

# ICAO MID Regional Seminar on Airport Master Planning

## Session 1.2 – Airport Master Planning Principals

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**FAA**  
Office of Airports

# Overview

- General planning process
- Key planning elements
- Right sizing planning

# General Planning Process



## Inventory

- Airport Facilities (Air and Land)
- Socioeconomic & Demographic Data



## Forecasts

- Based Aircraft & Fleet Mix
- Annual Operations



## Facility Requirements

- Design Categories
- Navigation Aids

# General Planning Process



## Airport Alternatives

- Airside
- Landside



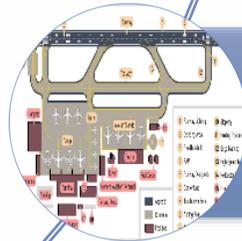
## Recommended Plan

- Detailed Facility, Land Use Plans
- NEPA Considerations



## Financial Plan

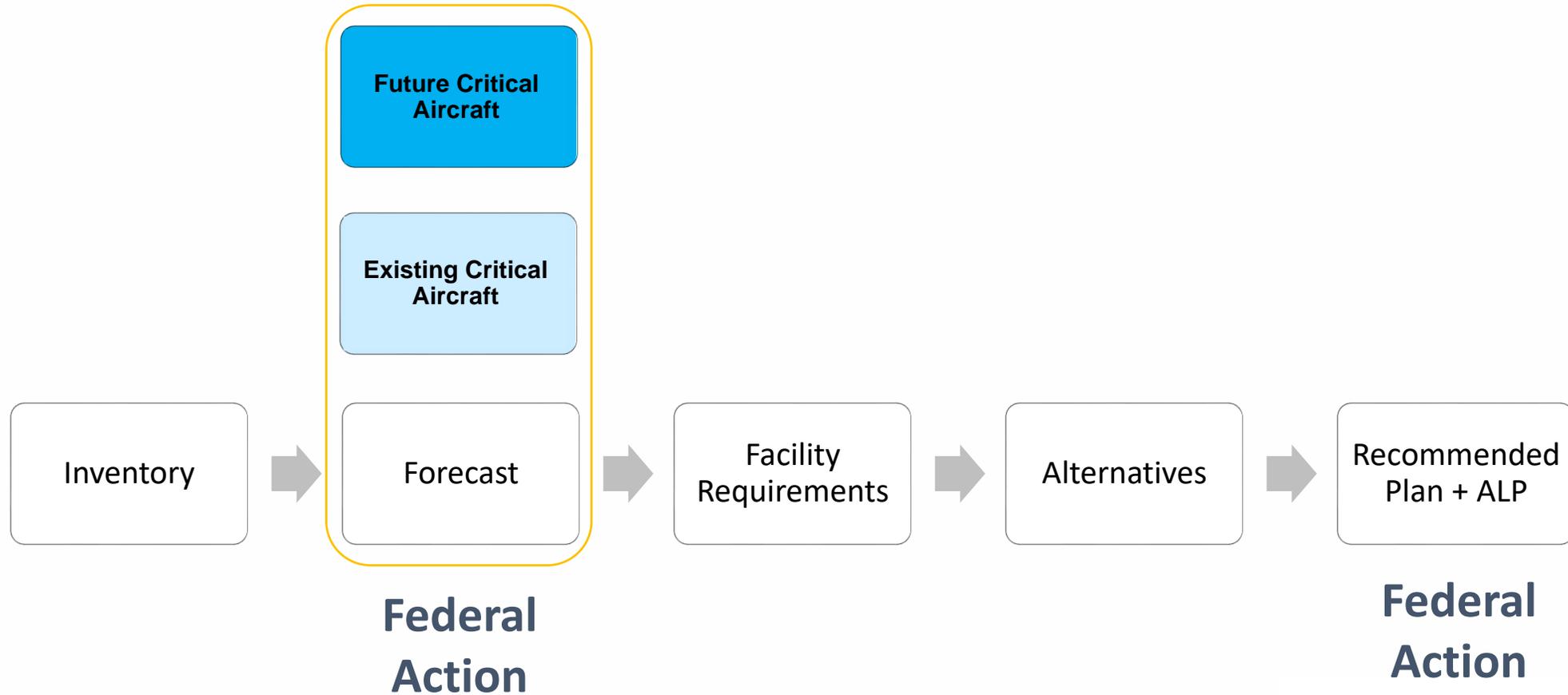
- Development Schedule
- Costs and Funding Sources



## Airport Layout Plan

- ALP Drawing Set
- Property Map

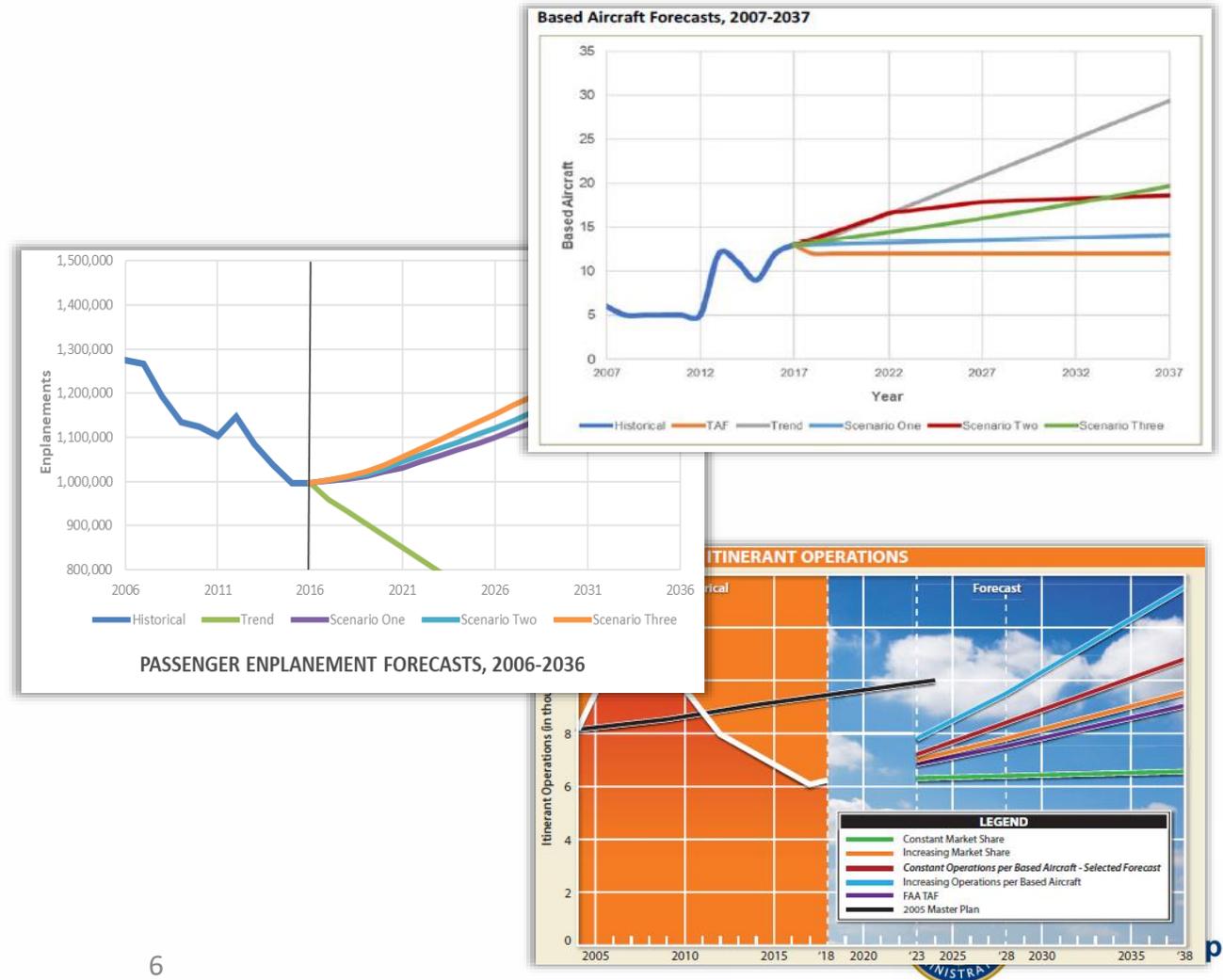
# Airport Master Plans - Process



# Key Planning Elements - Forecast

## What is forecasted?

- Operations
- Enplanements
- Based aircraft
- Fleet Mix
- Peak Hour Activity



# Right Sizing and Critical Aircraft

Planning & Engineering based on regulations, standards and guidance is key to *Right Sizing Airports and Airport Systems.*

- Critical aircraft, design aircraft, critical design aircraft are synonymous.
  - Must be determined based on current data.
  - Design aircraft for pavement may differ across the airfield.

**Table 2-3. Aircraft characteristics and design components**

<u>RDC Component</u>	<u>Aircraft Characteristics</u>	<u>Design Components</u>
AAC	Approach Speed	RSA, ROFA, <b>RPZ, runway width, runway-to-taxiway separation</b> , runway-to-fixed object.
AAC/ADG	Landing and Takeoff Distance	Runway length
ADG	Cockpit to Main Gear Distance (CMG)	Fillet design, apron area, parking layout
ADG	Main Gear Width (MGW)	Taxiway width, fillet design
ADG	Wingspan / Tail Height	Taxiway and apron OFA, parking configuration, hangar locations, taxiway-to-taxiway separation, runway to taxiway separation

Source: AC 150/5300-13A

Table 3-5. Runway design standards matrix

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):  
(select from pull-down menu at right)

B – II

Visibility Minimums

ITEM	DIM <sup>1</sup>	Visibility Minimums			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
<b>Runway Design</b>					
Runway Length	A	Refer to paragraphs 302 and 304			
Runway Width	B	75 ft	75 ft	75 ft	100 ft
Shoulder Width		10 ft	10 ft	10 ft	10 ft
Blast Pad Width		95 ft	95 ft	95 ft	120 ft
Blast Pad Length		150 ft	150 ft	150 ft	150 ft
Crosswind Component		13 knots	13 knots	13 knots	13 knots
<b>Runway Protection</b>					
Runway Safety Area (RSA)					
Length beyond departure end <sup>9, 10</sup>	R	300 ft	300 ft	300 ft	600 ft
Length prior to threshold	P	300 ft	300 ft	300 ft	600 ft
Width	C	150 ft	150 ft	150 ft	300 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	300 ft	300 ft	300 ft	600 ft
Length prior to threshold	P	300 ft	300 ft	300 ft	600 ft
Width	Q	500 ft	500 ft	500 ft	800 ft
Runway Obstacle Free Zone (ROFZ)					
Length		Refer to paragraph 308			
Width		Refer to paragraph 308			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1000 ft	1000 ft	1700 ft	2500 ft
Inner Width	U	500 ft	500 ft	1000 ft	1000 ft
Outer Width	V	700 ft	700 ft	1510 ft	1750 ft
Acres		13.770	13.770	48.978	78.914
Departure Runway Protection Zone (RPZ)					
Length	L	1000 ft	1000 ft	1000 ft	1000 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	700 ft	700 ft	700 ft	700 ft
Acres		13.770	13.770	13.770	13.770
<b>Runway Separation</b>					
Runway centerline to:					
Parallel runway centerline	H	Refer to paragraph 316			
Holding position		200 ft	200 ft	200 ft	250 ft
Parallel Taxiway/Taxilane centerline <sup>2, 4</sup>	D	240 ft	240 ft	240 ft	300 ft
Aircraft parking area	G	250 ft	250 ft	250 ft	400 ft
Helicopter touchdown pad		Refer to AC 150/5390-2			

Table 3-5. Runway design standards matrix

Aircraft Approach Category (AAC) and Airplane Design Group (ADG):  
(select from pull-down menu at right)

C – II

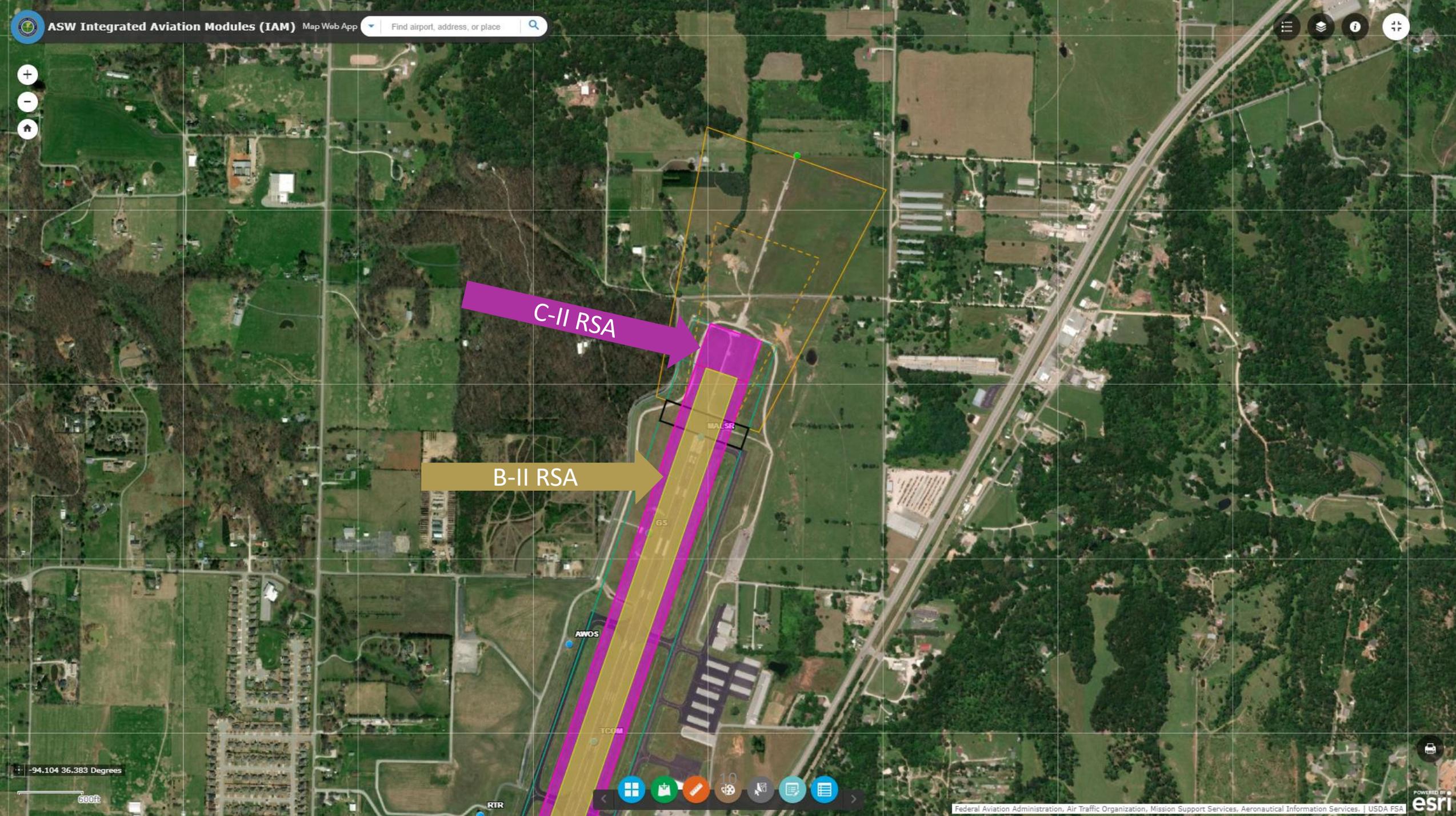
Visibility Minimums

ITEM	DIM <sup>1</sup>	Visibility Minimums			
		Visual	Not Lower than 1 mile	Not Lower than 3/4 mile	Lower than 3/4 mile
<b>Runway Design</b>					
Runway Length	A	Refer to paragraphs 302 and 304			
Runway Width	B	100 ft	100 ft	100 ft	100 ft
Shoulder Width		10 ft	10 ft	10 ft	10 ft
Blast Pad Width		120 ft	120 ft	120 ft	120 ft
Blast Pad Length		150 ft	150 ft	150 ft	150 ft
Crosswind Component		16 knots	16 knots	16 knots	16 knots
<b>Runway Protection</b>					
Runway Safety Area (RSA)					
Length beyond departure end <sup>9, 10</sup>	R	1000 ft	1000 ft	1000 ft	1000 ft
Length prior to threshold <sup>11</sup>	P	600 ft	600 ft	600 ft	600 ft
Width <sup>13</sup>	C	500 ft	500 ft	500 ft	500 ft
Runway Object Free Area (ROFA)					
Length beyond runway end	R	1000 ft	1000 ft	1000 ft	1000 ft
Length prior to threshold <sup>11</sup>	P	600 ft	600 ft	600 ft	600 ft
Width	Q	800 ft	800 ft	800 ft	800 ft
Runway Obstacle Free Zone (ROFZ)					
Length		Refer to paragraph 308			
Width		Refer to paragraph 308			
Precision Obstacle Free Zone (POFZ)					
Length		N/A	N/A	N/A	200 ft
Width		N/A	N/A	N/A	800 ft
Approach Runway Protection Zone (RPZ)					
Length	L	1700 ft	1700 ft	1700 ft	2500 ft
Inner Width	U	500 ft	500 ft	1000 ft	1000 ft
Outer Width	V	1010 ft	1010 ft	1510 ft	1750 ft
Acres		29.465	29.465	48.978	78.914
Departure Runway Protection Zone (RPZ)					
Length	L	1700 ft	1700 ft	1700 ft	1700 ft
Inner Width	U	500 ft	500 ft	500 ft	500 ft
Outer Width	V	1010 ft	1010 ft	1010 ft	1010 ft
Acres		29.465	29.465	29.465	29.465
<b>Runway Separation</b>					
Runway centerline to:					
Parallel runway centerline	H	Refer to paragraph 316			
Holding position		250 ft	250 ft	250 ft	250 ft
Parallel Taxiway/Taxilane centerline <sup>2</sup>	D	300 ft	300 ft	300 ft	400 ft
Aircraft parking area	G	400 ft	400 ft	400 ft	500 ft
Helicopter touchdown pad		Refer to AC 150/5390-2			

Notes:

- Appendix 7 contains non-interactive tables for all RDCs.
- Values in the table are rounded to the nearest foot. 1 foot = 0.305 meters.

Source: AC 150/5300-13A



C-II RSA

B-II RSA

65

AWOS

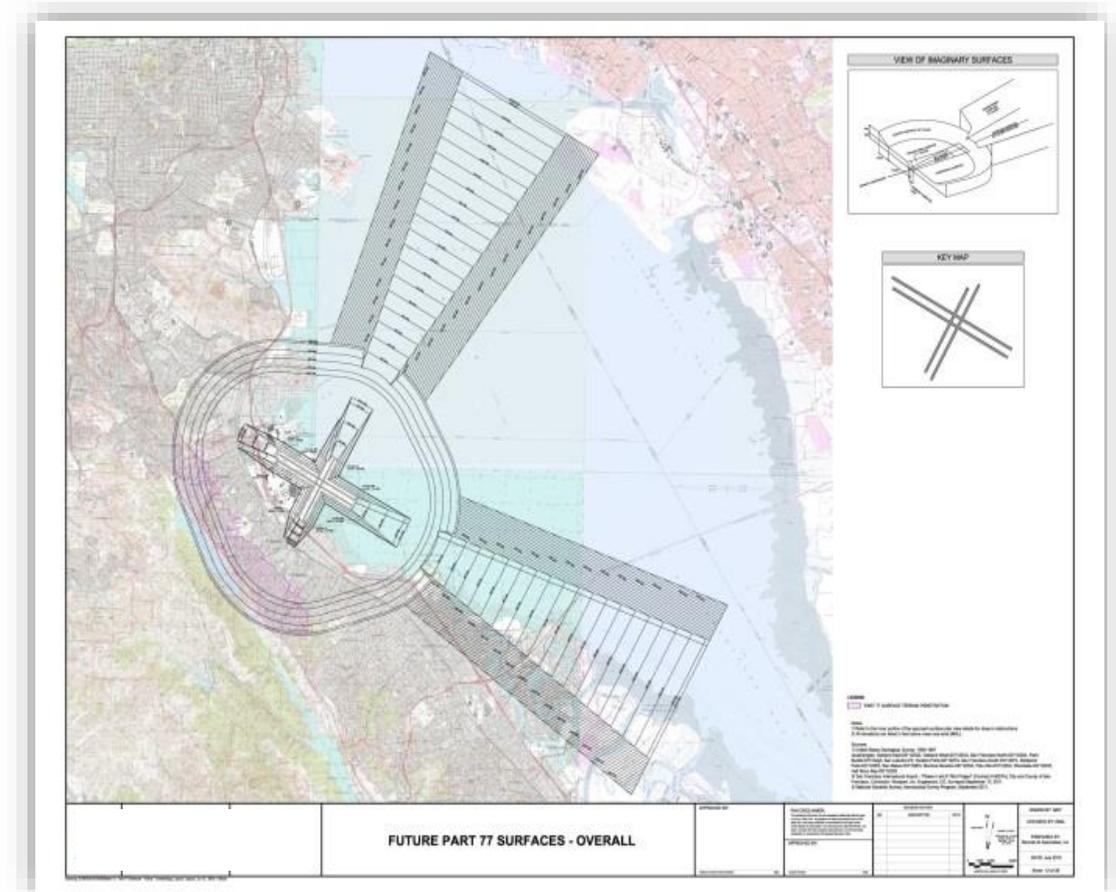
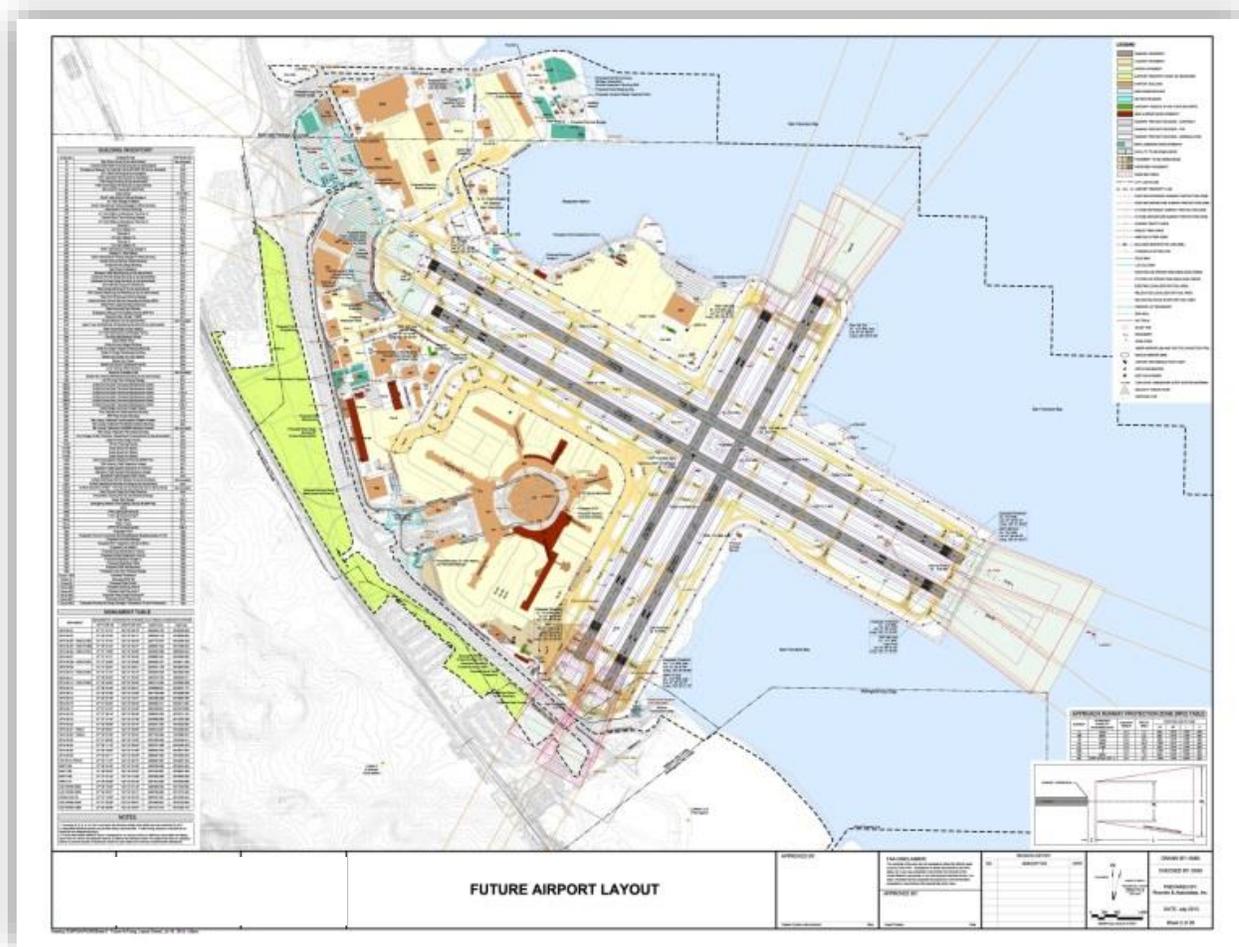
TCO

RTR

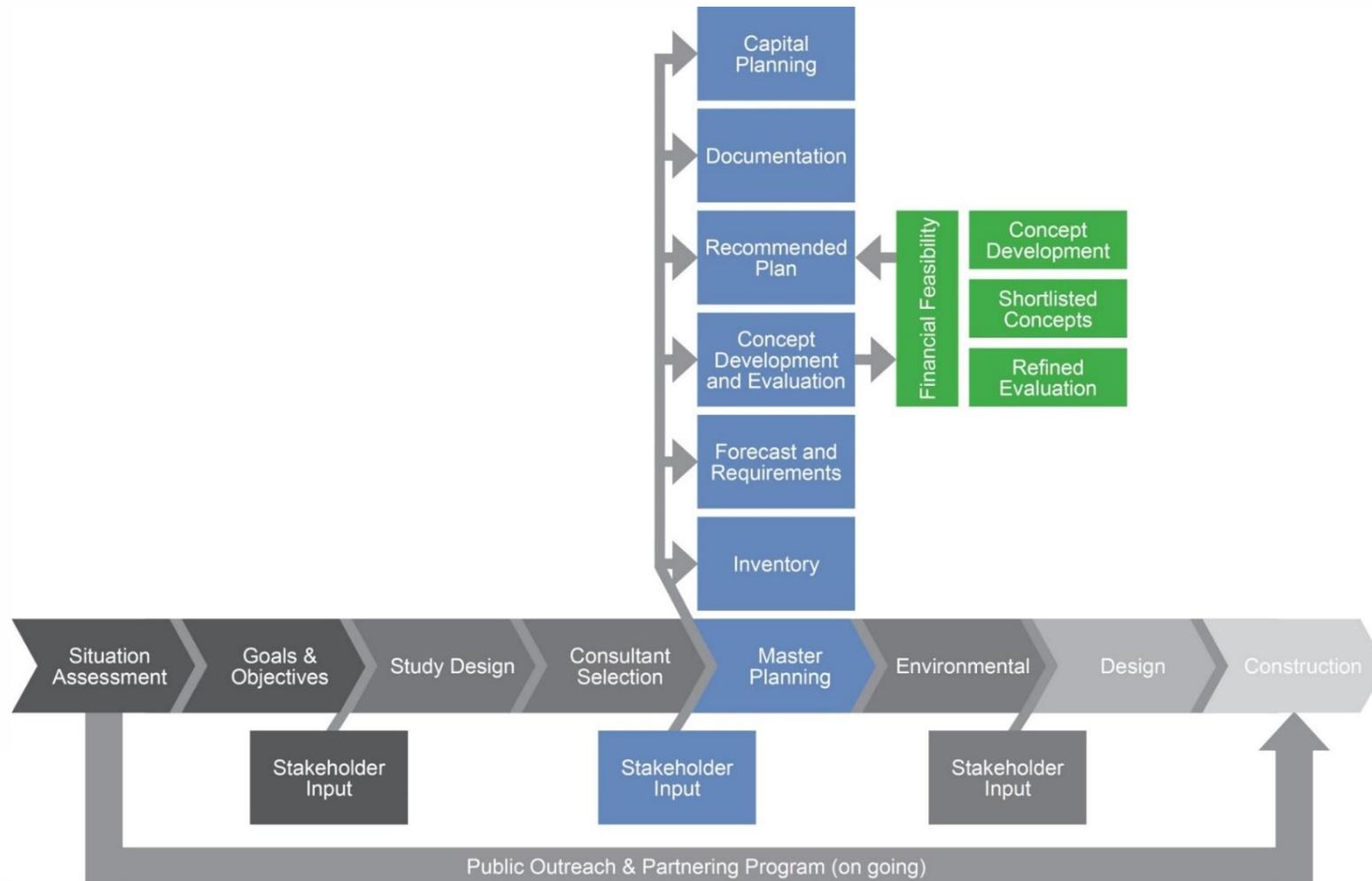


Large Aircraft  
Infrequent User &  
Taxiway Project

# Key Planning Elements – ALP Set



# Master Plan and Overall Airport Development Process



# Useful FAA Advisory Circulars

AC 150/5000-17: Critical Aircraft and Regular Use

AC 150/5300-13A: Airport Design

AC 150/5070-6B: Airport Master Plans

AC 150/5325-4B: Runway Length Requirements for Airport Design

AC 150/5320-6F: Airport Pavement Design and Evaluation

Thank you!



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# Airport Planning Types - National

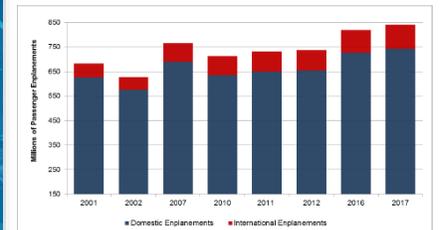
## *National Plan of Integrated Airport System (NPIAS)*

National scale - emphasizes what is necessary for the overall system.

Information in the NPIAS relies on other, smaller-scale state and local planning studies.

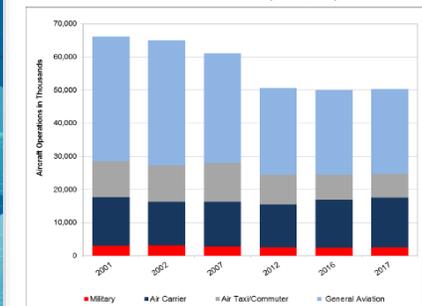


Figure 9: Domestic and International Enplanements (2001–2017)



There have been changes in aircraft operations as measured at the airports with airport traffic control towers as shown in Figure 10. Currently, 517 airport traffic control towers report traffic. Air carrier operations increased 16 percent in the last 5 years. Oundemand/commuter and general aviation operations at towered airports continue to decline.

Figure 10: Aircraft Operations at Airports with FAA and Contract Control Towers (2001–2017)



# Airport Planning Types – State/Local

- State airport system planning (SASP)
- Metropolitan airport planning
- Airport master planning



# Airport Master Plans

- Provides a blueprint for short, medium and long-term development
- Includes a capital improvement plan (CIP) which programs future projects
- Includes Airport Layout Plan (ALP) drawing set, which serves as a management tool and guide development (required by the FAA for obligated airports)

