Chapter 2

Forecasts of Aviation Demand

Image by Delta Airport Consultants, Inc.

2 | Section 1 - Introduction

Forecasts of aviation demand establish the nature and extent of future aviation activity. These forecasts are used to determine the ability of existing facilities to meet future needs in the form of the facility requirements review in the next chapter.

This Las Cruces Airport Action Plan Update forecast of aviation demand is for a 20-year planning period, from 2016 through 2035, with 2015 as the base year. This Action Plan Update will recommend forecasts based on a review of the 2008 Action Plan forecasts, the current FAA Terminal Area Forecast (TAF), and the FAA's national forecast trends of aircraft operations and fleet mix. All of these forecasts will be considered for applicability within the shifting operational climate for LRU and new activity forecasts adopted for the purpose of LRU's airport planning.

Since 2008, LRU has experienced changes in operations, including fixed-base operations, special operations such as the Unmanned Aircraft Systems (UAS), and military training. These trends have impacted airport operations during the past few years and will be reflected in updated forecasts for LRU. A recommended design aircraft for purposes of airport planning will also be determined.

The following phases of forecasts and development are presented in this Action Plan:

PHASE 1	PHASE 2	PHASE 3
■ Short Term	■ Intermediate Term	■ Long Term
■ 0-5 Years	■ 6-10 Years	■ 11-20 Years

2 | Section 2 - Approach

As indicated above, forecasts of aviation demand are the basis for identifying future development needs of an airport. While there are many methods to evaluate and establish the demand forecast, it is recognized that for general aviation airports like LRU, extrapolation of trends from existing national and regional forecasting documents is as accurate as a specific effort for an airport. Any local variables that might exist would not normally significantly change the number of operations, based aircraft, or other benchmark measures that would result in substantial changes of facility requirements.

The following sources were reviewed in preparing the forecast of aviation demands:

- 2008 Las Cruces Airport Action Plan
- FAA Terminal Area Forecast (TAF), issued January 2016
- 2008 New Mexico Airport System Plan Update (NMASP)
- FAA Aerospace Forecast 2014-2035
- Records provided by Las Cruces International Airport

As noted in Chapter One, the 2009 NMASP indicates that LRU is a regional general aviation airport. Where capacity constraints do not limit, this functional level of airport should support general aviation activities, including corporate/executive operations, private pilot, business and recreational activities, and flight training.

The 2009 NMASP data showed an average annual growth rate of 0.9 percent for based aircraft in the state, and 0.7 percent for general aviation operations during the planning period. Actual growth, however, was less than forecast. While the state system plan is currently being updated, the national 2014 FAA Long Range Aerospace Forecast is considered applicable at this time for airports such as LRU and is shown in **Table 2-1.**

Table 2-1. ***FAA Forecast of National Annual Growth Rates***

AGENCY	BASED AIRCRAFT	OPERATIONS
FAA	.50%	.50%

Source: FAA Long Range Aerospace Forecast 2014-2034

Table 2-2 shows the national general aviation fleet mix forecast broken down by aircraft type. As indicated, piston engine aircraft are anticipated to decline, whereas turbo-prop and jet aircraft will increase.

Table 2-2. ***FAA General Aviation Fleet Mix Growth Forecast for the United States (2014-2034)***

SINGLE-ENGINE PISTON	MULTI-ENGINE PISTON	TURBO-PROP	JET	ROTORCRAFT	OTHER
-0.40%	-0.50%	2.60%	3.00%	2.60%	.50%

Source: FAA Long Range Aerospace Forecast 2014-2034

2 | Section 3 - Based Aircraft

Table 2-3 shows the LRU based aircraft forecast as developed in the 2008 Action Plan for LRU. This forecast increase for LRU did not happen for many reasons such as the national and state economic trends and the business environment at Las Cruces. LRU had 145 actual based aircraft in 2014 per FAA records whereas the 2008 forecast indicated there would be almost 200.

Table 2-3. Forecast of Based Aircraft by Type (2008 Action Plan)

YEAR	SINGLE-ENGINE PISTON	MULTI-ENGINE PISTON	JET	HELICOPTER	GLIDER	TOTAL
2006	117	18	2	4	12	151
2011	132	23	3	5	12	175
2016	145	31	5	6	13	200
2026	169	39	8	8	16	240

Source: March 2008 Las Cruces International Airport Action Plan

The current LRU based aircraft total was obtained from the FAA's National Based Aircraft Inventory Validated Count dated January 2015, and is shown in **Table 2-4** below for 2014. Using the FAA's overall aircraft growth rate (0.5%) and the FAA U.S. General Aviation Fleet Mix Growth Forecast from **Table 2-2, Table 2-4** details the number of existing and forecast based aircraft at LRU by aircraft type for the planning period. The latest FAA Terminal Area Forecast (TAF) for LRU does not indicate any growth. In view of the ongoing efforts to develop the adjacent industrial park, New Mexico State University's relationship with the Airport, proximity of space industry development in New Mexico, and the recent basing of a second FBO, it does not appear reasonable that LRU will not have growth in based aircraft. Therefore, **Table 2-4** reflects a modest growth based on national trends.

Table 2-4. Forecast of Based Aircraft by Type

YEAR	SINGLE-ENGINE PISTON	MULTI-ENGINE PISTON	TURBO-PROP	JET	ROTORCRAFT	OTHER*	TOTAL
BASE							
2015	123	12	4	1	5	15	160
FORECAST							
2020	125	12	4	2	6	15	164
2025	126	12	5	4	7	15	169
2035	130	12	6	6	9	15	178

*Note: Represents ultra lights and gliders

Sources: 2014 Data from FAA National Based Aircraft Inventory Validated Count: 01/06/2015; Delta Airport Consultants, Inc. Analysis

2|Section 4 - Forecast of Operations by Aircraft Type

The FAA U.S. General Aviation Fleet Mix Operations Forecast and the FAA Long Range Aerospace Forecast of operations growth rate (0.5%) were used to project operations by aircraft type through 2035. Similar to based aircraft, the latest FAA TAF for LRU does not indicate any growth in operations. In view of the ongoing efforts to develop the adjacent industrial park, New Mexico State University's relationship with the airport, proximity of space industry development in New Mexico, and the recent basing of a second FBO, it does not appear reasonable that LRU will not have growth in aircraft operations. Therefore, **Table 2-5** reflects a modest growth in operations at LRU based on national trends.

Table 2-5 details the forecast operations at LRU by aircraft type for the planning period.

Table 2-5. Forecast of Operations for LRU by Aircraft Type

YEAR	SINGLE-ENGINE PISTON	MULTI-ENGINE PISTON	TURBO-PROP	JET	ROTORCRAFT	OTHER*	TOTAL
BASE							
2015	18,391	6,953	14,573	9,048	16,685	14,230	79,880
FORECAST							
2020	17,081	6,490	15,249	10,638	18,335	14,103	81,896
2025	15,761	6,015	15,854	12,426	20,015	13,887	83,958
2035	13,154	5,074	16,797	16,621	23,392	13,203	88,241

*Note: Represents ultra lights and gliders

Source: Delta Airport Consultants, Inc. Analysis

2 | Section 5 - Aircraft Operations – Local vs. Itinerant

Table 2-6 shows the LRU aircraft operations forecast as developed in the 2008 Action Plan for LRU. This forecasted increase for LRU did not happen for many reasons such as the national and state economic trends and the business environment at Las Cruces. LRU had 69,208 aircraft operations in 2014 per FAA records whereas the 2008 Action Plan forecast for 2014 indicated there would be almost 90,000.

Table 2-6. Forecast of Local/Itinerant Operations (2008 LRU Action Plan)

YEAR	ITINERANT OPERATIONS			LOCAL OPERATIONS		TOTAL OPERATIONS
	GENERAL AVIATION	AIR TAXI	MILITARY	GENERAL AVIATION	MILITARY	
2006	21,600	3,200	1,600	26,400	0	52,800
2011	25,200	3,600	1,600	30,800	24,000	85,200
2016	28,800	4,100	1,600	35,200	24,000	93,700
2026	34,600	5,100	1,600	42,200	24,000	107,500

Source: March 2008 Las Cruces International Airport Action Plan

The percentage of local versus itinerant operations was calculated from information in the FAA TAF. A local operation is defined as a take-off or landing performed by an aircraft that operates in the local traffic pattern or within sight of the airport; is known to be departing for, or arriving from, flights in a local practice area located within a 20-mile radius of the airport; or executes simulated instrument approaches or low passes at the airport. Itinerant operations are defined as all aircraft operations other than local operations.

Table 2-7 details the local/itinerant operations forecast and is based on FAA records of 2015 for the base year, and the national forecast rates for fleet mix and operations growth.

Table 2-7. Forecast of Local/Itinerant Operations at LRU

YEAR	TOTAL OPERATIONS	LOCAL OPERATIONS (15%)	ITINERANT OPERATIONS (85%)		
		GENERAL AVIATION	GENERAL AVIATION	AIR TAXI	MILITARY
BASE					
2015	79, 880	12,000	10,500	3,580	53,800
FORECAST					
2020	81,896	12,284	10,586	3,746	55,280
2025	83,958	12,595	10,692	3,894	56,777
2035	88,241	13,240	10,967	4,127	59,907

Sources: 2015: FAA-TAF; Delta Airport Consultants, Inc. Analysis

2|Section 6 - Design Aircraft Selection

The determination of the existing and future design aircraft at LRU will be useful to establish the future airport reference code (ARC) for the Airport. The design aircraft is defined as the aircraft, or collection of aircraft, with the most demanding characteristics (largest wingspan, highest approach to landing speed, heaviest weight, longest recommended runway length, etc.) 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. In most cases, the design aircraft for purposes of geometric design is a composite aircraft representing a collection of aircraft classified by three parameters: Aircraft Approach Category (AAC), Airplane Design Group (ADG), and Taxiway Design Group (TDG). In the case of an airport with multiple runways, a design aircraft is selected for each runway.

The FAA requires that the aircraft identified as the design aircraft routinely operate at the airport. In accordance with AC 150/5325-4B, a substantial use threshold is to be met with at least 500 or more annual itinerant operations at the airport by an individual airplane or a family grouping of airplanes.

Historically, LRU has been designated a C-II airport. Projects in recent years such as the reconstruction of Runway 12-30 and the relocation of Taxiway A were designed based on C-II aircraft using both Runways 12-30 and 8-26. Also, locally funded safety area improvements for both of these runways were based on C-II standards.

Keys to identifying the design aircraft are a review of the aircraft currently based at the Airport and an examination of available information related to transient aircraft visiting the Airport. A review of the based aircraft inventory and instrument flight rule operational logs shows a diverse group of almost 100 different types of aircraft that use LRU. These include a wide variety of single-engine, multi-engine piston, turbo-prop and jet aircraft that use all runways, several of which have C approach speeds, and several with Group II wing spans. Continued growth of business jet use of LRU will likely be the case in view of the active effort to attract businesses to the Las Cruces area, and tenants to the adjacent industrial park. New Mexico State University has expressed interest in using the Airport for aircraft charters for both its athletic department and visiting universities. An example of a typical charter aircraft anticipated to be used at LRU would be the Boeing 737-800. Although these charters will not be frequent, the Facility Requirements chapter of this Action Plan will review the requirements for this aircraft.

In summary, it is recommended that the design aircraft for both Runways 8-26 and 12-30 remain a C-II aircraft. Based on the condition and usage of Runway 4-22, the design aircraft for that runway is recommended to be reduced from C-II to B-II. The long range disposition of each runway will be addressed in future chapters of this Action Plan.

2 | Section 7 - Peak Period Demand

Peak period operations are a key element in evaluating facility requirements during periods of high demand. Peak operations drive the space and facility requirements required to meet forecast demand. General aviation facility needs are related to peak period activity and the most common and useful peaking characteristic of an airport is peak hour activity. Typically, non-towered general aviation airports, such as LRU, do not keep records of peak period activity. Thus, an industry standard accepted methodology for estimation is used to predict peak period activity that does not require a census of hourly operations totals and includes the following steps:

- **Peak Month** - Peak month operations are calculated assuming that the peak month is 10 percent busier than the average month (annual operations/12 x 110 percent).
- **Average Peak Day** - Average peak day operations are defined as the average day during the peak month. It is calculated by dividing the peak month by 30.
- **Peak Hour** - Peak hour operations represent the highest number of operations during the busiest hour of an average day during a peak month. Peak hour operations are assumed to be 15 percent of the average peak day.

Table 2-8 presents the forecasted peak period general aviation operations at LRU during the planning period based on the methodology detailed above and the annual forecasts shown in **Table 2-7.**

Table 2-8. General Aviation Operations Peak Period Forecast at LRU

YEAR	TOTAL ANNUAL OPERATIONS	PEAK MONTH	AVERAGE DAY (DURING PEAK MONTH)	AVERAGE DAY	PEAK HOUR
BASE					
2015	79,880	7,322	244	218	37
FORECAST					
2020	81,896	7,507	250	224	38
2025	83,958	7,696	256	230	39
2035	88,241	8,089	270	241	41

Source: Delta Airport Consultants, Inc. Analysis

2|Section 8 - Special Operations

As indicated in Chapter One, there are special types of aircraft operations at LRU – Navy flight training and New Mexico State University Physical Sciences Lab, Unmanned Aircraft Systems (UAS) flight testing.

The Navy has been training in recent years at LRU. Their pilots and aircraft set up base at the Airport for approximately two months a year. They have been averaging 24 aircraft and have occupied varied locations of the apron depending upon what other activities are taking place at the Airport. During these two months, there is a substantial impact on both overall operations as well as facility requirements. Growth of this training is uncertain. For planning purposes, military operations are forecast in this Action Plan to grow at the same national rate as other aviation demand. The Facility Requirements Chapter will discuss specific areas of apron needed for this activity.

New Mexico State University conducts flight testing of Unmanned Aircraft Systems at the Airport. They do this with use of their hangar and the north end of Runway 4-22. The extent of their testing has varied and has not significantly impacted other airport operations. This testing is not expected to grow significantly and their requirements will be addressed in the Facility Requirements Chapter of this Action Plan. The number of unmanned aircraft flights varies from three to ten per month depending upon whether or not NMSU has a contract for the flight testing.

The U.S. Army National Guard owns and operates four UH-72 Lakota helicopters from their base at LRU. They are currently deliberating plans to relocate these to another location on or adjacent to the Airport. Their requirements are not anticipated to grow significantly, and will be addressed in the Facility Requirements Chapter of this Action Plan.

2 | Section 9 - Forecast Summary

Table 2-9 presents a summary of the forecasts for LRU over the 20-year planning period. These forecasts indicate all aspects of aviation demand at the Airport will continue to grow during the planning period. Ongoing development of facilities will enable the Airport to continue to accommodate the growth in aviation demand and contribute to the economic vitality of the service area. Facility requirements and plans will be presented in future chapters of this Action Plan.

Table 2-9. ***Forecast Summary of Aviation Demand for LRU***

FORECAST ELEMENT	2015 (Base)	2020	2025	2035
TOTAL BASED AIRCRAFT	160	164	169	178
BASED AIRCRAFT BY TYPE				
Single-Engine	123	125	126	130
Multi-Engine	12	12	12	12
Turboprop	4	4	5	6
Jet	1	2	4	6
Rotorcraft	5	6	7	9
Other*	15	15	15	15
TOTAL OPERATIONS	79,880	81,896	83,958	88,241
LOCAL OPERATIONS	12,000	12,284	12,595	13,240
ITINERANT OPERATIONS	67,880	69,612	71,363	75,001
GA Itinerant	10,500	10,586	10,692	10,967
Air Taxi	3,580	3,746	3,894	4,127
Military	53,880	55,280	56,777	59,907
OPERATIONS BY AIRCRAFT TYPE				
Single-Engine	18,391	17,081	15,761	13,154
Multi-Engine	6,953	6,490	6,015	5,074
Turboprop	14,573	15,249	15,854	16,797
Jet	9,048	10,638	12,426	16,621
Rotorcraft	16,685	18,335	20,015	23,392
Other*	14,230	14,103	13,887	13,203

*Note: Represents ultra lights and gliders

Source: Delta Airport Consultants, Inc. Analysis

2|Section 10 - Alternative Forecast Scenario

As indicated in Chapter One, activity at LRU has dropped in recent years primarily due to termination of a general aviation flight school and lack of growth in the general aviation sector of the state and national economies. The forecast in **Table 2-9** reflects a modest growth and is generally consistent with state and federal forecasts. However, the city of Las Cruces and the airport are well-positioned for possible additional growth due to several factors. These include but are not necessarily limited to:

- Proximity to Spaceport America.
- Growth of El Paso and related businesses with aviation needs.
- The city of Las Cruces possibly pursuing another flight school.
- The industrial park adjacent to LRU could grow with new tenants that own business aircraft.
- An FBO may more aggressively develop its service to business aircraft.
- Regular use of charter aircraft for New Mexico State University athletic teams.
- Possibility of renewal of air carrier passenger service and/or introduction of air cargo services.

Although many of the above factors are uncertain, it is prudent to consider alternative facility layouts to accommodate additional growth beyond a modest forecast. LRU has considerable land to support such additional growth. The next Chapter, Facility Requirements, will further address the requirements for this possible additional growth in aviation activity. These alternate scenarios for growth could result in a more substantial increase of aviation activity at LRU. Possible ultimate activity in 2034 could be 200 total based aircraft (including 10 business jets) and 100,000 annual operations (15,000 local, 25,000 annual general aviation itinerant/air taxi, and 60,000 military). Eligibility and justification for state and federal grant funding for airport capital improvements will, of course, be based on actual activity levels.