	N/A	0.66%	0.66%

NOTES:

ASEG = Airfield Safety Enhancement and Geometry Study   CAGR = Compound Annual Growth Rate   MPU = Master Plan Update

1/   ASEG Study forecasts were approved by the FAA on April 28, 2017.

2/   CY 2017 was used as the base year for the MPU Sensitivity Forecast.

SOURCES: Broward County Aviation Department, April 2018 (historical data); Kimley-Horn and Associates, Inc., April 2017 (ASEG Study Forecast); Ricondo & Associates, Inc., July 2018 (MPU Sensitivity Analysis Forecast).

PREPARED BY: Ricondo & Associates, Inc., September 2019.

Exhibit 3.2-1: Based Aircraft Forecast
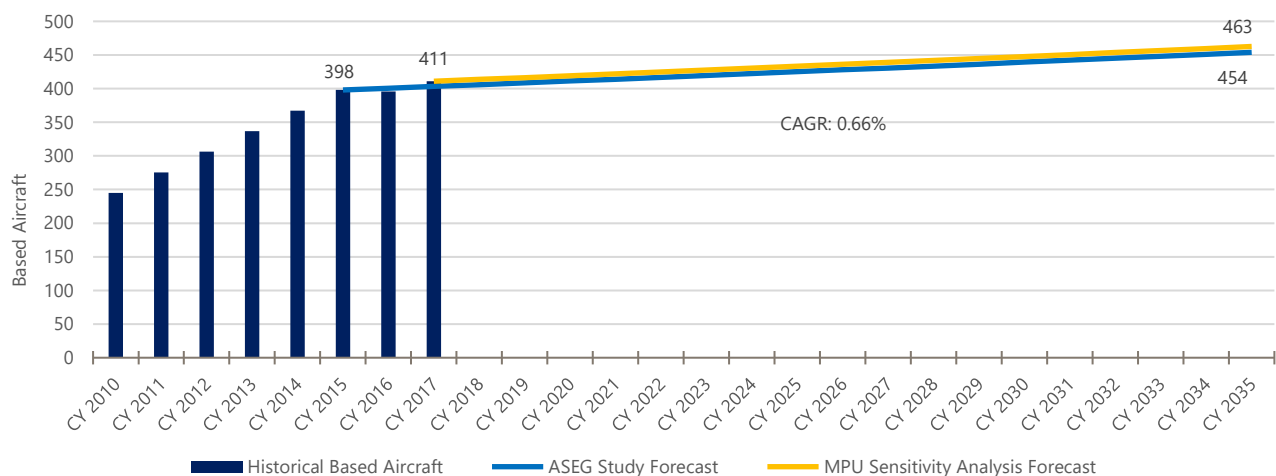
NOTES:

ASEG = Airfield Safety Enhancement and Geometry Study   CAGR = Compound Annual Growth Rate   CY = Calendar Year   MPU = Master Plan Update

SOURCES: Broward County Aviation Department, April 2018 (historical data); Kimley-Horn and Associates, Inc., April 2017 (ASEG Study Forecast); Ricondo & Associates, Inc., July 2018 (MPU Sensitivity Analysis Forecast).

PREPARED BY: Ricondo & Associates, Inc., September 2019.

3.2.2   AIRCRAFT OPERATIONS FORECASTS

Similar to the based aircraft forecasts, multiple methodologies were considered in the ASEG Study to develop a forecast for aircraft operations at HWO. These methodologies included regression analyses using socioeconomic activity and a market share projection technique, as well as an operation per based aircraft (OPBA) calculation. The OPBA methodology was selected as the preferred method of forecasting future operations. This is due to the lack of strong correlation between the operations and socioeconomic variables. Historical inconsistency between growth in HWO operations relative to total general aviation operations in the U.S. also contributed to the selection of the OPBA methodology. This results in a CAGR in aircraft operations of 0.66 percent between CY 2016 and CY 2035, similar to the CAGR forecast for based aircraft.

Between CY 2015 and CY 2017, HWO experienced a 32 percent increase in aircraft operations, primarily due to an increase in flight training activity. Therefore, the MPU Sensitivity Analysis forecast utilized the 0.66 percent ASEG Study operations growth rate developed from the OPBA methodology to produce an alternative demand scenario using the CY 2017 operations as the base year. This growth rate was deemed appropriate given it was previously approved by the FAA for use in the ASEG Study. **Table 3.2-2** and **Exhibit 3.2-2** summarize the historical aircraft operations, the ASEG Study operations forecast, and the MPU Sensitivity Analysis operations forecast.

| Table 3.2-2: HWO Historical and Forecast Aircraft Operations			
CALENDAR YEAR	**HISTORICAL OPERATIONS**	**ASEG STUDY FORECAST** [1]	**MPU SENSITIVITY ANALYSIS FORECAST**
2010	120,322	--	--
2011	136,104	--	--
2012	127,648	--	--
2013	142,399	--	--
2014	155,776	--	--
2015	171,550	171,550	--
2016	176,306	172,674	--
2017	226,376	173,805	226,376
FORECAST			
2020	--	177,534	230,888
2025	--	182,189	238,608
2035	--	195,487	254,833
CAGR	N/A	0.66%	0.66%

NOTES:

ASEG = Airfield Safety Enhancement and Geometry Study   CAGR = Compound Annual Growth Rate   MPU = Master Plan Update

1/   ASEG Study forecasts were approved by the FAA on April 28, 2017.

SOURCES: Broward County Aviation Department, April 2018 (historical data); Kimley-Horn and Associates, Inc., April 2017 (ASEG Study Forecast); Ricondo & Associates, Inc., July 2018 (MPU Sensitivity Analysis Forecast).

PREPARED BY: Ricondo & Associates, Inc., September 2019.

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Exhibit 3.2-2: Aircraft Operations Forecast
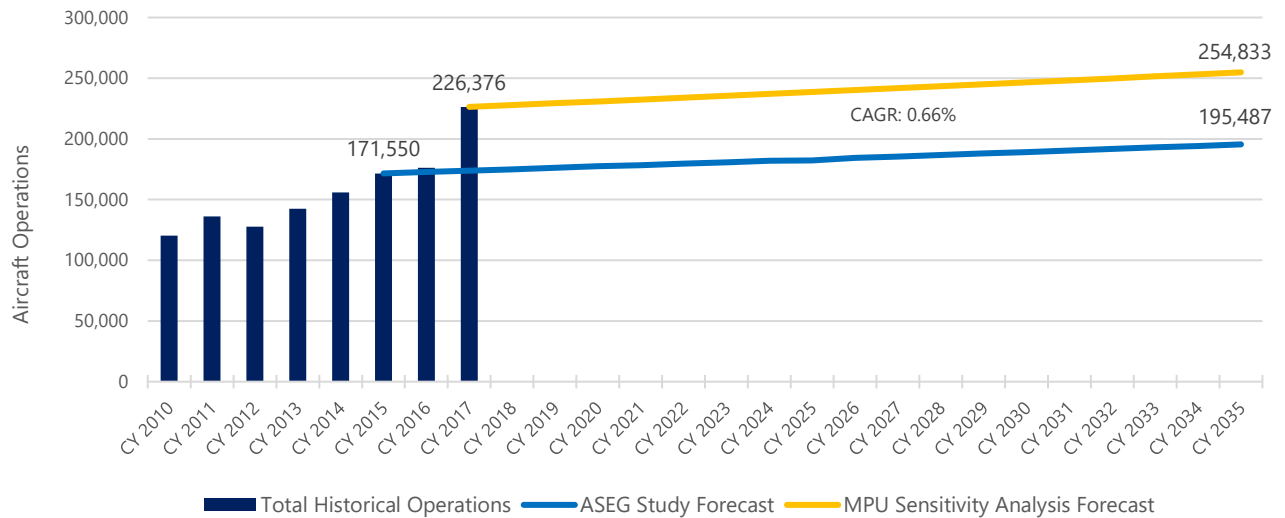
NOTES:

ASEG = Airfield Safety Enhancement and Geometry Study   CAGR = Compound Annual Growth Rate   CY = Calendar Year   MPU = Master Plan Update

SOURCES: Broward County Aviation Department, April 2018 (historical data); Kimley-Horn and Associates, Inc., April 2017 (ASEG Study Forecast); Ricondo & Associates, Inc., July 2018 (MPU Sensitivity Analysis Forecast).

PREPARED BY: Ricondo & Associates, Inc., August 2019.

The ASEG Study and MPU Sensitivity Analysis based aircraft and aircraft operations forecasts provide the basis for determining facility requirements and defining the type and extent of future Airport enhancements. The based aircraft forecasts are used to determine aircraft storage requirements and influence aircraft maintenance and other supporting aeronautical service offerings. The aircraft operations levels dictate the needs for airfield infrastructure, aircraft fuel storage, and transient aircraft storage.

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