LAS CRUCES INTERNATIONAL

Airport Facilities Needs Assessment

April 2020

City of Las Cruces®
MOUNTAINS OF OPPORTUNITY

DuBois & King inc.

This pdf is interactive.

Unless you've printed this report out to take a break from computer screens, pages within this document can be accessed by a single click.

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The Chapter headers on each page will navigate to that portion of the document.

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The Primary LRU Airport Diagram Can be Accessed via the runway icon on the bottom of each page.

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Chapter 1. Introduction

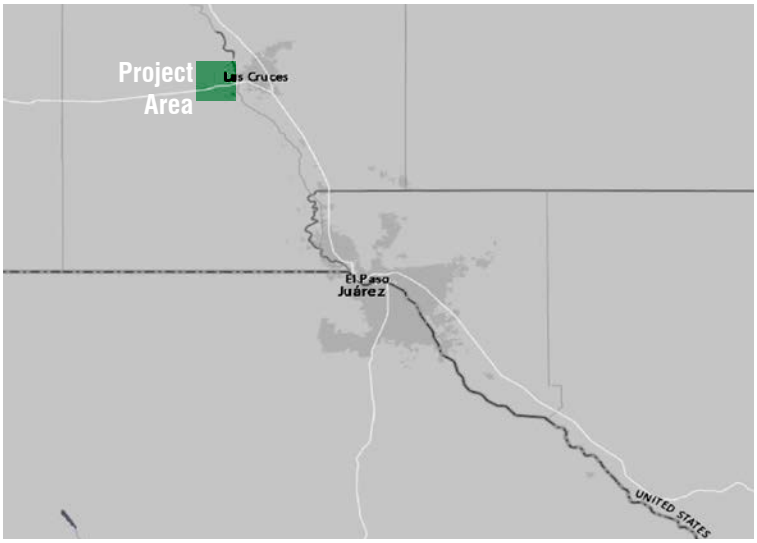
The purpose of this **Las Cruces International Airport** (LRU) Air Services Planning document is to provide the City of Las Cruces with a focused review of the current facility conditions of the airport.

This review identifies deficiencies in these facilities that may hinder, delay, or preclude the airport from supporting air service. The document makes prioritized recommendations to the City to fill these deficiencies. These recommendations are based on research and community engagement completed by DuBois & King, Inc. as well as air service demand analysis and development plan developed by AirPlanners in the fall and winter of 2019/20. Ultimately, this document supports and guides the development and growth of air service and related facilities at LRU. This project was funded by the City of Las Cruces through its Department of Economic Development.

Las Cruces International Airport is a City owned, public-use, non-Primary Airport with less than 10,000 annual enplanements. The Airport holds and maintains a 14 CFR Part 139 Certificate with the ability to provide **Airport Rescue and Fire Fighting** (ARFF) services at Class IV and Index A.

Class IV means that the airport can support unscheduled air carrier operations with proper notice. Index A means that the ARFF team can support air carrier aircraft less than 90 feet in length.

New Mexico Department of Transportation-Aviation Division (NMDOT-A) classifies LRU as a Regional General Aviation Airport and, by name only, is considered an International Airport. International Airports usually can receive international passengers through the support of **United States Customs and Border Protection** (USCBP). Currently LRU does not receive passenger-receiving support for USCBP.



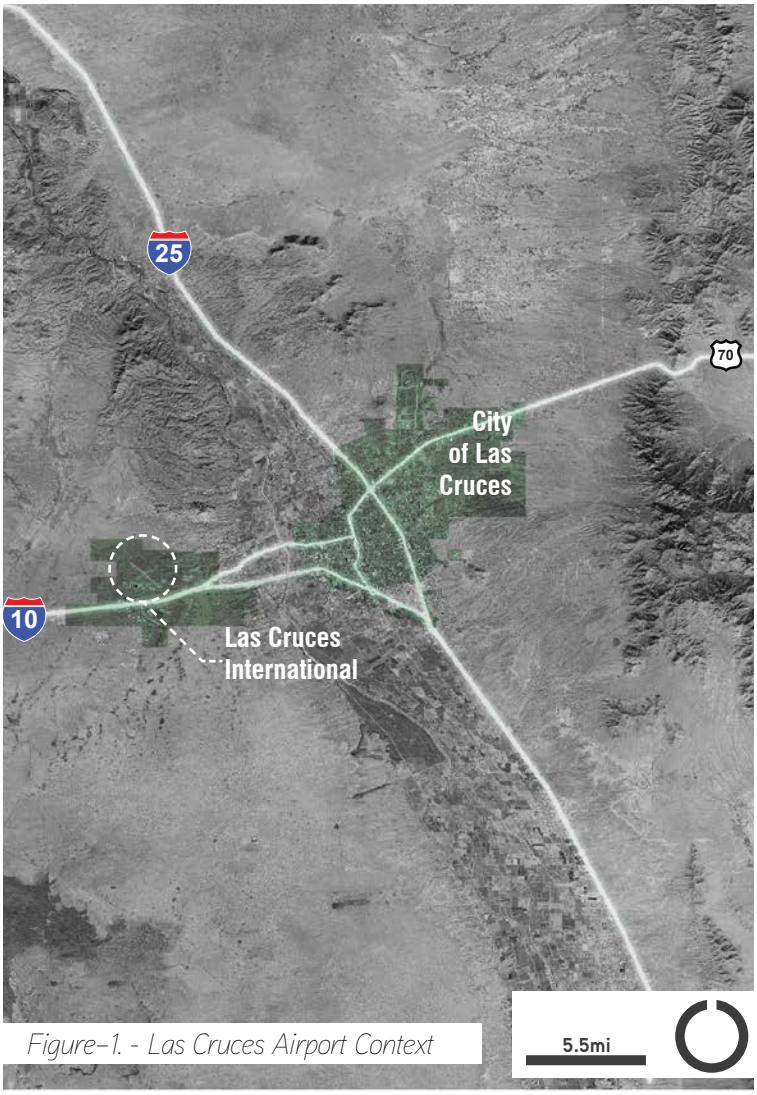


Figure-1. - Las Cruces Airport Context

LRU is included in the **Federal Aviation Administration's** (FAA) **National Plan of Integrated Airport System** (NPIAS) and, therefore, receives $150,000 of **Non-Primary Entitlement** (NPE) funding from the FAA each year to support the Airport's **Capital Improvement Plan** (CIP). With only $150,000 of federal funding each year the City and Airport need to be very strategic when considering capital improvement projects. Many projects require multi-year delays while enough funding is saved in order to proceed with repairs or construction. The FAA does offer another funding source - discretionary funding. This funding source is very competitive and FAA funding priorities make receiving discretionary funds a challenge.

In 2017, the City of Las Cruces adopted its 2017-2022 Strategic Plan. Goal #18 of this Plan stated that by 2022, "the airport terminal will be renovated to accommodate 20,000 enplanements per year". The Airport intends to develop passenger air service to and from LRU. The reader should note that once the airport reaches a sustained level of 10,000 annual enplanements the FAA will change the airport's funding status from Non-Primary to Primary. This status change would directly increase the airport's available annual federal funding for capital projects from $150,000 (NPE) to $1,000,000 (PE). To achieve City of Las Cruces' Strategic Plan goal #18, the airport must take a strategic approach to developing commercial passenger air service.

This document builds upon relevant planning and airport lease documents, interviews with FBOs, airport users, airport staff, the City of Las Cruces, site visits by the planning team, as well as current and recent research and findings related to pursuit of air service for LRU in the very near future.

The following is a non-comprehensive list of key sources of information used as reference in developing this document:

- 2017 LRU Action Plan
- 2020 LRU Capital Improvement Plan
- 2017-2022 City of Las Cruces Strategic Plan
- 2020 AirPlanners Air Service Demand Analysis
- 2017 New Mexico Airport System Plan Update
- 2018 Las Cruces International Airport FAA Part 139 Airport Certification Manual
- 2019 Las Cruces International Airport Terminal Planning
- 2019 Airport Emergency Plan
- 2019 LRU Chapter 7.5 - Aviation (A1 - General Provisions, A2 - Rules and Regulations, A3 - Minimum Standards for Commercial Aeronautical Activities) (under final review)
- 2012 Las Cruces Fire Station No. 7 Construction Documents
- 2016 Francis Aviation Facility Lease
- 2016 Francis Aviation Fixed Base Operator Lease
- 1993 Southwest Aviation East Lease
- 2015 Southwest Aviation Airport Facility Lease
- 1994 Southwest Aviation West Lease
- 1987 Southwest T-Hangar Lease
- October 2019 On-site visual evaluation of LRU

This introductory chapter provides a brief overview of the airport's history and background, as well as a discussion regarding its regional setting and relationship to air and space travel within the region.

Background

Constructed in 1942, the Las Cruces International Airport (LRU) is located eight miles west of the City of Las Cruces, New Mexico. It is located on a mesa overlooking the Mesilla Valley and is, in essence, in an unrestricted area as it relates to airspace. The Contiguous **United States Air Defense Identification Zone** (ADIZ) resides 30 nautical miles to the south. In addition, there are numerous **Military Operating Area**s (MOA) to the east of the airport. Neither the ADIZ nor MOA's create any issues for the airport, its instrument approach procedures or the prospects of introducing sustainable air service at LRU.

The City of Las Cruces has done an outstanding job protecting the airspace in and around the airport, setting the stage for development of airport infrastructure as well as air service. Zoning overlays, specific to the airport, have been created and the runway protection zones are protected from future encroachments.

The availability and extent of scheduled air carrier and commuter service has been sporadic for many years. Air carrier service at LRU dates back to 1948 when the first service was provided by Pioneer Air Lines with flights to Amarillo and El Paso. Pioneer utilized the DC-3, a 32 passenger aircraft. The table below provides the reader with a history of the airlines that operated to/from LRU over the years. In 1994, Mesa Airlines peaked the number of enplanements in LRU's airline history with over 8,100 annual enplanements with service to Albuquerque. Unfortunately, the airport was never able to cross the 10,000 enplanements benchmark whereby the airport would become a primary airport and receive additional FAA annual funding.

Without scheduled air service, the airport is currently served by Air Taxi, commuter operators, and private aviation. Of the estimated 36,000 annual operations at LRU, approximately 3,600 are from Air Taxi operations, 10,000 from military, 10,500 from transients with the balance from local general aviation.

Table –1 - LRU Airline History

Year	Airline	Route	Aircraft
1948-1950	*Pioneer Airlines*	*Amarillo / El Paso*	*DC-3*
1950-1954	*Continental Airlines*	*Denver / El Paso*	*DC-3*
1950-1953	*Frontier Airlines*	*Phoenix / El Paso*	*DC-3*
1963-1964	*Bison Airlines*	*Albuquerque / El Paso*	*Aero Commander*
1966-1967	*Zia Airlines*	*El Paso / Alamogordo / Silver City*	*C-402 / Jetstream*
1980	*Stahmann Farms*	*Albuquerque / Santa Fe*	*C-402*
1981-1985	*Airways of NM*	*El Paso / Albuquerque*	*C-402/Navajo*
1985	*JetAire*	*Albuquerque*	*Jetstream*
1985 - 2001	*Mesa Airlines*	*Albuquerque*	*B99/B1900*
2004-2005	*Westward Airlines*	*Albuquerque/Pheonix*	*PC-12*

Source: 2017 NM State Airport System Plan, 2017 LRU Action Plan, Media Sources, D&K Research

Spaceport America

The development of Spaceport America, a FAA-licensed spaceport located 45 miles north of Las Cruces has made Las Cruces International a key element in considering how future international (and perhaps intergalactic) travelers will access future low earth orbit flights from the spaceport.

In 2004, New Mexico was chosen to host the X-Prize Cup, an exhibition to showcase space tourism technologies and in October of 2005, more than 20,000 people flocked to Las Cruces to observe the event. Following this event, Sir Richard Branson and New Mexico Governor Richardson agreed that New Mexico should be the home of Spaceport America. Construction of the Spaceport America terminal building began following key benchmarks such as the groundbreaking in 2009 and the October 22, 2010, a runway dedication ceremony.

In October 2019, airport staff met with the President of Virgin Galactic. During this meeting it was outlined that in the next 18 months, their staff will triple from an estimated 80 currently to 240. Commercial space flights will begin in 2020 at a low pace and continue to increase to a point where passengers are taken to space weekly. According to Virgin Galactic, hundreds of passengers have pre-purchased tickets, holding their seats on the first flights to space. Once these flights commence, it is anticipated that not only will the holders of these tickets travel to the Spaceport but family members, media, Legislators and the just plain curious.

Should traffic to this futuristic facility reach expectations, there will be a significant number of travelers and spaceport staff flying into the region prior to boarding spacecraft at the spaceport. This anticipated future makes planning for the future of LRU facilities and the resumption of air service at this airport particularly important.

As Spaceport America reaches its operational goals, LRU will certainly see scheduled air service increase significantly, allowing the reach the City of Las Cruces to either close in on its goal of 20,000 enplanements or exceed it.

Spaceport America 's setting just north of LRU.

Photo Credit: spaceportamerica.com

Regional Setting and Land Use

Las Cruces International Airport is located immediately north of US interstate 10, on the mesa about 10 miles west of downtown Las Cruces.

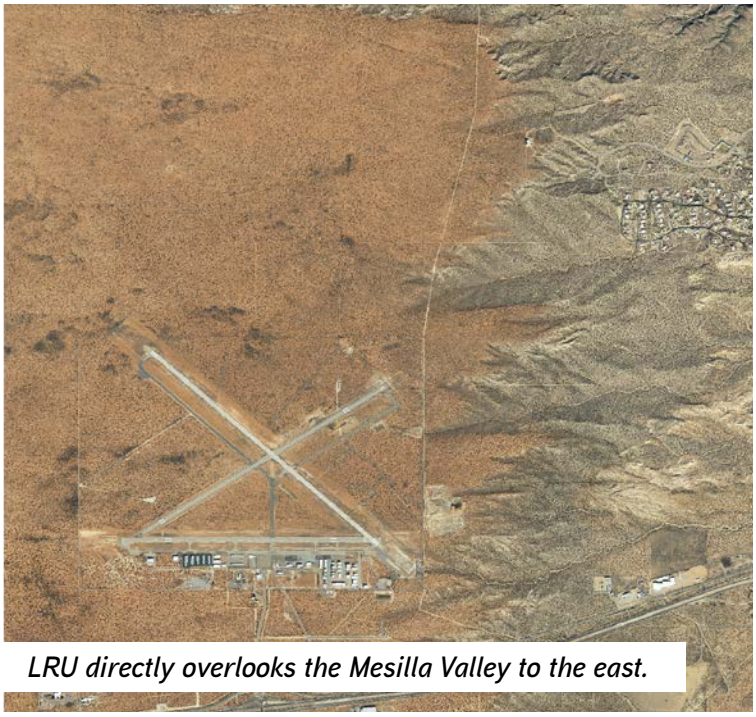
Within 50 miles of LRU are four public use National Plan of Integrated Airport Systems (NPIAS) airports, one military airport, and three airports not classified in the NPIAS. The public use airports include Hatch Municipal Airport (E05), Doña Ana County International Jetport (DNA), El Paso International Airport (ELP) and Bigg's Army Airfield at Fort Bliss (BIF). The closest scheduled passenger air service is located at El Paso International Airport, a 45 minute drive south of Las Cruces. The airport's 2,193 acres are publicly owned by the City of Las Cruces

The airport is home to two Fixed Base Operators (FBO), airport manager, airport staff, the Experimental Aircraft Association Chapter 555, Civil Air Patrol Las Cruces Composite Squadron, NM State University, Mesilla Valley Aviation, and staff, among other private tenants.

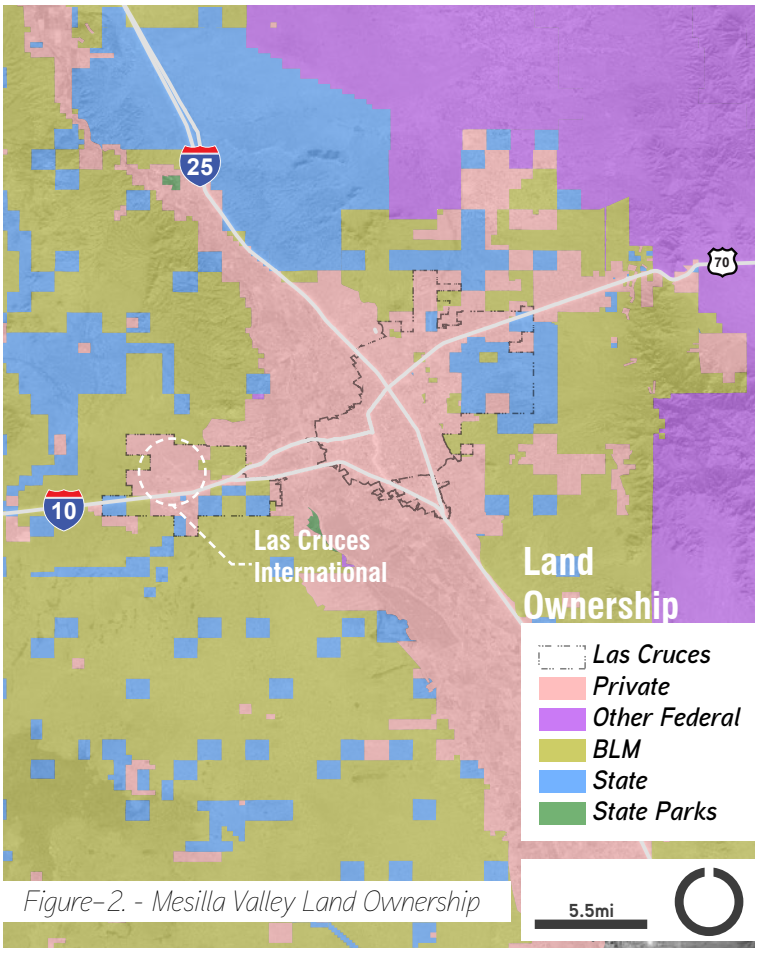
The City of Las Cruces is part of the Mesilla Valley MPO, which provides regional planning services for Las Cruces, Mesilla and part of Doña Ana County. Regional airport planning is funded, in part, by the New Mexico Department of Transportation-Aviation and the Federal Aviation Administration

Land Use & Zoning

Land surrounding the airport is largely undeveloped desert land. The airport itself sits upon a peninsula of private land eight miles west of downtown Las Cruces. This portion was annexed from Doña Ana County in 1990 and is connected with Las Cruces only along the I-10 corridor. The airport and west mesa industrial park make up a majority of these private properties within the western peninsula of Las Cruces. These properties are bordered on all sides by the Bureau of Land Management properties, dotted with New Mexico State inholdings.



LRU directly overlooks the Mesilla Valley to the east.



Figure–2. - Mesilla Valley Land Ownership

The land outside the airport is governed by Las Cruces **Extra-Territorial Zone** (ETZ) which covers five miles outside of the City limits. Beyond those areas lies Doña Ana County which is governed by the county's performance district zoning. The airport itself is zoned M-3C, which is heavy industry with conditional use. The adjacent West Mesa Industrial Park has a special overlay zoning designation. Private parcels outside the airport and industrial park are zoned **Holding Conditional** (HC), and small parcels are zoned commercial adjacent to I-10.

Generally speaking, land uses and zoning surrounding LRU do not pose any concerns with continued and planned operations.

Growth and development within the lands around the airport are protected around the perimeter of the airport. It is critical that LRU protect aeronautical operations from encroachment that could inhibit growth of the Airport. The City has developed an **Airport Operations District** (EAO) and the Airport Operations Overlay Zone District within the Extra-Territorial Zone (ETZ). The EAO affects existing land uses and zoning around the airport, ensuring that future development will be compatible with airport operations.

Demographics

Driveshed

The term "driveshed" describes the areas surrounding a location that can be reached in a certain amount of time traveling posted speed limits on public roads. The 30 minute driveshed from LRU reaches central Doña Ana County, all of Las Cruces, and the Mesilla Valley. This 30 minute drive shed includes New Mexico State University.

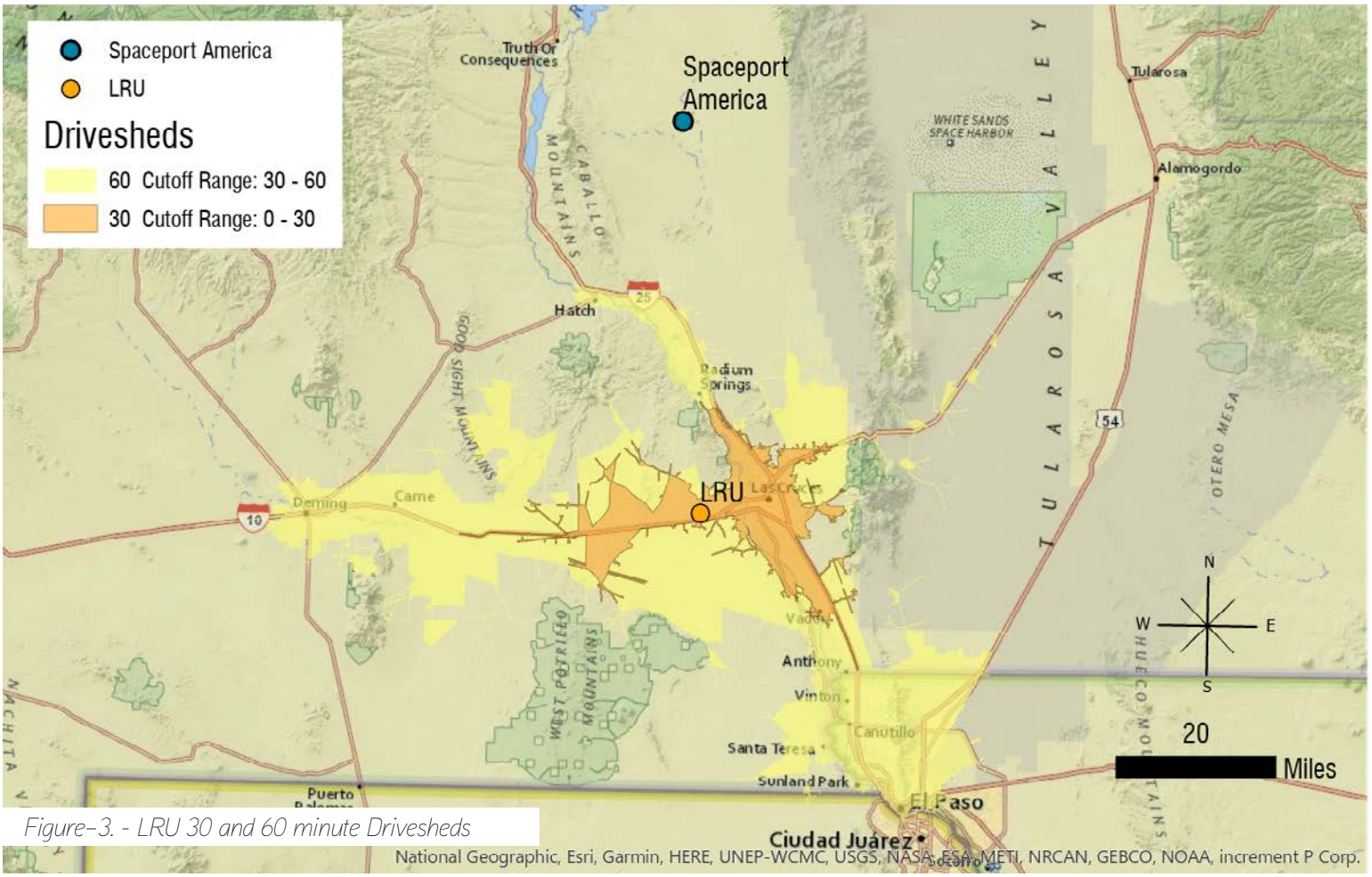


Figure-3. - LRU 30 and 60 minute Drivesheds

By extending drive time to 60 minutes, the airport can reach Luna County, the majority of Doña Ana County, and portions of the El Paso metro area, including El Paso International and related commercial service. At this distance, there are regional general aviation airports to the north, east and south.

Demographics & Local Economy

The populations of central Doña Ana County and Las Cruces have experienced moderate growth in recent decades, increasing the population at a rate of 2.03 percent from 2000-2010 according to the 2010 census. Estimated rates of current and future growth indicate a slowing of this rate, with the 2014-2019 growth rate estimated to be only 0.67 percent. This brings a community with approximately 113,469 residents in 2010 to that of 147,476 residents in 2019. The metropolitan area is growing at a slower rate than the state or nation. The **Metropolitan Statistical Area** (MSA) grew by .34 percent from 2016-17, whereas the state of New Mexico grew by .15 percent in the same period.

Yet real cumulative growth of the economics of this area has been higher than the state and nation since at least 2001. The main driver of the gross metropolitan product (GMP) in the region is state and local government, with 17.3 percent of the average annual share of GMP since 2001. Federal civilian government is the next largest sector, with 14.2 percent off average annual share. This metro-area is highly dependent on the public sector.

The most recent data available for unemployment points to a 5.7 percent unemployment rate, which is slightly higher than the state of New Mexico's rate of 5.1 percent. Tracking these rates since 2008 indicate that the city was less affected by the Great Recession than the state as a whole.

Chapter 2. Inventory of Existing Facilities

Air carrier operations will require airside and landside supporting facilities. The existing airport facilities provide a baseline for comparison when considering the establishment of sustainable air service at LRU. To better understand the status of these facilities and how the development of air service would impact the airport, both on- and off-airport background information was collected. It is the intent of the City of Las Cruces to reinstate commercial air service at the airport. Following is a review of facilities that are important to air service:

- Terminals/Terminal Building
- Terminal Apron Space
- Vehicular Parking
- Runways and Instrument Approach Procedures
- Wind Coverage
- Taxiways
- Aircraft Storage
- Fuel Farm Facilities
- ARFF Index, Facilities, Equipment
- Aircraft Maintenance Facilities
- Ground Support Equipment
  - » Ground Power Unit
  - » Aircraft Tugs and Tow bars
  - » Air Stairs
  - » De icing
  - » Lavatory servicing
- NAVAIDS
  - » Automatic Dependent Surveillance-Broadcast (ADS-B)
  - » Automated Weather Observation System (AWOS)

Las Cruces Aerial

image credit Google Earth

Figure-4. - LRU Airport Diagram

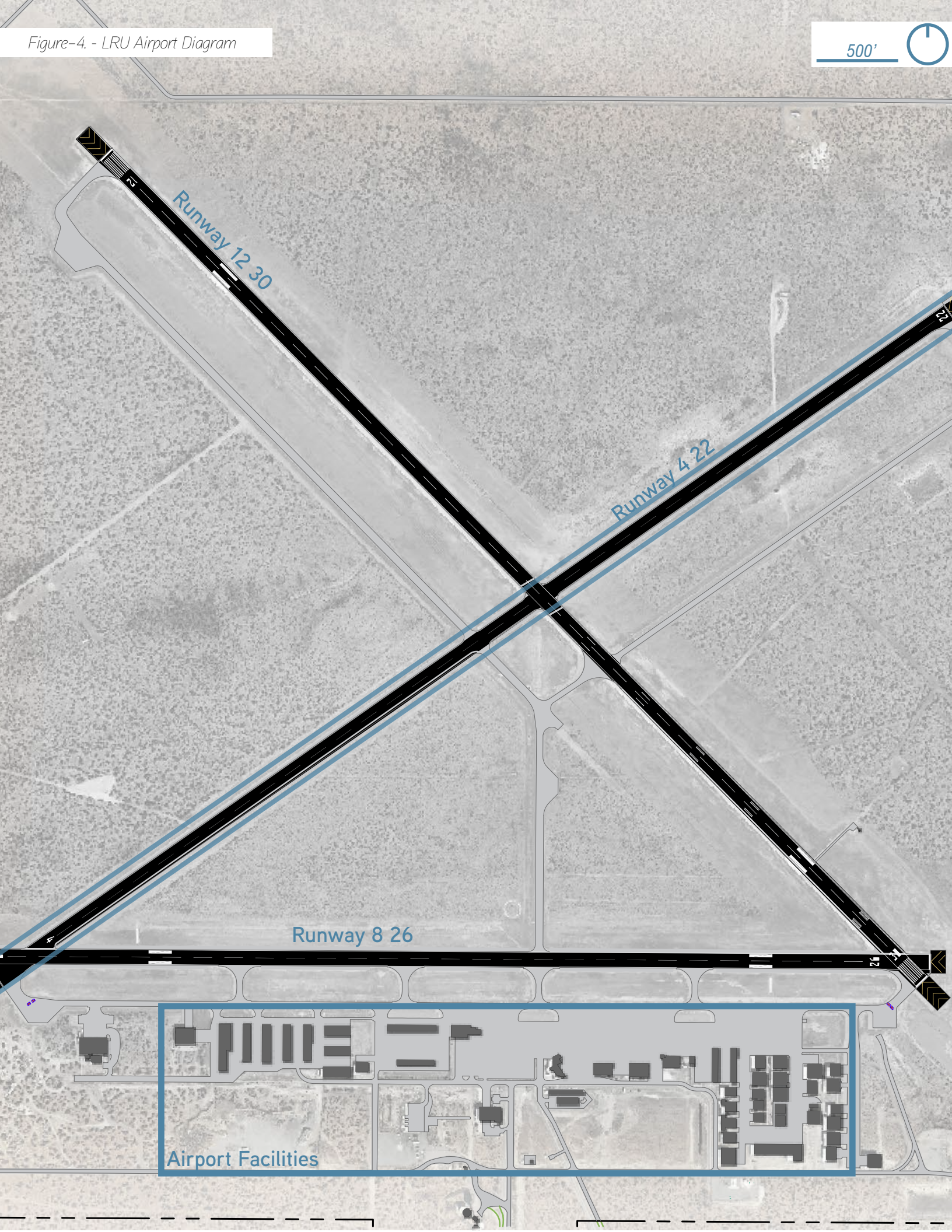
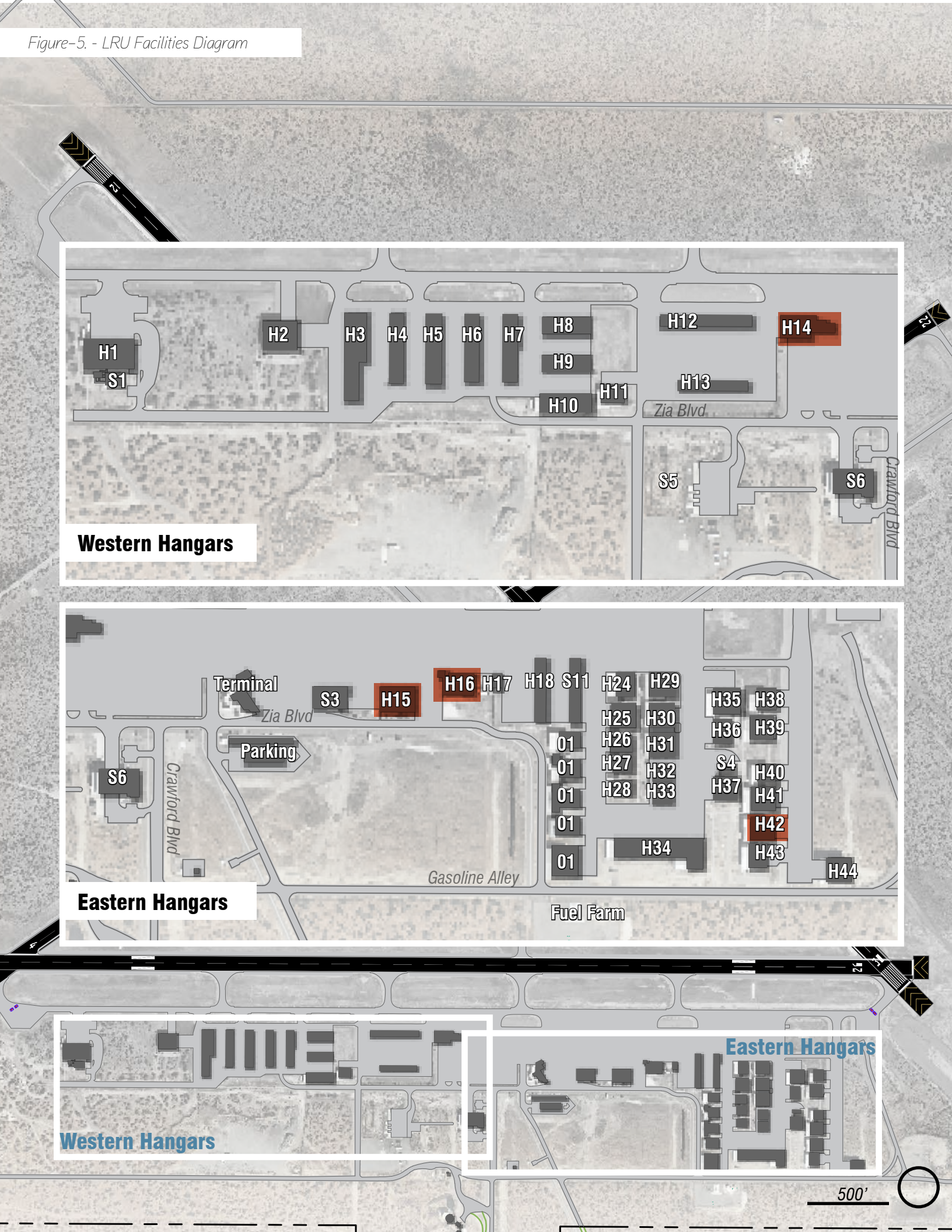


Figure-5. - LRU Facilities Diagram



Terminals

The airport terminal is a building where passengers transfer between ground transportation and the facilities that allow them to board and disembark from aircraft. Within the terminal, passengers purchase tickets, transfer their luggage and, in some cases, go through security. Following is a review of the LRU terminal building (Building 8990) and the building adjacent to it, Building 8960.

Terminal Building 8990

Terminal building 8990 is a 14 foot tall, single story, 4,400 square foot building located south of and mid-field of Runway 8/26 and adjacent to the main apron. Building 8990 was built in 1975 and remodeled in 1984. Historically, 8990 was used to accommodate commercial air carrier passengers. Currently, the terminal building houses airport management, restrooms, and Francis Aviation, one of two FBOs. Francis Aviation occupies much of the building's current space and, according to their lease, utilizes the space for administrative offices, flight line service, restrooms, and a pilot's lounge.

Building code review

The City ordered a situational assessment of Building 8990 as part of the Las Cruces International Airport Terminal Planning document, dated November 2019. The assessment included a code review. As part of the review, it was determined that the occupancy classification for Building 8990 is Assembly A-3 and Business B, Non-Separated Mixed. The following serves as a summary of Building 8990 code review relevant to air service development:

- 2015 International Building Code (IBC) maximum building height is 40 to 55 ft depending on construction type.
- Allowable Building Area/No Sprinklers is 6,000 - 9,500 sf depending on construction type.
- Automatic fire sprinkler system is required in A-3 occupancy when the floor area exceeds 12,000 sf or

Building 8990

the occupant load is greater than 300.

- Building 8990 current occupant load is 129; 121 in waiting areas and 8 in accessory office areas.
- The terminal lacks space for evolving operational and administrative needs for LRU.
- The terminal lacks the professional image of the communities "front door" and does not engender a good first impression for either tourism or business travel.

Part 77 Review

Building 8990 is 14 feet in height above ground level (AGL) and the set back distance from the primary surface area of Runway 8/26 is 500 feet. Building 8990 does not penetrate 14 CFR Part 77 airspace. When considering future development at the current terminal location, one assumption is that Runway 8/26 will remain a visual only runway without an instrument approach procedure. At a lateral distance of 500 feet from Runway 8/26 primary surface, Building 8990 could be constructed vertically up to 71 feet tall. If the airport were to consider the development of an instrument approach procedure in the future for Runway 8/26, the maximum height for Building 8990's location would be 53 feet tall.

Figure-6. - Building 8990 Location

Fixed-Base Operations - Building 8960

This 14 foot tall, single story, 10,400 sf fixed-base operator building was never designed to be a passenger terminal. Located immediately east of building 8990, it currently serves airport use as an administrative office suite with limited bunks to accommodate overnight stays. Though it has been considered for passenger terminal use, its current aspect does not make it an ideal choice. Current uses in this building are administrative offices, flight training, and operator's quarters. The City inferred that a vendor is currently looking to develop the building and has considered shifting the secure area to the east/northeast corner to accommodate its use.

Building code review

The City ordered a situational assessment of Building 8960 as part of the Las Cruces International Airport Terminal Planning document, dated November 2019. The assessment included a code review. As part of the review, it was determined that the occupancy classification for Building 8960 is Mixed Business-B and Residential-R due to the bunk quarters.

A summary of Building 8960 code review, relevant to air service development, include the following:

- 2015 International Building Code (IBC) maximum building height is 40 to 55 ft depending on construction type.
- Allowable Building Area/No Sprinklers is 9,000 - 23,000 sf depending on construction type.
- If the building is of Construction Type VB, combustible construction, a fire-sprinkler system becomes a mandatory element if proceeding with alteration/renovations.
- Building 8960 occupant load based on gross area: 1,000 and 3 exits required.

Part 77 Review.

Building 8960 is 14 feet in height Above Ground Level (AGL) and the set back distance from the primary surface area of Runway 8/26 is 545 feet. Building 8960 does not penetrate 14 CFR Part 77 airspace. When considering future development at the Building 8960, one assumption is that Runway 8/26 will remain a visual only runway without an instrument approach procedure. At a lateral distance of 545 feet from Runway 8/26 primary surface, Building 8960 could be constructed vertically up to 77 feet tall. If the airport were to consider the development of an instrument approach procedure in the future for Runway 8/26, the maximum height for Building 8990's location would be 60 feet tall.

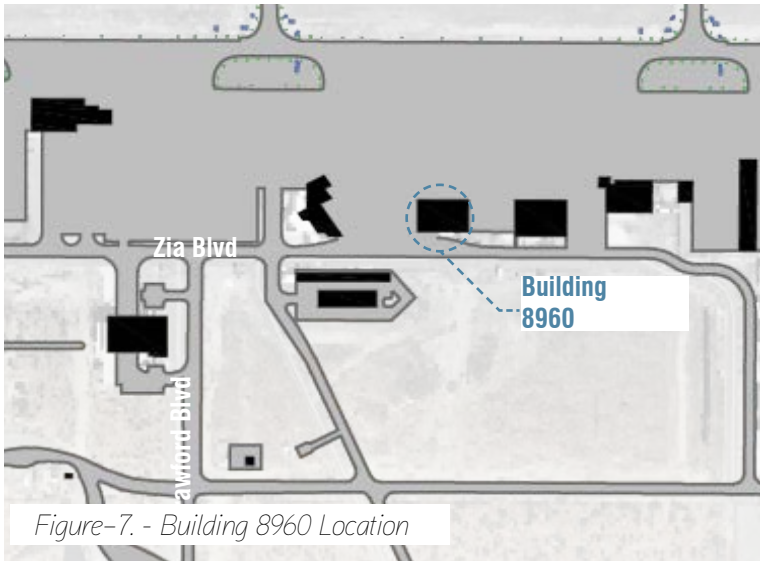


Figure-7. - Building 8960 Location


Building 8960

Apron Space

As air service is developed and air carrier operations begin, the airport will need to provide safe and orderly unrestricted access to air carrier aircraft as they land and taxi to the terminal to off load and load passengers.

The access to the terminal building and the area needed will depend heavily on the size of the aircraft. The airport's critical design aircraft is categorized as a C-II aircraft. Airplane Design Group (ADG) II aircraft have a wingspan of no less than 49 feet and up to 79 feet. Typical aircraft in this category include the Canadian Regional Jet (CRJ) 145, a 50 passenger aircraft. Wing tip clearances on the General Aviation (GA) Terminal Apron will need to be considered in the apron sign and marking plans.

The 2017 Airport Action Plan anticipates that the airport will have an excess number of tie-downs and apron space for the 20-year planning period (2015 - 2035).

The airport has control of most of the tie-downs on the Terminal Apron while Southwest Aviation has 30 tie-downs in its leasehold area.

At the time of this writing, the airport plans to reconstruct and paint new markings on the terminal apron (Feb. 2020). The plan accounts for 14 tie-downs, a vehicle service road, designated fuel truck parking for four (4) fuel trucks, a 60 feet by 60 feet concrete hardstand pad for large aircraft, and ADG - II taxi lane centerline markings. The marking plan is depicted in Figure 8 below. Depending on the air service aircraft, the apron space may be a concern. If the apron is full, it may be difficult for an airline to have more than one aircraft at the terminal at a time. It is not uncommon for the airline to have a scheduled aircraft, an "ahead of schedule" aircraft and an aircraft down for maintenance.

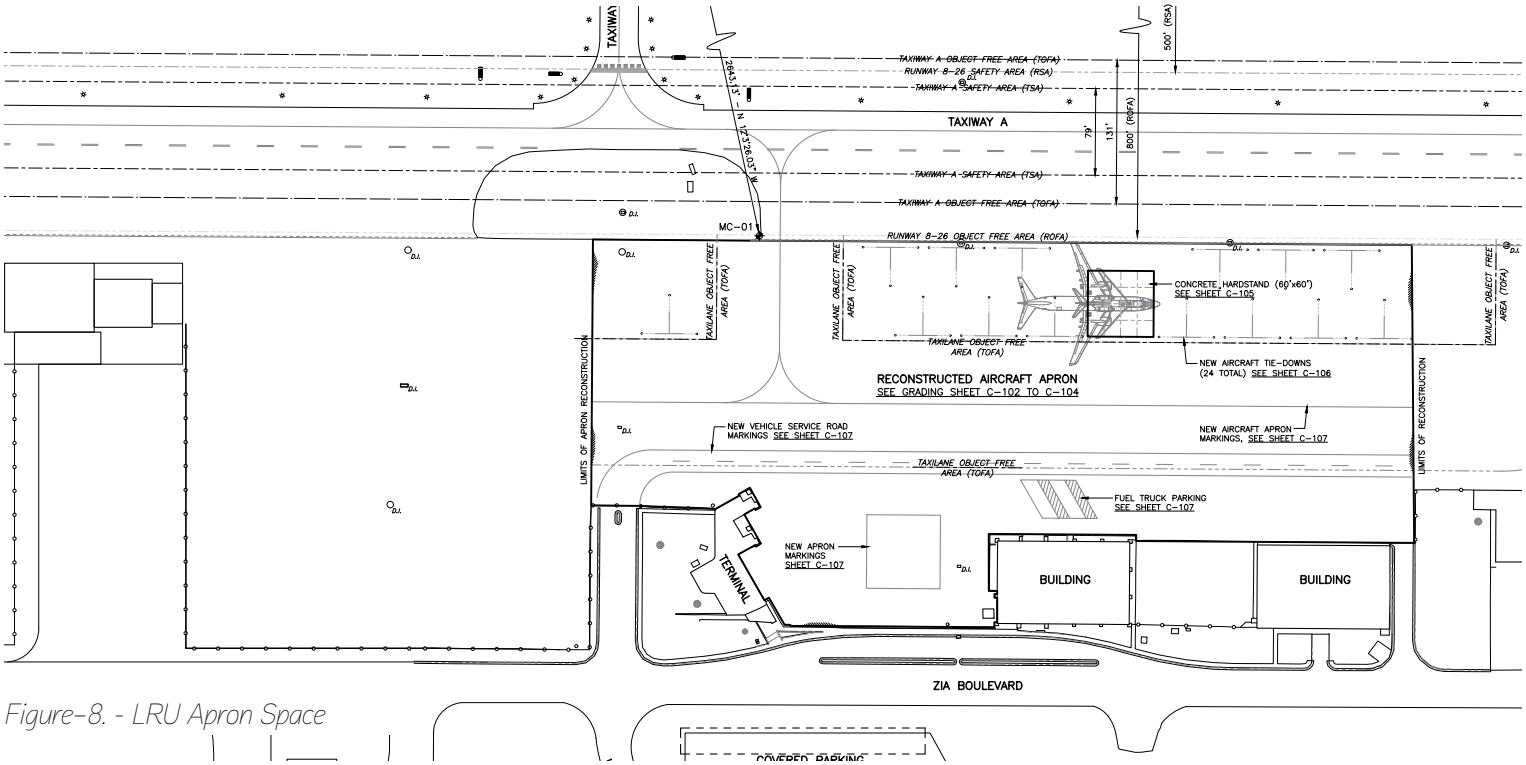


Figure-8. - LRU Apron Space

Image Credit : Monzel Corbin / City of Las Cruces

Vehicular Parking

Exit 132 of Interstate 10 provides direct access to Crawford Boulevard and LRU parking, hangars, and terminals. Access is also possible on Frontage Road which parallels the interstate. Circulation within the airport and to various buildings and hangars is serviced by Zia Road. Terminal Building parking is located south of Zia Boulevard, with approximately 30,000 sf of dedicated parking space. All 46 covered parking spaces are owned by the City of Las Cruces, which includes two disabled spaces. Airport tenants such as Southwest Aviation have additional parking areas available next to their buildings.

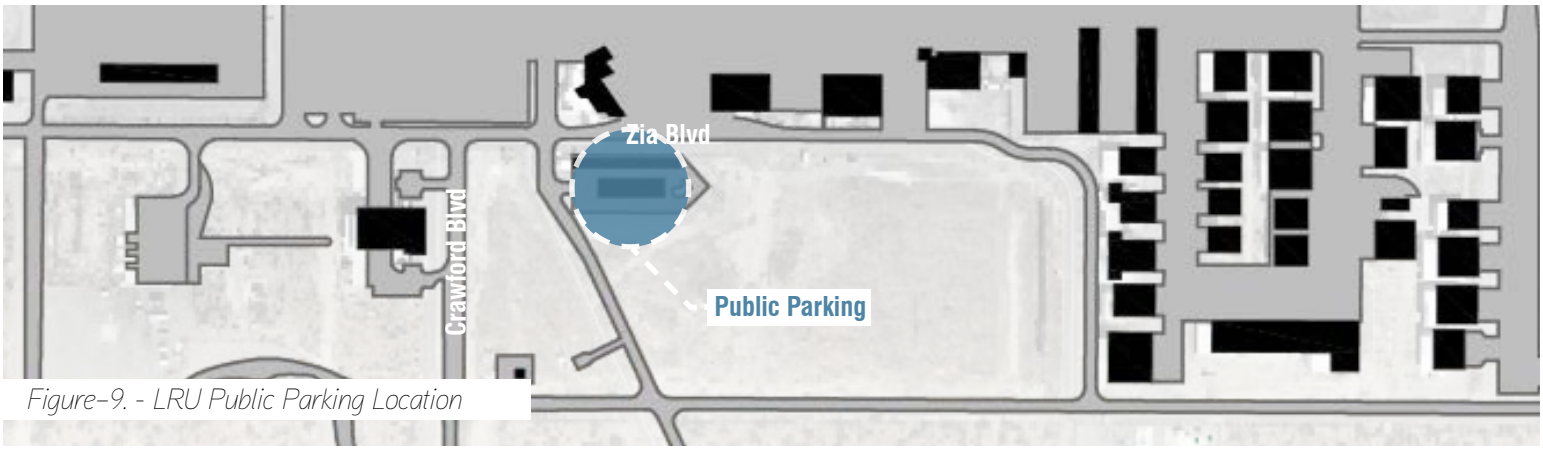


Figure-9. - LRU Public Parking Location

LRU Public Parking

Runways & Instrument Approach Procedures

Runway 12/30

Runway 12/30 is the primary runway and is 7,506 feet long by 100 feet wide. The full length runway surface type is concrete, grooved to aid in reducing aircraft stopping distance. The LRU Part 139 Airport Certification Manual, identifies Runway 12/30 as an air carrier runway. The runway has a single wheel and double wheel weight bearing capacity of 70,000 pounds and 120,000 pounds, respectively. According to the 2014 New Mexico Department of Transportation Pavement Condition Index (PCI) study, it was determined that Runway 12/30 has a PCI of 100 (scale 0-100), however, the FAA Form 5010 reports the Pavement Condition Number (PCN) as 41.

Lighting and approach aids include high intensity runway lighting (HIRL), with Non-Precision Instrument (Runway 12) and Precision Instrument (Runway 30) markings. Runway 12 has Runway End Identifier Lights (REIL) while Runway 30 is equipped with Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR). The MALSR and REILS are owned, maintained and operated by the FAA for Runway 12.

Runway 12/30 is the only runway at Las Cruces that is served by Instrument Approach Procedures. These procedures, as of January, 2020, are as follows:

- ILS or LOC RWY 30
- RNAV (GPS) RWY 12
- RNAV (GPS) RWY 30

As air service is developed for LRU, it is important that the airport protect the airspace in and around the airport. This is a requirement of the FAA Sponsor Assurances. The airport has done an excellent job in the area of zoning. It is equally important that the airport institute a vegetation management plan that will ensure that vegetation does not impact the approach surfaces to the airport. A basic review of the instrument approaches was conducted in an effort to identify any potential issues for future air carrier operators to utilize the airport.. This included the review of the December 2018 Airport Master Record (5010) and the 2015 instrument approach procedures included in the 2017 LRU Action Plan. The review of the three instrument approaches follows:

Runway 12/30 is the only runway at Las Cruces that is served by instrument approach procedures.

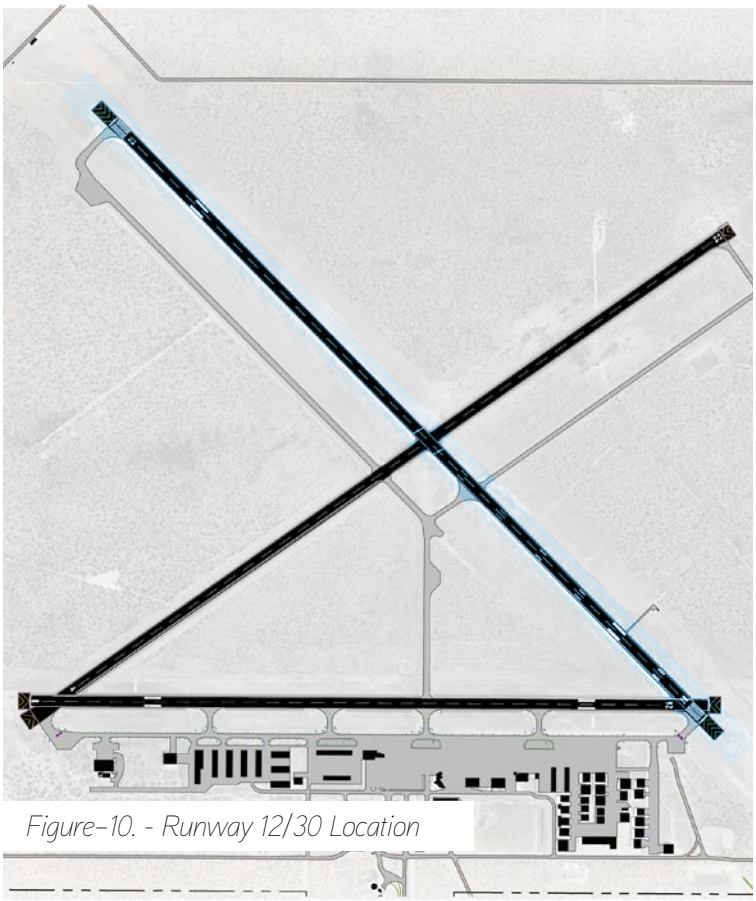


Figure-10. - Runway 12/30 Location

ILS or LOC RWY 30

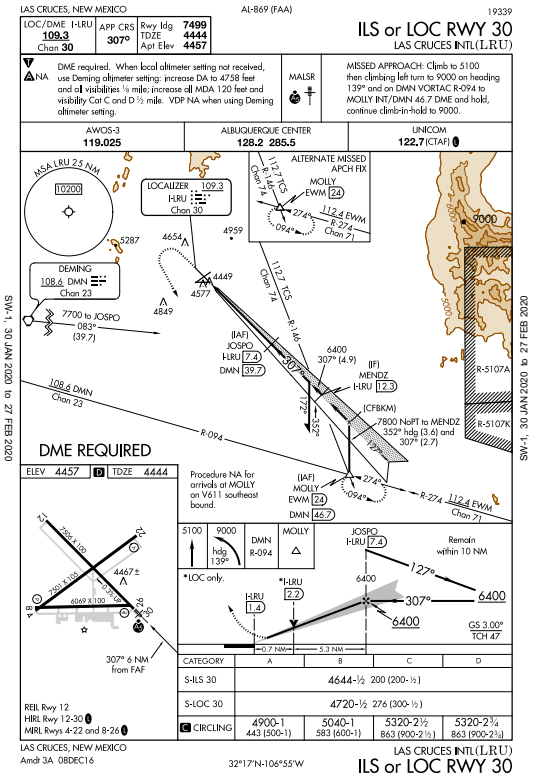
Installed in 1992, and upgraded in 2019, the Instrument Landing System (ILS) provides the pilot with both runway lateral alignment through the ground based Localizer antenna as well as vertical glideslope alignment through the ground based Glide Slope antenna. The FAA owns and operates the ILS. The airport protects and maintains Localizer and Glide Slope critical areas on the airport property.

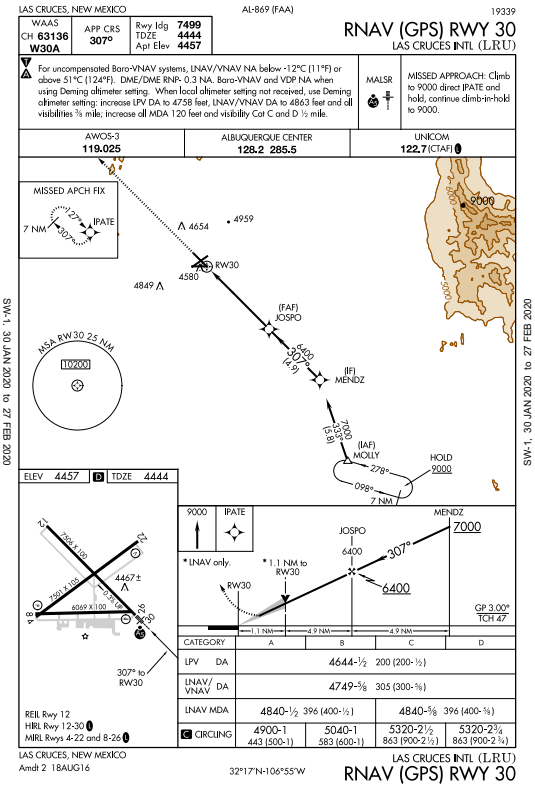
The straight-in ILS altitude and visibility minimums for this approach are 200 feet and ½ mile, respectively.

According to the December 2018, Airport Master Record (5010), Runway 30 has no reported obstructions.

Since completion of the 2017 LRU Action Plan the notable changes to the ILS or LOC RWY 30 Precision Instrument approach procedure include:

- Declared distances reducing usable runway length from 7,506' to 7,499'. Non-impactful.
- Restricted Airspace R-5107B, northeast of LRU no longer considered. Non-impactful.
- Distance Measuring Equipment (DME) is now required for the full procedure.





RNAV (GPS) RWY 30

This procedure is a localizer performance with vertical guidance (LPV) approach that uses the Wide Area Augmentation System (WAAS) and has very precise GPS capabilities to attain an airplane's position.

The straight-in RNAV (GPS) decision altitude and visibility minimums for this approach are 200 feet and ½ mile, respectively.

According to the December 2018, Airport Master Record (5010), Runway 30 has no reported obstructions.

Since completion of the 2017 LRU Action Plan the notable changes to the RNAV (GPS) RWY 30 Non-Precision Instrument approach procedure include:

- Declared distances reducing usable runway length from 7,506' to 7,499'. Non-impactful.
- Restricted Airspace R-5107B, northeast of LRU no longer considered. Non-impactful.
- A 50 feet reduction in the decision altitude (DA) from 4,694. MSL to 4,644' MSL.
- A reduction in the glidepath angle from 3.05 degrees to 3.00 degrees.

RNAV (GPS) RWY 12

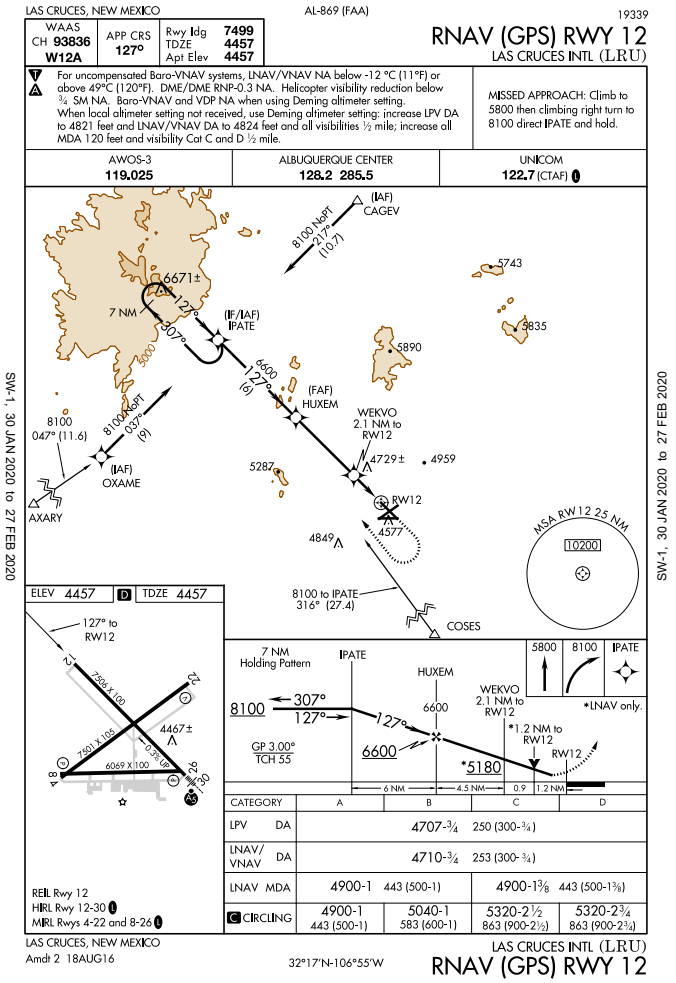
This procedure is a localizer performance with vertical guidance (LPV) approach that uses the WAAS and has very precise GPS capabilities to attain an airplane's position.

The straight-in RNAV (GPS) decision altitude and visibility minimums for this approach are 250 feet and ¾ mile, respectively.

According to the December 2018, Airport Master Record (5010), Runway 12 has no reported obstructions.

Since completion of the 2017 LRU Action Plan the notable changes to the RNAV (GPS) RWY 12 Non-Precision Instrument approach procedure include:

- Declared distances reducing usable runway length from 7,506' to 7,499'. Non-impactful.



Runway 8/26

Runway 8/26 is considered a visual approach, crosswind runway and is 6,069 feet long by 100 feet wide. The runway surface type is asphalt. According to the 2018 Airport Master Record (5010) the asphalt is in good condition and the LRU Part 139 ACM, identifies Runway 12/30 as an air carrier runway. Take Off Distance Available (TODA) and Landing Distance Available (LDA) are both the full length of the runway at 6,069 feet. The runway has a single wheel and double wheel weight bearing capacity of 70,000 pounds and 120,000 pounds, respectively. According to the 2014 New Mexico Department of Transportation PCI study, it was determined that Runway 8/26 has a PCI of 76 (scale 0 - 100), however, the FAA Form 5010 reports the PCN as 25.

Lighting and approach aids include Medium Intensity Runway Lights (MIRL) with basic runway markings that are in good condition. Runway 8 and Runway 26 both have 4-box, Precision Approach Path Indicators (PAPI) providing a 3.0 degree glide path with a threshold crossing height of 50 feet. The PAPI is owned, operated and maintained by the FAA. No approach lights or runway end indicator lights are installed on this runway.

Runway 8/26 is not served by an instrument approach procedure. At the time of the document (January 2020) there are no documented obstructions for either runway end.

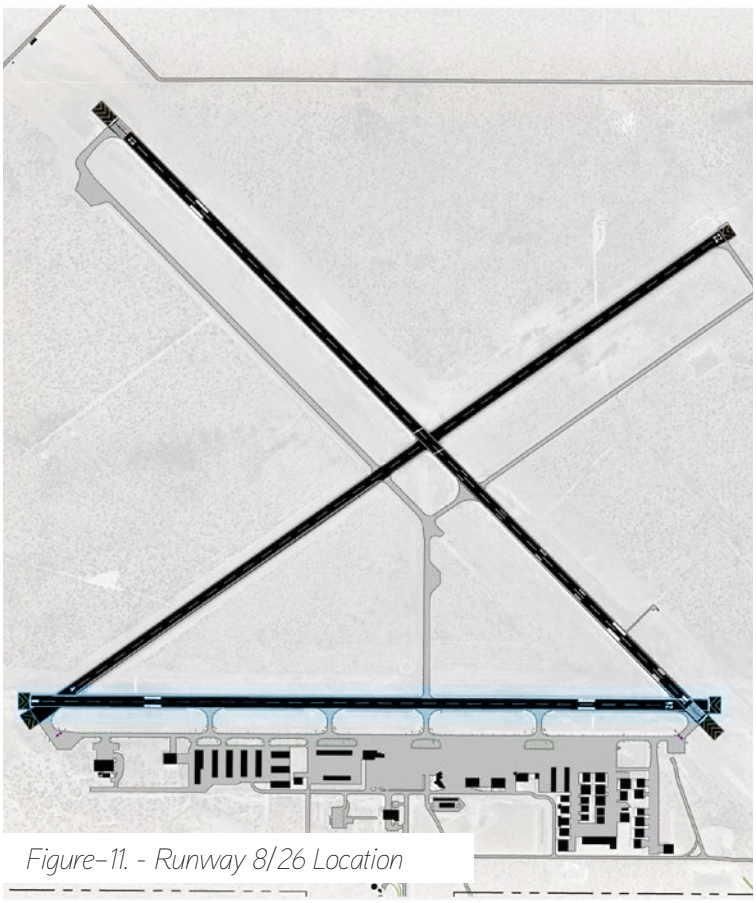


Figure-11. - Runway 8/26 Location

Runway 4/22

Runway 4/22 is considered a visual approach, crosswind runway and is 7,501 feet long by 105 feet wide. The runway surface type is asphalt. According to the LRU Airport Certification Manual, **Runway 4/22 is not identified as an Air Carrier Movement area, therefore, may not be utilized for Air Carrier Operations.** According to the 2018 Airport Master Record (5010) the asphalt is in poor condition with cracked slabs, open 1/8th inch, and spalling sealant failure in multiple joints. The runway has a single wheel and double wheel weight bearing capacity of 30,000 lbs. According to the 2014 New Mexico Department of Transportation Pavement Condition Index (PCI) study, it was determined that Runway 4/22 has a PCI of 57 (scale 0 - 100), however, the FAA Form 5010 reports the Pavement Condition Number (PCN) as 3.

Lighting and approach aids include MIRLs with basic runway markings that are in fair condition. Runway 22 has a 4-box, Visual Approach Slope Indicator (VASI) providing a 3.0 degree glide path with a threshold crossing height of 64 feet. The VASI is owned, operated and maintained by the FAA. No approach lights or runway end indicator lights are available.

Runway 4/22 is not served by an instrument approach procedure. At the time of this document (January 2020) there are no documented obstructions for either runway end.

As air service is developed, it will be important that the runway length for proposed air carriers is evaluated to verify the type aircraft will have adequate room to land and depart the aircraft.

Runway 4/22 is not identified as an Air Carrier Movement area and may not be utilized for Air Carrier Operations.

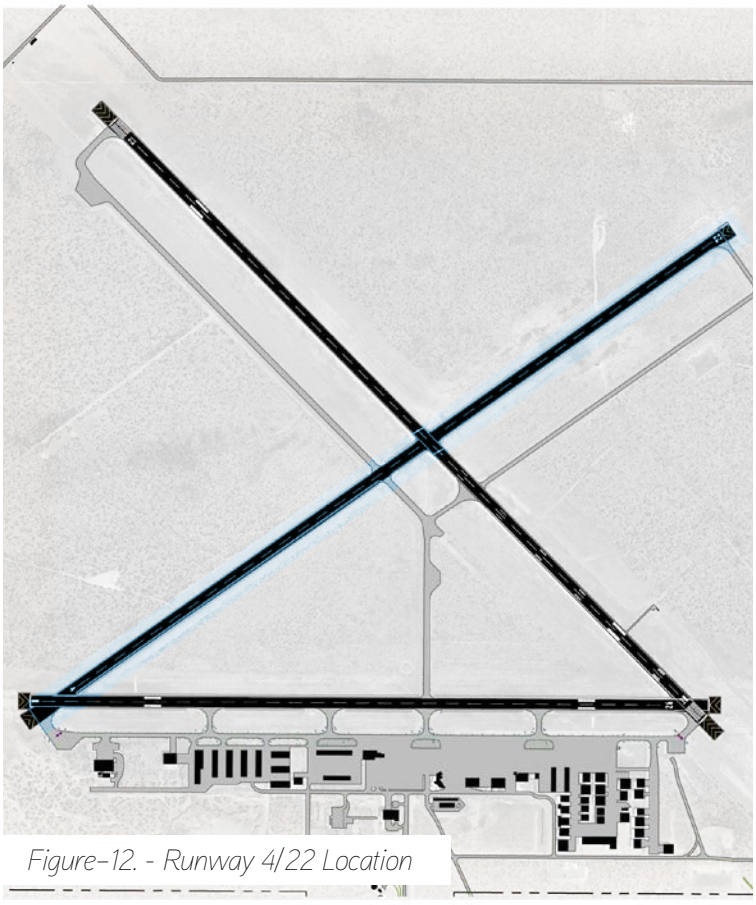


Figure-12. - Runway 4/22 Location

Wind Coverage

Sitting in a mesa, LRU is subjected to varied wind; velocity and direction. As the potential for air service is evaluated it is important to not only review the supporting infrastructure such as runway length and runway/taxiway width, but also the meteorological factors associated with the airport. There are airports in the United States that are situated well geographically, however, struggle with the harsh meteorological conditions, minimize success rates of landing aircraft.

Wind patterns and runway crosswind conditions are an important meteorological factor in assessing runway utilization and determining runway design requirements in accordance with FAA aircraft category standards. Crosswind coverage is the component of wind speed and relative direction acting at right angles to the runway—the greater the angle, the more difficult the landing. The FAA desirable threshold for adequate crosswind coverage is 95 percent minimum.

The 2017 LRU Action Plan determined that the airport should maintain its designation as a C-II airport throughout the planning period (Chapter Two, Forecasts of Aviation Demand, Section 6, Pg 2-6). As a part of the development of the Action Plan, a wind analysis (Chapter 1, Inventory of Existing Conditions, Pg. 1-27) was conducted. FAA Advisory Circular (AC) 150/5300-13A specifies the maximum allowable crosswind component for C-II runways as 16 knots. As part of the wind analysis, all three runways at LRU were analyzed independently. It was determined that only Runway 8-26 provides adequate wind coverage during all weather conditions for crosswind components of 16 knots (6,069' in length, PCN 25, 2014 PCI 76) . The analysis goes on to say that when multiple runways are in operation, any two of the LRU runways combined provide the desired 95 percent coverage during all weather conditions for crosswind components of 16 knots. It should also be noted that according to the LRU Airport Certification Manual, Runway 4/22 is not identified as an air carrier movement area, therefore, may not be utilized for Air Carrier Operations.

During Instrument Flight Rules (IFR) conditions, no single runway provides 95 percent coverage for all crosswind components considered. As air service at LRU is developed it is most likely that only larger aircraft will be considered for a scheduled air carrier utilizing aircraft greater than 12,500 lbs.

Taxiways

Each of the LRU Taxiways A through G have been identified as Air Carrier Movement areas. Each Taxiway has a single wheel and double wheel weight bearing capacity of 70,000 pounds and 120,000 pounds, respectfully. The following depicts relevant data for each of the LRU Taxiways:

As air service is developed, it will be important that the turn radius for proposed air carriers are evaluated to verify the type aircraft will have adequate room to maneuver the aircraft.

Table –2 - LRU TAXIWAYS DESIGNATED AIR CARRIER MOVEMENT AREAS

Taxiway	*Length*	*Width*	*Surface*	*Strength*	*Safety Area*
A	*6,200'*	*35'*	*ASPHALT*	*70S 120D*	*79' (22' ea. Side of pavement)*
B	*2,300'*	*50'*	*ASPHALT*	*70S 120D*	*120' (35' ea. Side of pavement)*
C	*4,500'*	*50'*	*ASPHALT*	*70S 120D*	*120' (35' ea. Side of pavement)*
D	*300'*	*35'*	*ASPHALT*	*70S 120D*	*Within 12/30 & B Safety Area*
E	*200'*	*35'*	*ASPHALT*	*70S 120D*	*Within 8/26 & A Safety Area*
F	*200'*	*35'*	*ASPHALT*	*70S 120D*	*Within 8/26 & A Safety Area*
G	*200'*	*35'*	*ASPHALT*	*70S 120D*	*Within 8/26 & A Safety Area*

Aircraft Storage

Hangars are used to protect aircraft from the weather, direct sunlight and for maintenance, repair, manufacture, assembly, and storage. The current FBOs and the City own and operate hangars at LRU. Depending on the air service aircraft, these facilities may have the potential to support the uses described above. If an air carrier determines that they need to remain overnight (RON) or requires maintenance, aircraft storage, tie-down or maintenance facilities, having aircraft storage would be beneficial. Following is a review of City and FBO facilities. Private hangars were not included in this review.

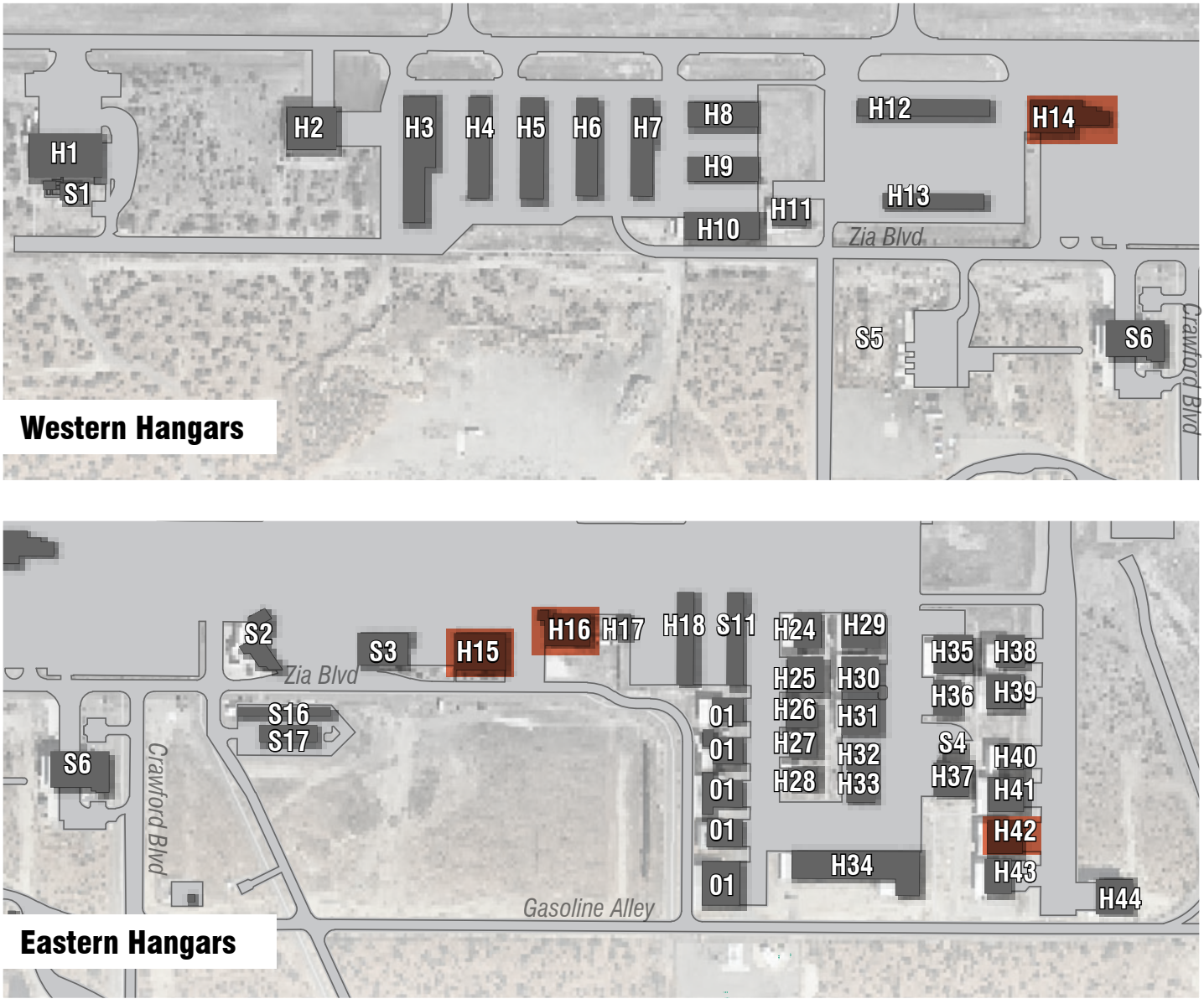


Figure-13. - Hangar Location Diagram

Hangar 14

Hanger 14 is a 70' x 70' (4900 square feet) aircraft hangar owned and occupied by Southwest Aviation. The hangar is affixed and adjacent to the Southwest FBO facility, located west of the airport terminal building and adjacent to Apron B, providing aircraft with unrestricted access. According to the Southwest Aviation, Inc. West lease, permitted operations include the housing, inspection, maintenance and storage of aircraft (Article B (vii)). Required facilities include one large hangar with a minimum of 4,800 within which the hangar may be used for airframe and engine repair, avionics, instrument and propeller repair activities.

Hangar 14 Dimensions:

Length: 70'
Width: 70'
Door Width: 68'
Door Height: 15'

Hangar 14

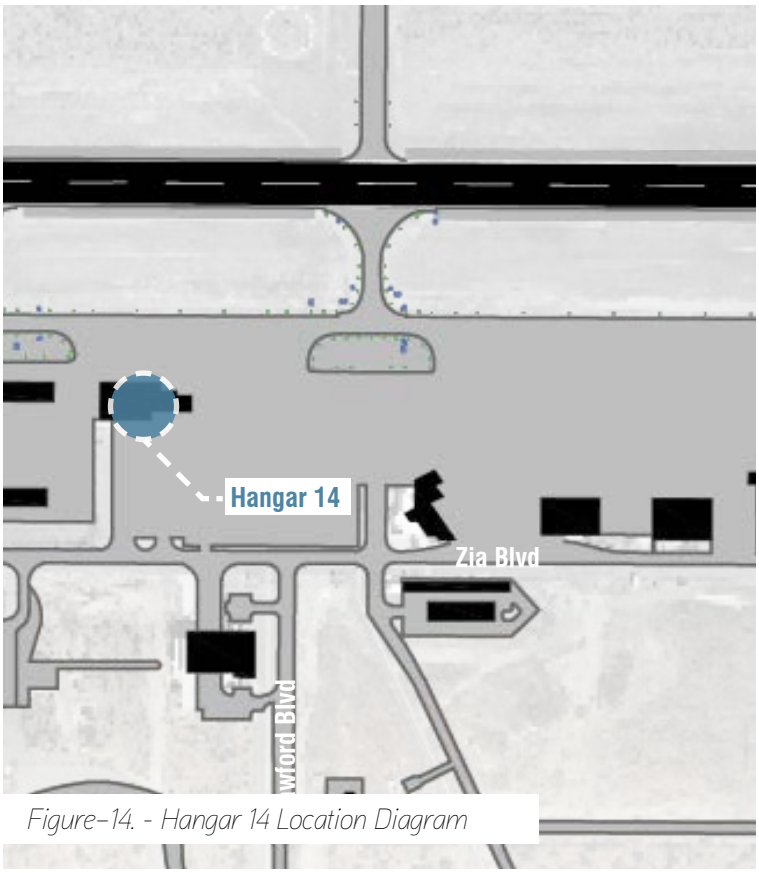


Figure-14. - Hangar 14 Location Diagram

Hangar 15 (Building 8950)

Hangar 15 is a 120' x 80' (9600 square feet) aircraft hangar owned by the City of Las Cruces and currently leased to the New Mexico Army National Guard (NMARNG) for the storage of Lakota UH-72 helicopters. This hanger is a stand alone building located west of the airport terminal building and adjacent to the Military Apron, providing aircraft with unrestricted access. Building 8950 has potential to be used as remain overnight (RON) heated storage. The NMARNG is currently constructing a new facility adjacent to the airport. Once complete, this hangar and its associated lease, will be released to the City.

Hangar 15 Dimensions:

Length: 80'
Width: 120'
Door Opening: 110'
Door Height: 25'

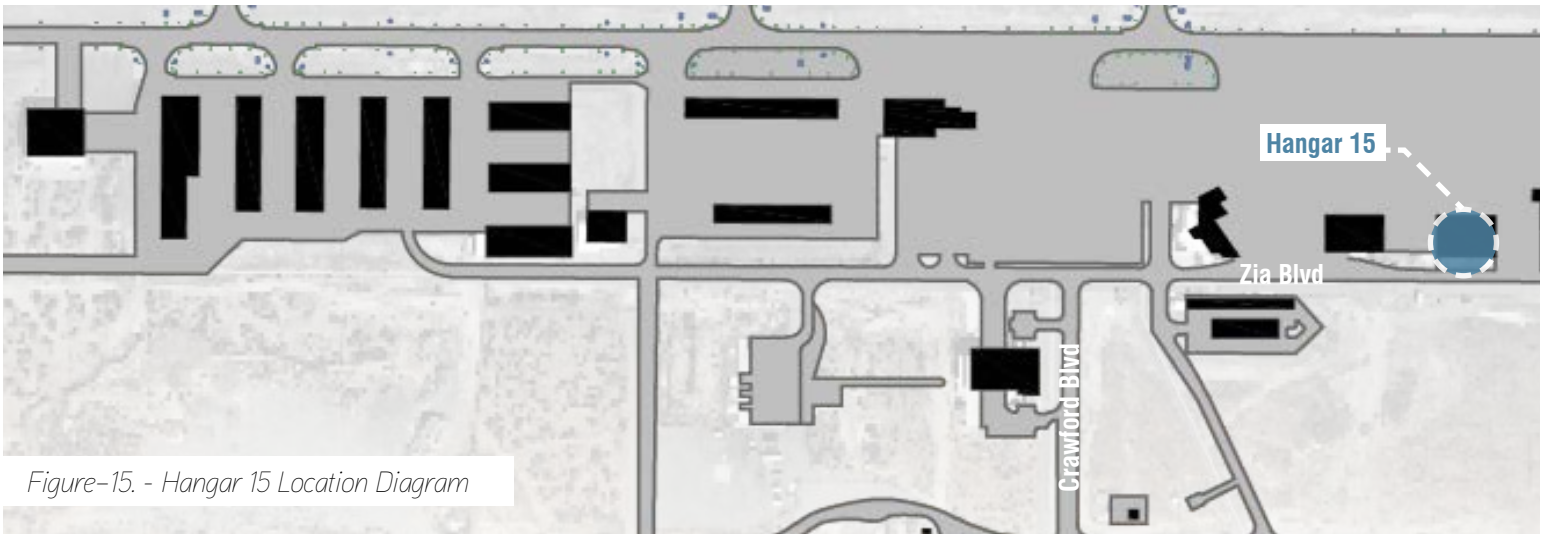


Figure-15. - Hangar 15 Location Diagram

Hangar 15

Hanger 16

Hanger 16 is an 80' x 80' (6400 square feet) aircraft hangar owned and occupied by Southwest Aviation. The hangar is a free standing facility located west of the airport terminal building and adjacent to the west GA Apron providing aircraft with unrestricted access. Permitted uses include aircraft storage.

Hangar 16 Dimensions:

Length: 80'
Width: 80'
Door Opening: 75'
Door Height: 15'

Figure-16. - Hangar 16 Location Diagram

Hangar 16

Hangar 42

Hangar 42 is a 60' x 60' (3,600 square feet) aircraft storage hangar owned by the City and leased to Francis Aviation. This hangar is a free standing, unheated, facility east of the terminal building and the fifth hangar along Taxilane 1. The hangar is used for aircraft storage.

Hangar 42 Dimensions:

Length: 60'
Width: 60'
Door Opening: 54'
Door Height: 14'

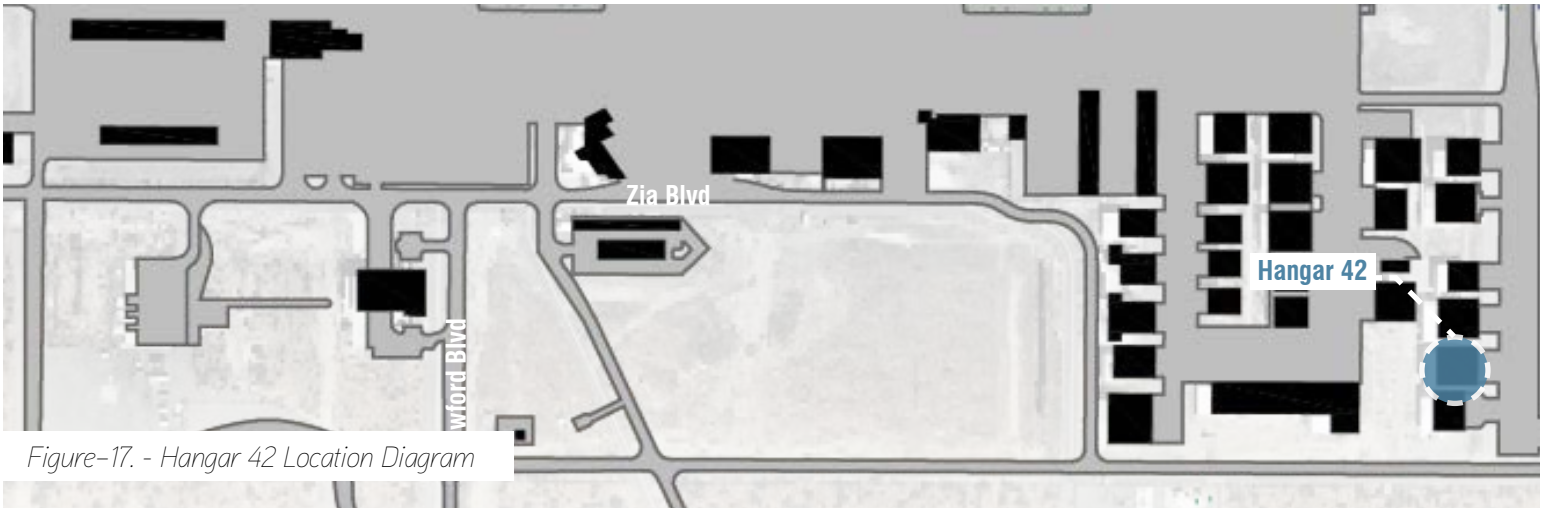


Figure-17. - Hangar 42 Location Diagram

Hangar 42

Fuel Farm Facilities

Francis Aviation

In 2014, the City of Las Cruces constructed a new fuel farm consisting of one 12,000 gallon above ground tank for the storage of 100LL aviation fuel and one 12,000 gallon above ground tank for the storage of JetA fuel. The City currently leases this fuel farm to Francis Aviation, one of two FBOs conducting commercial aeronautical services on the Airport. Francis Aviation is open 7 days per week from 6am to 6pm, after which, service is provided on a call-out basis. Francis Aviation utilizes the aviation fuel tanks to top off their mobile fuel trucks to service its customers.

An interview with the manager of Francis Aviation in December of 2019 revealed further insights into the operations currently underway at this facility. Francis Aviation uses Avfuel as a fuel vendor. There are no restrictions on the FBO with regard to refueling or cathodic test requirements beyond what the FBO conducts themselves, which include monthly, yearly, and quarterly checks on hoses, tanks and related equipment applied per industry standards.

When asked regarding Francis Aviation's thoughts on increased demands on fuel due to resumptions of air service, they did not see any issues with being able to supply two-2,000 gallon planes daily. Francis Aviation, on average (basis 2016 - 2018), sells approximately 284,000 gallons of JetA and 100LL combined. JetA equates to approximately 85 percent of their total annual sales.

Francis indicated that there is no current agreement between Francis Aviation and Southwest with regards to who fuels transient aircraft. At this point, it would be up to the aircraft operators to choose their FBO.

Current fuel flowage fees are $.06/per gallon. Francis leases a portion of the terminal building 8990. Plans to develop additional facilities were discussed in concept during this interview, however Francis Aviation management indicated that level of planning for the future is still to be determined.

Southwest Aviation

Southwest Aviation owns and operates a similarly sized fuel farm, configured in the same fashion as the City owned fuel farm. The Southwest Aviation fuel farm consists of one 12,000 gallon above ground tank for the storage of 100LL aviation fuel and one 12,000 gallon above ground tank for the storage of JetA Fuel. The City currently leases the footprint to Southwest Aviation on which the Southwest Aviation fuel farm resides.

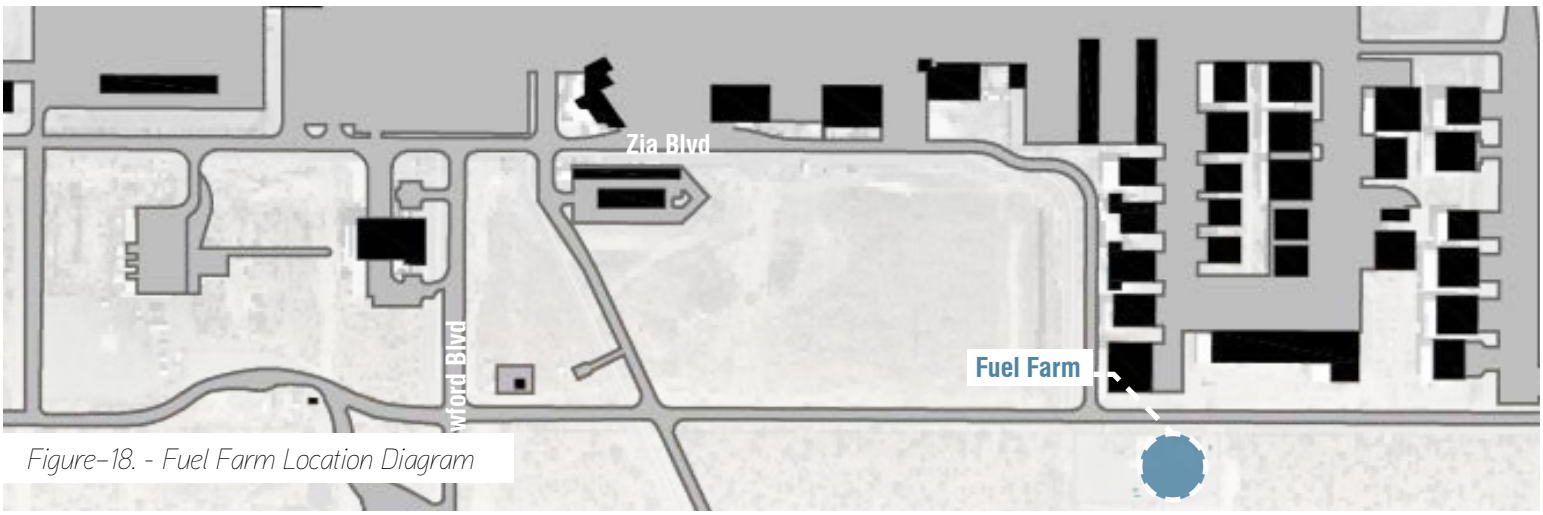


Figure-18. - Fuel Farm Location Diagram

Southwest Aviation is one of two FBOs conducting commercial aeronautical services on the airport. This FBO is open 7 days per week from 8am to 6pm. Southwest Aviation utilizes the aviation fuel tanks top off their mobile fuel trucks to service its customers.

An interview with the owners of Southwest Aviation in February of 2020 revealed further insights into the operations currently underway at the airport. This FBO utilizes Phillips 66 as their fuel vendor. There are no restrictions on the FBO's ability to increase fuel orders. The FBO conducts normal monthly, quarterly and annual fuel farm inspections with regards to hoses, tanks and related equipment applied per industry standards.

When asked regarding their thoughts on increased demands on fuel due to resumptions of air service, this FBO did not see any issues with supplying additional fuel as needed. Southwest Aviation, on average (basis 2016 - 2018), sells approximately 130,000 gallons of JetA and 100LL combined. According to Airport management, Southwest Aviation does not report to the airport the number of gallons sold annually per fuel type, therefore, the percentage of JetA fuel sold each year could not be determined.

Both Southwest Aviation and Francis Aviation are limited service FBOs, providing aircraft line service and fuel sales. Flight instruction and aircraft maintenance are not provided by either FBO. The fuel farms are located on the southeast side of the airport on Gasoline Alley. In addition to the fuel storage tanks, each FBO owns a fleet of fuel trucks. A location on the apron has been identified for fuel truck parking. Fuel truck parking markings will be placed in this area during the 2020 apron reconstruction project.

Fuel Farm Facilities

Aircraft Rescue and Firefighting Equipment

Under existing rules, the FAA issues two types of airport operating certificates depending on the type of air carrier operations an airport serves. Operators of airports that serve scheduled operations of large air carrier aircraft are issued an Airport Operating Certificate (AOC), commonly referred to as a "full" certificate. As these airport operators regularly serve large air carrier operations, they must fully comply with all Part 139 requirements.

Of the approximately 660 certificated airports, approximately 430 airport operators hold a "full" certificate. Conversely, airport operators serving only unscheduled operations of large air carrier aircraft are required to have a Limited Airport Operating Certificate (LAOC), known as a "limited" certificate. Approximately 135 airport operators in the United States hold a "limited" certificate. Air carrier operations in large aircraft are so infrequent at these facilities that their operators are only required to comply with Part 139 in a limited manner. For example, existing §139.213 requires airport operators holding a "limited" certificate to comply with only certain pavement, lighting, marking and emergency response requirements. Such airports are typically located in remote communities or support seasonal activities, such as skiing during winter months.

The Las Cruces International Airport holds an LAOC as it does not currently maintain scheduled air carrier aircraft service. The airport is considered a Class IV airport. Class IV airports are those airports that serve only unscheduled operations of large air carrier aircraft. Air carrier operations are so infrequent at LRU that the FAA only requires the Airport to comply with some of the Part 139 requirements.

Las Cruces' Rosenbauer Panther

ARFF Index

14 CFR 139.315 provides LRU with the guidance to determine the aircraft rescue and firefighting Index (ARFF). The Index is determined by a combination of the length of air carrier aircraft and the average daily departures of the longest air carrier aircraft. For the purpose of Index determination, air carrier aircraft lengths are grouped as follows:

Table –3 - ARFF Index Determination

Index	Aircraft Length Specifications
A	*Aircraft less than 90 feet in length.*
B	*Aircraft at least 90 feet but less than 126 feet in length.*
C	*Aircraft at least 126 feet but less than 159 feet in length.*
D	*Aircraft at least 159 feet but less than 200 feet in length.*
E	*Aircraft at least 200 feet in length.*

If there are five or more average daily departures of air carrier aircraft in a single Index group serving that airport, the longest aircraft with an average of five or more daily departures determines the Index required for the airport. When there are fewer than five average daily departures of the longest air carrier aircraft serving the airport, the Index required for the airport will be the next lower Index group than the Index group prescribed for the longest aircraft.

According to the Las Cruces International Airport Certification Manual (Page F-1, FAA Dated MAR 30, 2018), the airport's Index for aircraft firefighting and rescue is Index A. Rescue and firefighting equipment is provided by pre-arrangement at least 48 hours in advance of an air carrier operation. Upon notification by the Airport Manager of LRU of an air carrier operation, the City of Las Cruces Fire Department will station vehicles and personnel at the Airport or at Fire State 7. At least one of the Fire Department personnel will be an ARFF trained firefighter, as well as one licensed Emergency Medical Technician (EMT).

Las Cruces' Rosenbauer Panther

ARFF Equipment and Agents

14 CFR 139.317 provides LRU with the guidance to determine what fire fighting equipment and agents are minimally required for the ARFF Indexes referred to in §139.315 above. For the purposes of equipment and agent determination, the ARFF Indexes are grouped as follows:

Table –4 - Equipment and Agents required under 14 CFR 139.317

Index	Vehicle(s)	Agent(s)
A	*One (1) Vehicle carrying at least:*	*500 lbs. Of sodium-based dry chemical, halon 1211, or clean agent; or*
		450 pounds of potassium-based dry chemical and water with a commensurate quantity of AFFF to total 100 gallons for simultaneous dry chemical and AFFF application.
B	*One (1) Vehicle carrying at least:*	*500 pounds of sodium-based dry chemical, halon 1211, or clean agent and 1,500 gallons of water and the commensurate quantity of AFFF for foam production.*
	OR	
B	*Two (2) Vehicles with One (1) Vehicle carrying the extinguishing agents; and*	*Outlined under ARFF Index A*
	One (1) Vehicle carrying	*An amount of water and the commensurate quantity of AFFF so the total quantity of water for foam production carried by both vehicles is at least 1,500 gallons.*
C	*Three (3) Vehicles*	*Carrying extinguishing agents, water and commensurate quantity of AFFF so the total quantity of water for foam production carried by all three vehicles is at least 3,000 gallons.*
D	*Reference 14 CFR 139.317*	
E	*Reference 14 CFR 139.317*	

Table –5 - Las Cruces International Airport ARFF Equipment on-hand				
Vehicle	**Description**	**Agents**		
1 - Primary Unit	*2007 Rosenbauer "Panther" 4x4 ARFF Vehicle*	*1. Dry Chemical Capacity: 450 lbs potassium bicarbonate*	*2. AFFF Capacity: 200 gallons foam*	*3. Water Capacity: 1,500 gallons*
2 - Secondary Unit	*2016 Spartan Class A Pumper*	*1. AFFF Capacity: 30 gallons Class A and 30 gallons Class B*	*2. Water Capacity: 500 gallons*	

Each vehicle and its systems is maintained in an operational condition during all airport carrier operations by the Las Cruces Fire Department personnel and the City of Las Cruces Fleet Section. Any required vehicle, which becomes inoperative, shall be replaced immediately by the backup Class A Pumper, Vehicle 2. If replacement equipment is not available immediately, the Airport Manager shall notify the FAA Airports Division Manager through the Airport Certification Safety Inspector, and deny any request for an air carrier operation. A summary of the current equipment at LRU follows:

- Vehicle 1 - Primary Unit meets the FAA equipment requirements for ARFF Index A.
- Vehicle 2 - Secondary Unit does not meet the FAA equipment requirements for ARFF Index A.
- Vehicles 1 & 2 (combined) - Do not meet the FAA equipment requirements for ARFF Index B, C, D & E.

ARFF Facilities

The airport is fortunate enough to be served by the Las Cruces Fire Department from Fire Station No. 7, located on the corner of Crawford and Zia Boulevard on the airport. This enables the airport to currently provide adequate ARFF response for unscheduled air carrier operations and minimizes the airport's operational costs. Fire Station No. 7, constructed in 2014, is a 30,000 sf building. The 3 bays are dimensionally adequate to support ARFF Index B equipment.

Las Cruces Fire Station #7

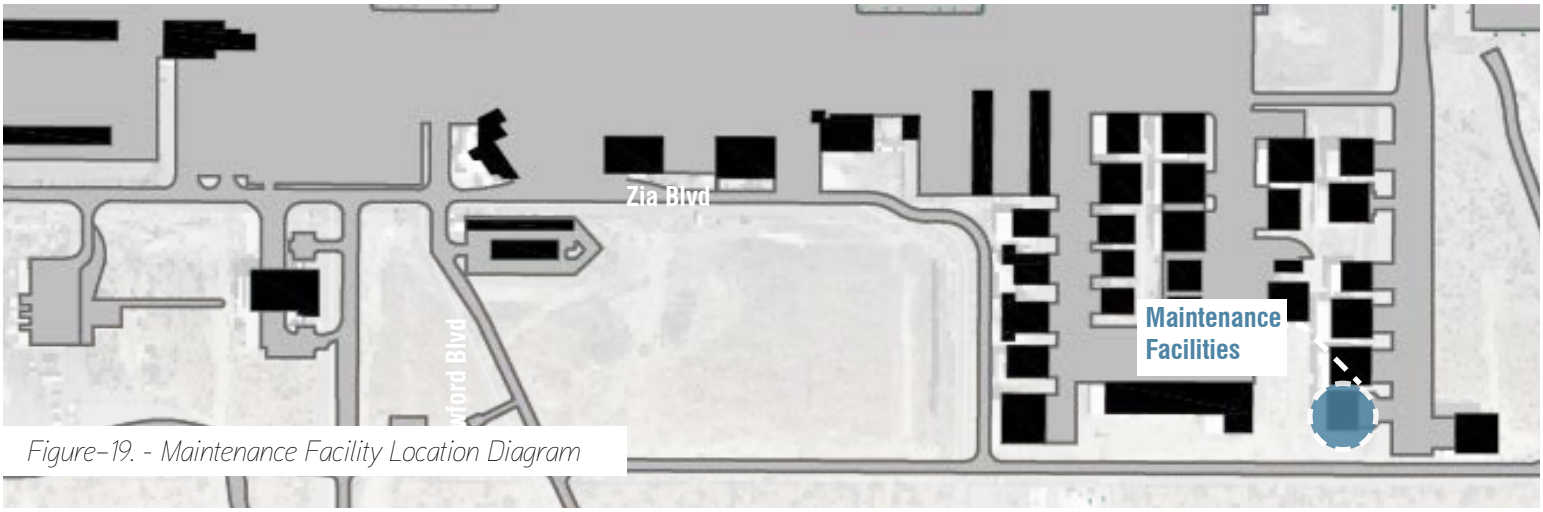
Aircraft Maintenance Facilities

Aircraft maintenance is managed by Mesilla Valley Aircraft. Interviews in December of 2019 with Oscar Reyes, manager of Mesilla Valley Aircraft indicated that their facility allows for them to provide maintenance on aircraft with wingspans up to 39 feet.

Mesilla does not currently provide maintenance on turbine powered aircraft however, they do provide major airframe and powerplant repairs for aircraft powered by reciprocating engines.

Their workspace is a 4800 sf facility (60' x 80'). Bulk or bottled O2 is not available with Mesilla Valley Aircraft.

Their services are available 8am-5pm Monday through Friday. Mesilla Valley Aircraft employs numerous Inspection Authorities (IA) and Airframe and Powerplant Mechanics (A&P).



Figure–19. - Maintenance Facility Location Diagram

Mesilla Valley Aircraft Facilities

Ground Support Equipment

Tug and Tow Bar

A "Tug" is used to tow aircraft when needed. It is not uncommon for "on-time" scheduled aircraft, "ahead of time" schedule aircraft and aircraft down for maintenance to be at the gate at the same time.

Francis Aviation has one Dimensional tug, and one jet porter. It was unclear if the tug is large enough to move an aircraft such as the CRJ 145. Francis would need to acquire a tow bar, if needed. Southwest Aviation has one tug which is large enough to move a CRJ 145, however, they do not currently have a tow bar to match this aircraft. Southwest Aviation would need to acquire a tow bar, if needed.

Baggage Cart

Baggage carts are used to transport passenger baggage between the aircraft and the terminal building. Neither Francis Aviation nor Southwest Aviation own a baggage cart.

Lavatory Servicing

Neither FBO has lavatory servicing equipment. Depending on the incoming airlines needs, the airport may need to consider this as a revenue source or leave the Airline to "tanker" its waste to another airport.

Courtesy Car

Francis Aviation operates a single courtesy car, a 2018 Honda Accord. Southwest Aviation advertises the ability to rent cars through Enterprise Rent A Car. This FBO can make these arrangements as needed.

Tug & Tow Bar (foreground)

Ground Power Unit (GPU)

A GPU is a piece of equipment that when connected to the aircraft, can power heat and air conditioning units, power other aircraft utilities and help start the aircraft while on the ground. A GPU can be a dedicated electric power supply, a battery power supply or a combination of both. Ground power units usually provide either 28V DC or 115V 400Hz AC, although certain aircraft will require a more specialized power derivative.

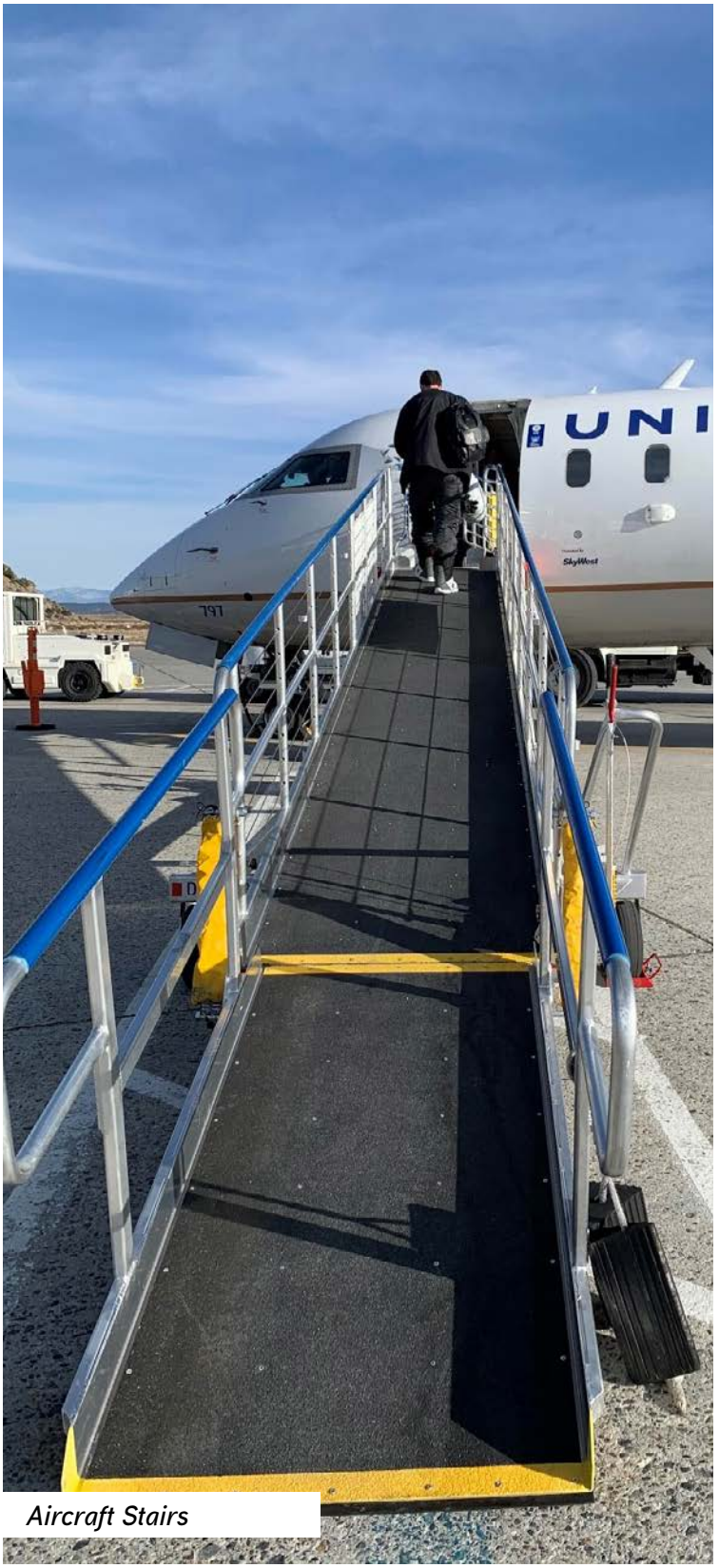
Francis Aviation operates one (1) Ground Power Unit (GPU) to power aircraft. This unit is self supporting and does not require 3-phase power.

Similarly, Southwest Aviation operates one (1) 28 Volt Direct Current (VDC), 400 cycle GPU to power aircraft. This unit is self supporting and does not require 3-phase power. Due to the low probability of icing and historical meteorological data, neither of the FBO's provide deicing services.

Aircraft Ramp Stairs

Aircraft Ramp Stairs allow for the safe boarding and deboarding of passengers. Francis Aviation has airstairs offered as part of their FBO services.

Ground Power Unit



Aircraft Stairs

Navigational Aids & Weather Reports

ADS-B Beacon at Airport

As part of the FAA's NextGen program to enhance how aircraft navigate, new technologies, such as the automatic dependent surveillance-broadcast (ADS-B), have been deployed. ADS-B provides in-flight information from an aircraft, including airspeed and location, to air traffic control and to nearby aircraft, equipped with receivers, through a system of satellites and ground stations. Ultimately, this system will replace radar and will include complete coverage of New Mexico. Presently, there are 13 ADS-B ground stations within New Mexico, 11 of which are located at system airports. Las Cruces International Airport is one of the airports in which the ground station has been installed. They are owned, operated and maintained by the FAA at no expense to the airport. This provides great value to the airport as it will increase safety through improved situational awareness and visibility for pilots of general aviation and commercial aircraft operators when utilizing LRU during inclement weather. In addition, LRU's ADS-B capability will increase efficiencies through traffic capacity improvements ultimately reducing environmental impacts

Automated Weather Observation System (AWOS)

LRU's Automated Weather Observation System (AWOS-III PT) is equipped to provide pilots with the date, time, wind, visibility, ceiling, temperature, dew point, altimeter and other critical data such as density altitude, gust indication, precipitation identification and intensity, thunderstorm and local-area lightning tracking. This non-federal AWOS is owned and maintained by the airport and was installed/upgraded in 2010. The AWOS transmits the weather on two (2) discrete frequencies and is also available via a landline telephone.
The ground to ground/air frequency (119.025 VHF) enables pilots to listen to the repeated weather data that is collected by the AWOS-III PT system. The AWOS-III PT system simultaneously transmits the weather data on a separate ground to ground UHF frequency to the weather base station on the airport. From here, the data is transmitted to the secure FAA through the National Airspace Data Interchange Network (NADIN) allowing local and remote pilots to access the Meteorological Aerodrome Report (METAR). An example of the METAR for LRU is below:

LRU
151055Z AUTO 32004KT 10SM CLR 04/01 A3013 RMK AO2 T00380007

Terminal Area Forecast (TAF)

LRU also has a Terminal Aerodrome Forecast (TAF). TAF's are issued four times a day and complement and use the METAR report. TAFs are generated by a human forecaster and are an important report for commercial pilots flying to LRU.

Las Cruces NAVAIDS

Chapter 3. Facility Requirements

The City of Las Cruces contracted to conduct an air service demand study. The purpose of the study was to conduct research on the viability and demand for air service at the Las Cruces Airport. The research conducted included engagement with the community, strategic surveys and various public presentations. The survey work was conducted between October 2019 and March 2020. Bi-weekly meetings were held with the City and Airport to provide the results of the surveys and potential for air service. The provisional findings of the research and survey work include the following:

- El Paso International Airport (ELP) generated approximately 1.7 million scheduled passengers each way in calendar year 2019, or approximately 4,800 Passengers Daily Each Way (PDEW).
- A little over half of the passengers flying from ELP in the 12 month period through third quarter 2019 began their air travel at ELP (53.2 percent), while 45.9 percent began their air travel at the counterpart destination airport. (Note that this origin/destination mix varies by flight route.)
- Among the passengers who originated at ELP, approximately 15.3 percent are estimated to live in the LRU primary catchment area (the five-county region encompassing Doña Ana, Sierra, Luna, Grant, and Hidalgo counties). This data is based on cell phones tracked in the ELP terminal in 2019.
- It was provisionally estimated that approximately 12 percent of the inbound passengers to ELP were bound for the LRU catchment area.
- Based on the foregoing, it is estimated that the LRU catchment area generates approximately 652 passengers daily each way – approximately 388 outbound passengers (59.5 percent) and 265 (40.5 percent) inbound passengers.
- Focusing on ELP passengers boarding flights to Dallas (either DFW or DAL, including passengers terminating at those airports and passengers continuing on to other destinations), the LRU catchment area is estimated to account for approximately 174 of the 1,290 total daily passengers generated to Dallas each way.
- LRU's potential volume of passengers to Dallas could vary from 70 PDEW (if LRU achieves a 40 percent capture rate), to 139 PDEW (at an 80 percent capture rate).

The research also provided provisional estimates of LRU "Share" of ELP passenger volume LRU potential passenger capture for destinations such as Phoenix, Los Angeles, Denver, Houston, Atlanta, Las Vegas, Houston, Austin, San Antonio and San Diego. These preliminary findings are shown in the following table.

Table –6 - LRU POTENTIAL PASSENGER CAPTURE							
	ORG	**DEST**	**Destination Airport**	**LRU PDEW 100%**	**LRU PDEW 80%**	**LRU PDEW 60%**	**LRU PDEW 40%**
1	*ELP*	*DFW*	*Dallas (DFW)*	*113*	*90*	*68*	*45*
3	*ELP*	*DAL*	*Dallas (Love Field)*	*61*	*49*	*37*	*24*
2	*ELP*	*PHX*	*Phoenix*	*84*	*68*	*51*	*34*
4	*ELP*	*LAX*	*Los Angeles*	*49*	*39*	*30*	*20*
5	*ELP*	*DEN*	*Denver*	*47*	*38*	*28*	*19*
6	*ELP*	*HOU*	*Houston (Hobby)*	*46*	*37*	*27*	*18*
7	*ELP*	*ATL*	*Atlanta*	*43*	*34*	*26*	*17*
8	*ELP*	*LAS*	*Las Vegas*	*41*	*33*	*25*	*16*
9	*ELP*	*IAH*	*Houston (G. Bush)*	*38*	*30*	*23*	*15*
10	*ELP*	*AUS*	*Austin*	*36*	*28*	*21*	*14*
11	*ELP*	*ORD*	*Chicago (O'Hare)*	*29*	*23*	*17*	*12*
12	*ELP*	*SAT*	*San Antonio*	*27*	*21*	*16*	*11*
13	*ELP*	*SAN*	*San Diego*	*25*	*20*	*15*	*10*
	ELP	*Others*		*13*	*10*	*8*	*5*
	ELP	**GRAND TOTAL**		**652**	**520**	**392**	**260**

It is conservatively estimated from the research that 59.5 percent of passengers traveling are outbound passengers. Outbound passengers are considered an enplanement. If we apply this to the potential passenger daily each way from the table above with an assumed capture of 40 percent, the total potential enplanements at LRU are estimated to be 155 daily or 56,575 annually. This assumes that LRU was able to establish air service to all 13 destination airports listed which is not likely in the foreseeable future.

Dallas (DFW) and Dallas Love Field accounted for the highest number of on boardings in El Paso equaling 470,717 annual or 1,290 passengers daily each way. If we assume LRU establishes daily air service to Dallas (DFW) and Dallas Love Field and captures 40 percent of the PDEW, the total potential enplanements as LRU would be 27 daily or 9,855 annually.

According to the research conducted by RRC Associates the estimates show that flights to Dallas would support twice daily service on a 50 seat regional jet at a load factor of 70 percent or higher. Ultimately, it is the City of Las Cruces' goal to reach 20,000 annual enplanements. At 10,000 annual enplanements the FAA and NMDOT-A will consider LRU a Primary Airport at which time the funding amounts from FAA will transition from $150,000 per year of non-primary entitlement (NPE) funding to $1,000,000 per year of primary funding, to be used to conduct capital improvements on the airport.
Chapter 2: Inventory of Existing Facilities, reviewed and documented the existing facilities and equipment that could impact the ability of the airport to reestablish and sustain air carrier operations. These facilities were inventoried to establish a baseline of current facilities and to identify potential deficiencies in areas that the airport will need to consider additional planning to develop commercial air service. The facility needs to develop commercial air service include the following.

Terminals

As the research estimates, twice daily service on a 50 seat regional jet could be supported with a load factor of 70 percent. Assuming this were to happen, the airport terminal could see 70 or more daily passenger enplanements. As discussed in Chapter 2, the current terminal (Building 8990) is not adequately sized and will not provide the necessary facilities for air service. The 2019 Las Cruces International Airport Terminal Planning document utilized a prescriptive, comparative and programmatic methodology to determine the current terminal space needs. The document further categorized the space needed as mandatory (room to conduct baseline/minimum operations), desired additional space (restaurant, concessions, training/office space, etc) and future commercial operations (ticketing, baggage, TSA, ground transportation). The square footage for each of these spaces are as follows:

Table –7 - Terminal Space needs

Space	Target Square Footage	Surplus / Deficit
Mandatory Required Space	*5,172 (current terminal 4,400)*	*772*
Desired Additional Space	*6,565*	*6,565*
Future Commercial Operations	*8,580*	*8,580*
Approximate square footage. Subject to firewalls, circulation, MEP		*15,917*

The LRU Action Plan calls for the construction of a new 15,000 sf commercial terminal building on the east side of the airport as depicted. With the exception of the east side road and the taxiway, this is planned to be privately funded. This east side development will require a significant private capital investment to include a new east side road vehicular parking, commercial terminal building, vehicular parking area, aircraft apron, taxiway tie-ins, and water/wastewater. Total conceptual estimated cost for the development of an east side Commercial terminal building is between $9.3 and $12.0 million.

The LRU Action Plan Implementation Plan (Chapter 5) calls for the construction of the east side Road in Phase III which does not begin until 2027. The parallel taxiway on the East side would most likely be funded by the FAA however, if a private investor elected to accelerate the project, the taxiway may be privately funded. The City of Las Cruces intends to develop air service in a time frame that appears to be much sooner than the construction of a new privately funded terminal building on the east side. The airport's current need for terminal building space is an additional 15,917 sq feet to meet the needs outlined in the terminal building assessment. The airport should explore alternatives to fill this short term need and these alternatives will be presented and considered in Chapter 4: Alternatives.

Terminal Apron

Depending on the air service aircraft, the apron space may be a concern. The airport is reconstructing the terminal apron and has an FAA approved sign and marking plan. If the apron is full, it may be difficult for an airline to have more than one aircraft at the terminal at a time. It is not uncommon for the airline to have a scheduled aircraft, an "ahead of schedule" aircraft and an aircraft down for maintenance.

The terminal apron marking plan, in its current configuration, will require the air carrier to park in the taxilane and new vehicle service road. A short term solution should be considered to enable air service to begin which may include options as simple as changing the taxilane to a non-movement area to other options to increase the terminal apron space. The airport should explore alternatives to fill this short term need and these alternatives will be presented and considered in Chapter 4: Alternatives.

Vehicular Parking

The terminal building is currently occupied by Airport administration, reception staff, a few lease holders, and Francis Aviation. The vehicular parking area south of the terminal building is 30,000 square feet and has room for expansion. Of the 30,000 square feet of parking area, approximately 18,500 square feet is used for vehicular maneuvering and not for parking netting the usable parking area down to 11,500 square feet for parking. Of the 46 parking spaces adjacent to the current terminal building, approximately 25 percent or 11 parking spaces are utilized by day users of the terminal netting the usable vehicular parking spaces down to 35.

In the absence of guidance within the LRU Action Plan, it was decided to utilize two methods to determine the number of parking spaces needed at LRU once air service begins. The first method included the review of the most recent NMDOT-A Airport System Plan (NM ASP) to identify other Part 139 Commercial Services airports in New Mexico. The NM ASP provided the research with a list of commercial airports and the number of enplanements per airport. A physical count of the number of vehicle parking spaces was conducted for each commercial airport using Google Earth. A summary of the physical count is provided as well as the average number of parking spaces per 1,000 enplanements. Based on this physical count, the New Mexico commercial service airports are providing an average of 2.5 parking spaces for every 1,000 enplanements.

Table –8 - NM Airports, Enplanements, Vehicular Parking Spaces

Airport	Annual Enplanements	Parking Spaces	Spaces per Enplanement
Carlsbad - Cavern City (CNM)	*2,600*	*130*	*20*
Clovis Municipal (CVN)	*1,384*	*50*	*28*
Farmington Four Corners (FMN)	*14,263*	*610*	*23*
Grant County - Silver City (SVC)	*1,670*	*70*	*24*
Lea County-Hobbs (HOB)	*17,246*	*345*	*50*
Roswell Int'l (ROW)	*32,616*	*509*	*64*
Santa Fe Municipal (SAF)	*65,845*	*470*	*140*
Average Parking Spaces per 1,000 Enplanements			**2.5**
Source: NM Airport System Plan Update and DuBois & King			

The second method involved the utilization of the Parking Generation Manual from the Institute of Transportation Engineers (ITE), 5th Edition. By simply inputting the number of daily enplanements, the software generates the number of parking spaces required. The research provided by RRC Associates assumes that initially, air service at Las Cruces would include 2 daily flights with aircraft of 50 seats and a load factor of 70 percent. Given these assumptions, annual enplanements would equate to 25,550. This would meet the goals set forth in the City of Las Cruces 2017-2022 Strategic Plan which calls for, "The Las Cruces airport terminal will be renovated to accommodate 20,000 enplanements per year".

The following table provides the results of the ITE parking generation model. It should be noted that the average number of parking spaces per 1,000 enplanements is similar to the other commercial airports in New Mexico that were reviewed in method one.

It should be noted that the ITE method provides a fairly average number of parking spaces for the constrained low end however accounts for a much higher number for the unconstrained parking spaces for the lower number of annual enplanement. Example; 25,550 annual enplanements equates to 3.99 parking spaces per 1,000 enplanements while 153,300 annual enplanements equates to 1.28 parking spaces per 1,000 enplanements. Although they average out, our recommendation is for Las Cruces to utilize the ITE method for calculating the number of required parking spaces for the terminal building. The following table provides an estimated number of parking spaces required at various enplanement benchmarks.

Table –9 - LRU - ITE Parking Generation Methodology

Daily Enplanements	Annual Enplanements	Daily Flights (50 Seat/70% Load Factor)	# Parking Spaces Required	# Parking Spaces per 1,000 Enplanements	Parking Surplus (+) /Deficiency (-)
70	*25,550*	*2*	*20 to 102*	*0.78 to 3.99*	*+15 to - 67*
140	*51,100*	*4*	*41 to 121*	*0.80 to 2.37*	*-6 to - 86*
280	*102,200*	*8*	*81 to 158*	*0.79 to 1.55*	*-46 to -123*
420	*153,300*	*12*	*122 to 196*	*0.79 to 1.28*	*-87 to -161*
Average # of Parking Spaces per 1,000 Enplanements					**0.8 to 2.3**
Source: Institute of Transportation Engineers Manual 5th Edition and DuBois & King					

Table –10 - LRU - Parking Spaces Surplus / Deficit Based on Annual Enplanements (35 Usable Parking Spaces Available)

Annual Enplanements	Daily Flights	# Parking Spaces Required	Parking Surplus (+) / Deficiency (-)
25,550	*2*	*20 to 102*	*+15 to -67*
51,110	*4*	*41 to 121*	*-6 to -86*
102,200	*8*	*81 to 158*	*-46 to -123*
153,300	*12*	*122 to 196*	*-87 to -161*
Source: DuBois & King			

Runways

Runway Lengths

There are several technical factors involved in deciding the required runway length including aircraft type, surface type, longitudinal slope, altitude and climate. Every aircraft has specifications that indicate how many feet are necessary to carry out each of its operations given various parameters. The FAA utilizes the critical design aircraft which is the aircraft that conducts 500 annual operations at the airport. The airport does not have an air traffic control tower and therefore, operations are estimated using flight plan data. The LRU Airport Action Plan Chapter 2 Forecast did not account for the reestablishment of air service.

As air service is reestablished, the airport will engage with an airline in the short term and, as air service sustains and grows, potentially engage with additional carriers. The air carrier will evaluate LRU to determine the runway length required and will consider the following:

- Current runway length
- Destination airport
- Passenger average weight
- Aircraft seat capacity

Until the airport engages with an aircraft carrier, it is difficult to estimate the runway length requirements for LRU as it relates to air service. A discussion with the Airport Administrator provided the following information regarding current runway lengths/widths and the associated capital improvement plans (CIP) in the short-term (2020-2025).

Runway pavement strength

The Pavement Condition Index (PCI) is a numerical index between 0 and 100, which is used to indicate the general condition of a pavement section. Aircraft schedulers and dispatchers as well as airport users will consider pavement conditions when evaluating the airport during preflight. Obviously if the pavement is listed as Very Poor, the pilot may reconsider their destination.

The Aircraft Classification Number (ACN) expresses the relative effect of an aircraft on the runway pavement for a specified standard subgrade category. The Pavement Classification Number (PCN) is a number that expresses the load-carrying capacity of a pavement for unrestricted operations. An aircraft that has an ACN equal to or less than the PCN of a given pavement can operate without restriction on the pavement. If PCN is lower than the ACN, the aircraft will not be able to operate on the runway and the airport will need to consider a full depth reconstruction. LRU provides the public with the PCN information through FAA Form 5010.

Table –11 - LRU Short Term Capital Improvement Plan

Runway	Current Length	Current Width	Description	Ultimate Length
12/30	*7,506'*	*100'*	*Environmental Assessment and Design*	*10,500'*
8/26	*6,069'*	*100'*	*Environmental Assessment and Design*	*8,500'*

Table –12 - LRU Pavement Classification Number

Runway	PCN
12/30	*41*
8/26	*25*
Source: LRU FAA Form 5010	

As pilots consider an airport, they will reference the public data for each runway to assess if their aircraft can utilize a runway. A discussion with the Airport Administrator provided the following information regarding recent construction history and the airport's public information with regard to pavement strength. It should be noted that due to recent construction history, it is the Airport Administrators opinion that the publicly available pavement strength information may not be correct. This impacts the current use of the airport. It should also be noted that the FAA will no longer participate in capital improvements for Runway 4/22 and therefore is not considered in this evaluation.

In an effort to minimize construction costs, it is not uncommon for airports, when extending a runway, to simply rehabilitate the balance of the runway. If the PCN's are as low as publicly reported, the airport will need to consider a full depth reconstruction for Runways 12/30 and 8/26 as part of the runway extension projects.

Instrument Approach Procedures

The LRU Action Plan provided a wind analysis of which this study verified to be accurate. As part of the wind analysis, all three runways at LRU were analyzed independently. It was determined that only Runway 8-26 provides adequate wind coverage during all weather conditions for crosswind components of 16 knots. The analysis goes on to say that when multiple runways are in operation, any two of the LRU runways combined provide the desired 95 percent coverage during all weather conditions for crosswind components of 16 knots. During Instrument Flight Rules (IFR) conditions, no single runway provides 95 percent coverage for all crosswind components considered.

Runway 12/30 is served by an ILS and RNAV (GPS) approach. Many smaller airlines are not equipped to utilize RNAV GPS approaches. In this case the air carrier may be limited to utilizing ILS Runway 30 only. To increase the success rate of air carrier operations during IFR conditions, the Airport should consider the development of an additional instrument approach procedure to Runway 8/26.

Table –13 - LRU Taxiways Designated Air Carrier Movement Areas					
Taxiway	**Length**	**Width**	**Surface**	**Strength**	**Safety Area**
A	6,200'	35'	ASPHALT	70S 120D	79' (22' ea. Side of pavement)
B	2,300'	50'	ASPHALT	70S 120D	120' (35' ea. Side of pavement)
C	4,500'	50'	ASPHALT	70S 120D	120' (35' ea. Side of pavement)
D	300'	35'	ASPHALT	70S 120D	Within 12/30 & B Safety Area
E	200'	35'	ASPHALT	70S 120D	Within 8/26 & A Safety Area
F	200'	35'	ASPHALT	70S 120D	Within 8/26 & A Safety Area

Taxiways

It is not uncommon for air carrier operators to require a minimum taxiway width. By way of example, United Express requires 40 foot wide taxiways. Each airline has its own specifics and once a carrier is chosen, the taxiway widths will need to be evaluated. Currently, LRU Taxiways B & C are 50 feet in width which meet FAA taxiway design group (TDG) III standards. The balance of the taxiways are 35 feet in width which meet FAA TDG-II standards.

The airport will need to engage with the initial air carrier to determine the minimum taxiway widths required. The Embraer 145 is an ADG-II. Taxiway design standards for ADG-II require taxiway widths of 35'. It is possible that the air carrier will operate ADG-III aircraft or require wider taxiways. If this is the case it would be recommended that the airport update the master plan to reflect the appropriate taxiway widths and update the ACIP appropriately. In addition, it is recommended that the airport create and update a pavement maintenance plan so that taxiways are programmed and maintained appropriately.

Aircraft Storage

Hangars were evaluated for the ability to store air carrier aircraft. Privately-owned hangars were not included. Commercial hangars owned by the City of Las Cruces and the FBOs were included In this evaluation and it was determined that there were only four (4) sizable hangars on the airport. A summary of the hangars and associated dimensions:

Table –14 - Aircraft Storage Table				
Hangar	**Owner**	**Door Opening**	**Door Height**	**Hangar Depth**
14	*Southwest*	*68'*	*15'*	*70'*
15	*Las Cruces*	*110'*	*25'*	*80'*
16	*Southwest*	*75'*	*15'*	*80'*
42	*Las Cruces*	*54'*	*14'*	*60'*

The air service preliminary research data has shown that there appears to be enough demand for LRU to begin air service with two-daily flights with aircraft of 50 seats. A typical 50-seat aircraft would include the Embraer 144. This may change, however, assuming the E-145 provides air service at LRU, the dimensional specifications are:

Wing span: 65 ft 9 in
Height: 22 ft 2 in
Length: 98 ft 0 in

Embraer 145

Hangar 15, owned by Las Cruces, is the only hangar that has the proper door opening and height. At 80 feet in depth, however, it is not deep enough to support the E-145 which is 98 ft in length. Therefore, if the air carrier needs to remain overnight, the airport does not currently have facilities to store the E-145.

The LRU Action Plan Chapter 3 Facility Requirements did not account for the reestablishment of air service and reports an excess of 145,000 square feet of conventional hangar space. However, the Action Plan does state that as new hangars are needed or existing hangars outlive their useful facility life, it is recommended that new hangar areas be developed that provide efficient maneuvering space, consistent with FAA geometric standards.

There will be times in which an air carrier will have a maintenance issue and may need to remain over night. The airport has an option to leave the aircraft in front of the terminal building or to have the FBO move the aircraft. The apron reconstruction, scheduled for 2020 will include a marking plan that creates a taxilane in the terminal area. The E-145 is a ADG-II aircraft and therefore, if the aircraft remains in front of the terminal, it would negatively impact the flow of aircraft within the taxilane.

The airport should explore alternatives to fill this potential need and alternatives will be presented and considered in Chapter 4: Alternatives.

Fuel Farm

The airport has two (2) 12,000 gallon JetA fuel tanks and service aircraft with fuel trucks. The FBOs feel this is adequate to service up to 3-daily air service aircraft. It is their opinion that more 3-daily flights would over tax the current fuel farm capacity. The air carrier that begins service at LRU will negotiate with the FBO how much fuel they will purchase from the airfield.

The LRU Action Plan did not account for air service to begin again and therefore, the Forecast, Facility Requirements and Alternatives do not take into account the study, planning and construction of a properly sized fuel farm based on a demand forecast.

Fuel supply reliability has a major impact on financial and operational viability of flights. Airport fuel infrastructure forms a vital part of the fuel supply chain. While at most airports the fuel facility appears to be adequate, some airports are perceived to have insufficient or excessive facilities. In case of supply disruptions, insufficient capacity could result in non-availability of jet fuel. Insufficient storage capacity may also add pressure on ensuring fuel quality. The need to ensure fuel quality and safety could result in restrictions in fuel availability or even non-availability of jet fuel when storage capacity is insufficient. The knock-on effect of non-availability of jet fuel or even restrictions in availability is huge: consequential damages may arise from canceled flights, diversions, payload limitations, and tankering. On the other hand, excessive capacity could result in higher charges. There is always a trade-off, and it is essential to strike the right balance between storage capacity, operational reliability, and cost.

- In planning for the right-sized fuel farm the following should be considered:
- Fuel demand based current and unconstrained demand forecasts
- Supply & Offloading facilities
- Current storage capacity
- Fuel distribution whether fuel trucks or via hydrant systems
- Product diversity receiving “unbatched” or “uncertified” fuel
- Fuel contingency plan aimed to minimize disruptions to passengers and flights.

A Master Planning effort should be completed to understand the unconstrained forecast which will enable the airport to properly evaluate the airport’s future needs for the fuel farm.

Airport Rescue and Firefighting Facilities

Las Cruces is currently classified as an Airport Rescue and Fire Fighting (ARFF) Index A (aircraft less than 90 feet in length) and currently has appropriate facilities and equipment to support this Index. The ARFF Index is determined by the longest aircraft with an average of five or more daily departures. Once the airport has an average of 5 or more daily departures of aircraft greater than or equal to 90 feet in length, the airport will need to acquire larger ARFF equipment to support the appropriate Index.

Example: The Embraer 145 is 98 feet in length. With 5 or more daily departures of the E-145, the airport would be required to acquire ARFF Index B equipment.

The air service research has preliminarily shown support to begin air service with two-daily flights of aircraft with 50 seats. An air service forecasting effort should be conducted as part of a Master Plan update or through the City’s own means. This forecast would evaluate and provide a projected date when to anticipate five-daily departures.

The airport is fortunate enough to be served by the Las Cruces Fire Department from Fire Station No. 7, located on the corner of Crawford and Zia Boulevard on the airport. This enables the airport to currently provide adequate ARFF response for unscheduled air carrier operations and minimizes the airport's operational costs. Fire Station No. 7, constructed in 2014, is a 30,000 sf building. The 3 bays are dimensionally adequate to support ARFF Index B equipment.

Aircraft Maintenance Facilities

The airport does have an aircraft maintenance facility, however the building is not large enough to house an aircraft with a wingspan greater than 39 feet. In addition, the aircraft maintenance staff do not work on turbine powered aircraft. It was concluded that the Air Maintenance Facility and its staff are not able to provide support to Air Service operations.

Navigational Aids

Important NAVAIDs on the airport are the ADS-B, AWOS-III PT, and the approach, runway, and taxiway lighting systems. The ADS-B increases the efficiency of air carrier operations by providing FAA Air Traffic Controllers with up to date information regarding the location of inbound and outbound aircraft and the safe, orderly and expeditious sequencing of IFR traffic.

The AWOS is critical to Part 135 Air Taxi and Part 121 Air Carrier operations for multiple reasons. First, without current weather information schedulers and dispatchers will not be able to dispatch their aircraft. The AWOS provides this information enabling dispatch and provides pilots with the necessary information to attempt a landing. The AWOS also provides the National Oceanic and Atmospheric Administration (NOAA) with the requisite information needed to develop the Terminal Area Forecast (TAF) for LRU. If the weather at LRU is not at least 3 tatute miles of visibility and 2000’ AGL

ceilings from 1 hour before to 1 hour after your ETA, a commercial operator will need to file for an alternate airport on their IFR flight plan. The LRU TAF provides an operator with the necessary forecast information. Approach lighting and runway and taxiway lights are critical and these lights need to be operable during commercial activity. The Runway 30 approach lighting system (MALSR) is owned and maintained by the FAA, while the runway and taxiway lights are owned and operated by the Airport.

If the airport experiences a power outage, these critical NAVAIDS need to remain operable. To enable the continuity of operations it is recommended that the NAVAIDS described in this section are combined with the airport's critical power circuit and backed up with a generator.

Chapter 4. Alternatives Analysis

This chapter deals with the description and evaluation of alternative plans for proposed development that will support the development of scheduled air service at Las Cruces International Airport. The purpose of this analysis is to develop a complement of airport facilities that can realistically accommodate the demands imposed by air service. As mentioned prior, the previous Action Plan did not forecast air service development and the master planning process is one of defining the facility requirements of the airport to handle the forecast demand. Chapter 3 identified facility requirements necessary to support a reestablished air service. A series of alternative solutions to satisfy air service facility needs must be identified and tested. Both Airside and Landside facilities were reviewed as a part of this study. Alternatives to be considered in this Chapter will include alternatives for providing an immediate solution for the terminal building and options for vehicular parking.

Recommendations for other areas reviewed will be provided in Chapter 5: Implementation Plan as they do not necessarily warrant an alternatives analysis with one exception, the terminal apron space. The evaluation of the terminal apron space is outside of the scope of this study and should be incorporated into a Master Planning effort. The review and recommendations for the following areas will be found in Chapter 5 and they will include:

- Master Plan Update
  - » Forecasting
  - » Terminal Apron Space
  - » Aircraft Storage
  - » Fuel Farm Facilities
  - » Additional Instrument Approach Procedures
  - » Airport Pavement Maintenance Plan (PMP)
- ARFF Equipment
- Update Airport Capital Improvement Plan (ACIP);
- Airport Certification Manual update

Terminal Alternatives

Analysis of various options for the terminal building is a critical element of this air service facilities study. Opportunities for the development of air service is currently constrained by the usable square footage of the current terminal building. Based upon the desire to develop air service and have 20,000 enplanements by the year 2022 the current terminal, building 8990 is deficient. Following the compilation of data collected during a site visit in October 2019 and the review of numerous recent studies, four terminal building alternatives were evaluated.

Key issues examined for each alternative include the lack of space in the current building, funding, and the timing of the reestablishment of commercial air service. This is not a Master Planning effort. This is a presentation of alternatives for the airport to consider. The recent Action Plan did not anticipate commercial air service within the planning period.

This section presents the alternatives under consideration for a terminal building that will allow the City of Las Cruces to meet its strategic goals.

The analysis of the terminal building alternatives generally includes the following:

- Description of each terminal alternative identifying the necessary infrastructure, construction needs, conceptual cost estimates, and a recommendation regarding each alternative's suitability for further evaluation.
- Evaluation of the feasible alternatives, including an analysis of impacts associated with each alternative.
- Recommendation and justification for a "preferred" terminal alternative.

Description of Terminal Alternatives

The objective is to develop Alternatives that will enable the City to meet its Strategic goal to have facilities of 15,000 square feet or more that will support 20,000 enplanements by the year 2022 and provide air service to airports where passengers are cleared into the TSA sterile area. To enable this, the LRU terminal will need space for TSA as well as Customs and Border Protection for international flights. The terminal area should improve airport sustainability and have adequate vehicular parking.

Terminal Alternative A (No-Build)

Alternative A (Figure 20) involves neither a new terminal building nor any upgrades to current infrastructure and is generally described as follows:

- Maintain the current dimensions and interior layout of Terminal Building 8990

This alternative may require the funding, relocation, environmental review, construction, and/or the acquisition of the following:

- Does not require funding, relocation, environmental review, construction, and/or property acquisition.

Alternative A does not meet the City's Strategic Goal to have 20,000 enplanements by the year 2022 with air service to airports with TSA screening. Building 8990 is too small to provide the necessary space for ticket counters, baggage handling, and TSA screening and holding which will not meet the air service facility needs for the planning period. In addition, Alternative A does not provide space for international flight passenger processing, does not increase airport sustainability, nor does it provide adequate vehicular parking for passengers.

Therefore, at this time, Alternative A (No-Build) is not considered feasible and it is the consultant's recommendation not to evaluate it further.

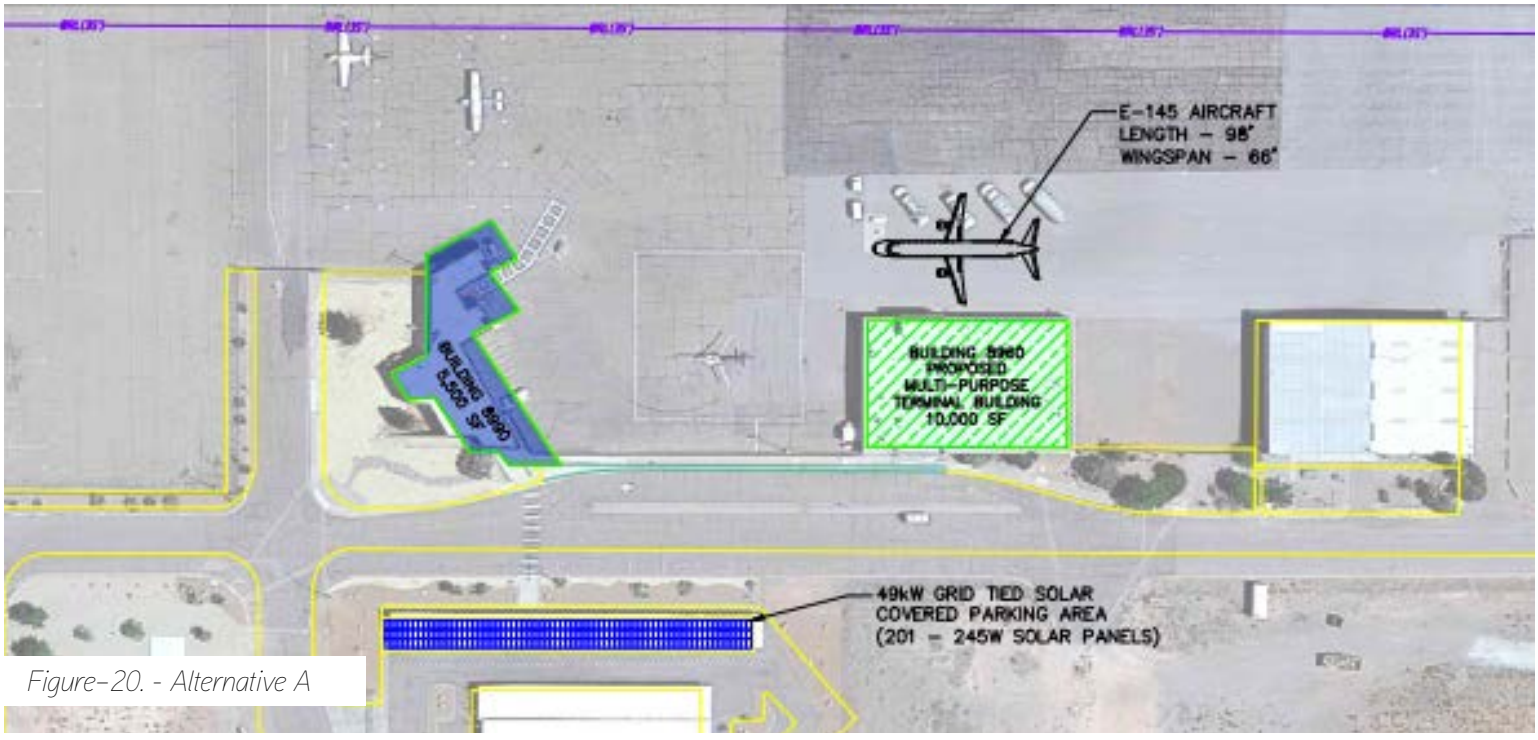


Figure-20. - Alternative A

Terminal Alternative B

Alternative B (Figure 21) is generally described as follows:

- Privately funded construction of a new 16,800 sf commercial terminal building on the east side of the airport
- Construct an estimated 1.96 miles of access road on the east side (FAA Funded)
- Privately funded construction of an estimated 337,000 sf vehicle parking
- Construct an estimated 271,872 sf of taxiway and stub taxiways (FAA Funded)
- Privately funded construction of an estimated 227,882 sf of commercial terminal aircraft apron
- Privately funded construction of new utilities (water/ wastewater/power/internet)

Alternative B may require the funding, relocation, environmental review, construction, and/or the acquisition of the following:

- The east side Commercial terminal will need to be a public/private partnership in which the FAA may require a commitment from the private investor before FAA funds are programmed. Conceptual funding estimates are $6.8-$10.5 million of Private and $2.5 to $2.9 million of Federal funding. Total conceptual funding estimates are $9.3 to $13.4 million. There are no recent commitments from a private investor. In addition, an investor will want a return on investment which most likely means they will want to be an FBO. The airport currently has two FBO's.
- An environmental assessment may need to be completed prior to design.
- Construction can not begin until all environmental

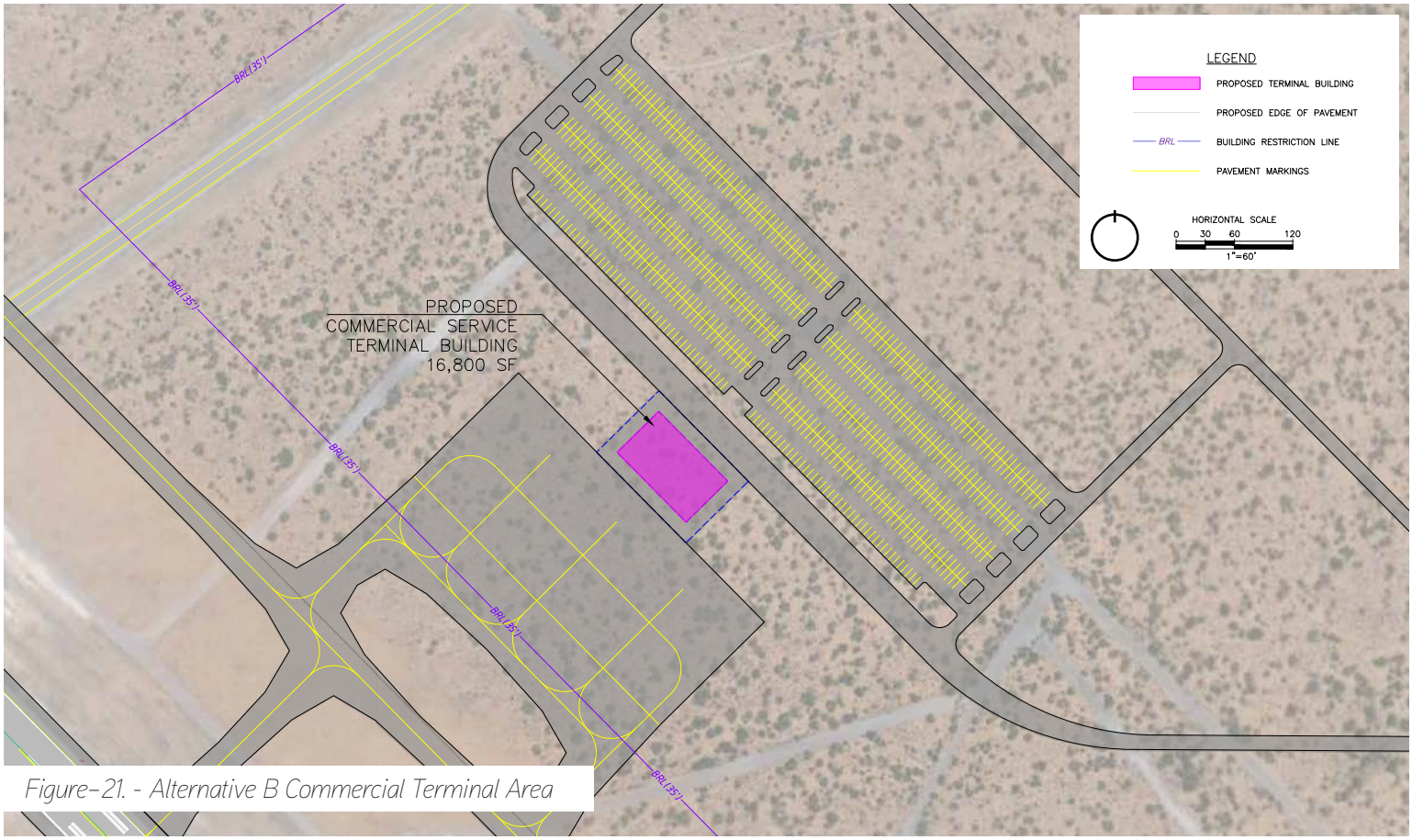


Figure-21. - Alternative B Commercial Terminal Area

clearances are in hand, design is complete and the Airport's CIP is in line with the Private investor, FAA and NMDOT-A. Construction will need to be phased to separate private construction with federal construction.

- Property boundaries will need to be adjusted to allow room for the construction of the East side access road.

With Alternative B, the space needed in the terminal is provided for mandatory (room to conduct baseline/ minimum operations), desired additional space (restaurant, concessions, training/office space, etc) and future commercial operations (ticketing, baggage, TSA, ground transportation). It does not provide space for international flight passenger processing. Alternative B provides adequate vehicular parking. The timing of the City to have 20,000 enplanements by 2022 may not be achievable given that there are neither any commitments from private investors (in Action Plan since 2015) nor is this capital investment in the Las Cruces Capital Improvement Plan. The ability to meet environmental clearances are unknown at this time.

Alternative B is considered a reasonable and feasible alternative to evaluate further, since it meets the space requirements of a commercial service terminal.

Table –15 - East Side Commercial Terminal Area Conceptual Estimates

Capital Improvement	**Funding Source**	**Unit of Measure**	**Conceptual Estimates**
East Side Vehicular Road	*FAA*	*1.96 mi*	*$1.4M*
Commercial Terminal	*Private*	*15,000 sf*	*$3.0 - 6.0M*
Vehicular Parking	*Private*	*337,000 sf*	*$1.0 - 1.3M*
Taxiway and Stubs	*FAA*	*271,872 sf*	*$1.1 - 1.5M*
Aircraft Apron	*Private*	*227,882 sf*	*$0.9 - 1.1M*
Water, Wastewater, Power, Internet	*Private*	*2.1 mi*	*$1.9 - 2.1*
Total Conceptual Estimates*			**$9.3 - 13.4M**
**conceptual only and should be formally estimated.*			

Terminal Alternative C

Alternative C (Figure 23) is generally described as follows:

- Refurbish Building 8960 (10,000 sq ft) as a short-term Multi-Purpose Terminal
- Construct additional solar vehicular parking area to accommodate an additional 68 parking spaces

Alternative C may require the funding, relocation, environmental review, construction, and/or the acquisition of the following:

- Funding from the FAA requires FAA buy-in and ACIP update.
- According to the 2019 Terminal Planning Study, the refurbishment of Building 8960 is achievable although costly. FAA will need to be engaged in the funding of the refurbishment as a Multi-Purpose Terminal building. Construction of 67 additional parking spaces will be required. Solar parking shades will assist the airport in sustainability. 10,000 square feet will meet the space needs for commercial operations (ticketing, baggage, TSA and ground transportation)
- Lessees within Bldg 8960 will need to vacate during construction and, depending on floor plan, may be permanently displaced as air service is a priority.
- Building codes will need to be met as part of the refurbishment.
- There are no known environmental impacts to this alternative and should be a CATEX with FAA.
- Property acquisition is not required with this alternative.

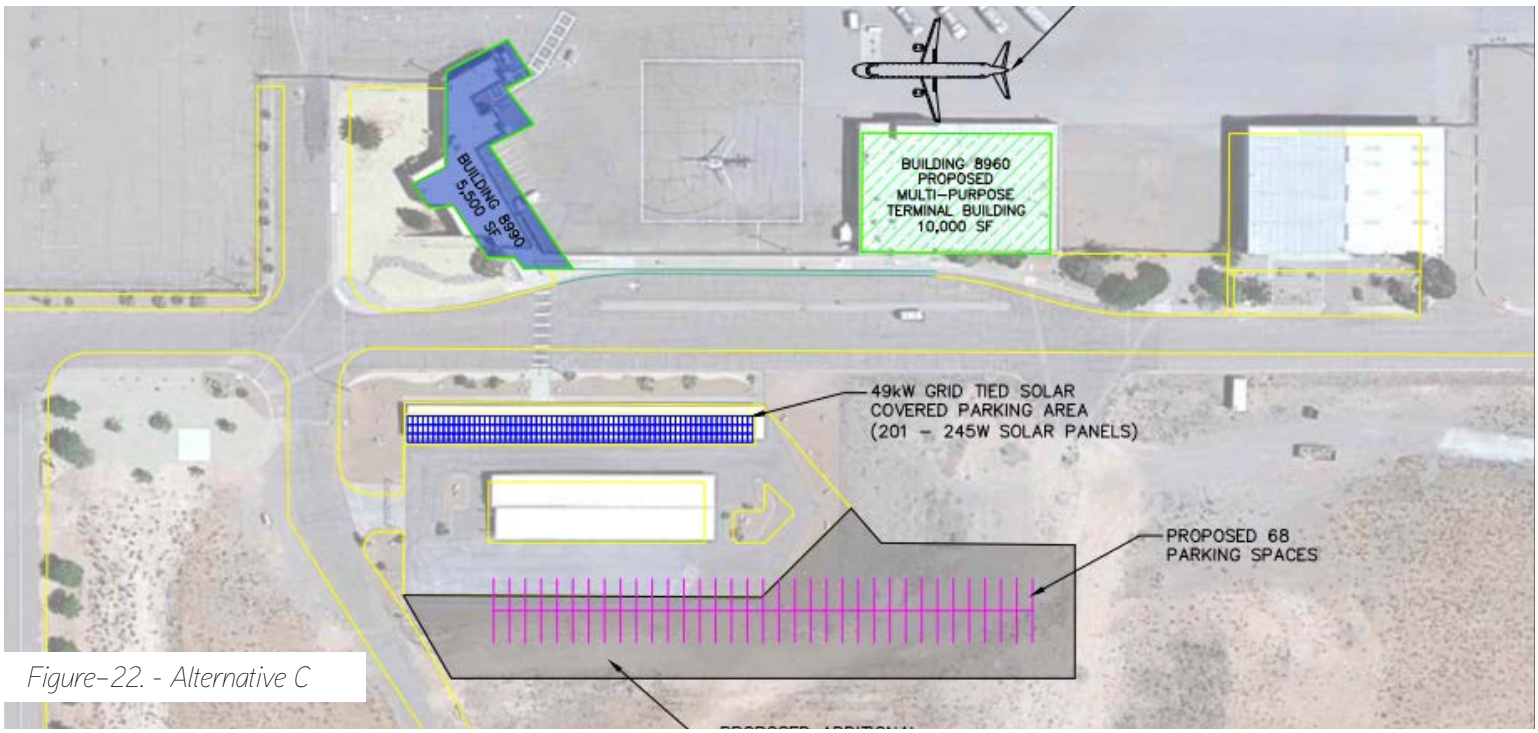


Figure-22. - Alternative C

With Alternative C, the airport does not entirely meet its needs of 15,000 square feet of terminal space. It does however meet the need to add space needed for ticketing, baggage, TSA. and ground transportation but, depending on layout, may not provide space for international flight passenger processing (TBD). With engagement with the FAA, it may be possible to fund this with FAA AIP funding, leaving the airport with a 5 percent match. With a conceptual/estimated construction cost of $159 per square foot (fit up to meet ticketing, baggage, TSA, and ground trans needs) the cost to refurbish building 8960 is $1.6 million.

Alternative C is considered a reasonable and feasible short-term alternative to evaluate further.

Terminal Alternative D

Alternative D (Figure 24) is generally described as follows:

- Construct addition to Building 8990 (8,580 sq ft) as a short-term Multi-Purpose Terminal
- Construct additional solar vehicular parking area to accommodate an additional 67 parking spaces

Alternative D may require the funding, relocation, environmental review, construction, and/or the acquisition of the following:

- Funding from the FAA requires FAA buy-in and ACIP update.
- According to the 2019 Terminal Planning Study, the minimum square footage to meet the commercial operations space needs (ticketing, baggage, TSA and ground transportation) is 8,580 square feet. The construction of an addition with 8,580 will meet this need. Construction of an additional 67 parking spaces will meet the parking space requirement identified in Chapter 3: Facility Requirements. Solar parking shades will assist the airport in sustainability.
- This will not require the relocation of tenants within Bldg 8990.
- This alternative will not meet the entire need of the terminal building which requires 15,000 square feet total.
- There are no known environmental impacts to this alternative and should be a CATEX with FAA.
- Property acquisition is not required with this alternative.

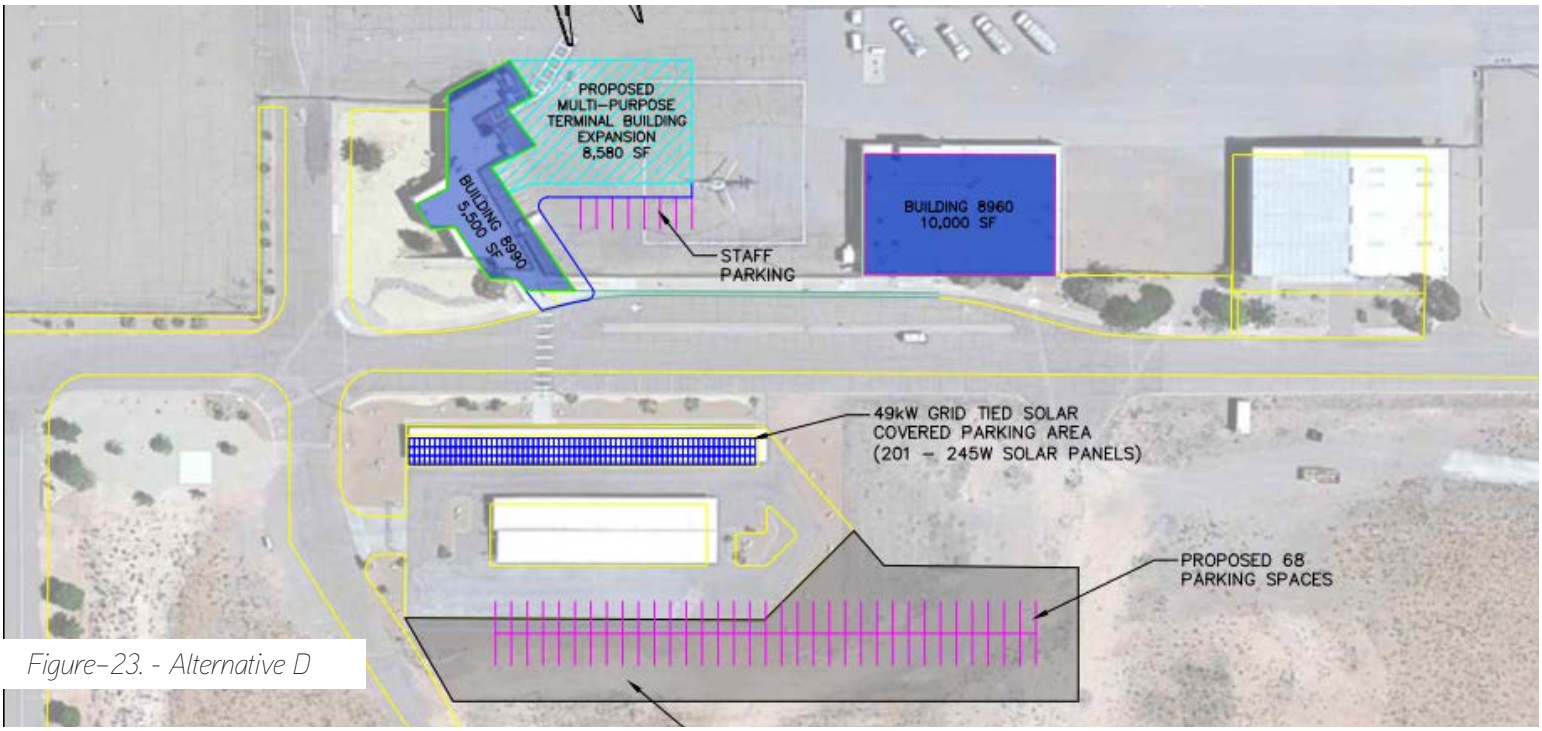


Figure-23. - Alternative D

With Alternative D, the airport does not entirely meet its needs of 15,000 square feet of terminal space. It does however meet the need to add space needed for ticketing, baggage, TSA and ground transportation but does not provide space for international flight passenger processing. With engagement with the FAA, it may be possible to fund this with FAA AIP funding, leaving the airport with a 5 percent match. With a conceptual/ estimated construction cost of $225 per square foot the cost to construct this addition on to Building 8990 is $1.9 million and should be eligible under the FAA AIP program.

Alternative D is considered a reasonable and feasible short-term alternative to evaluate further.

Terminal Alternative E

Alternative E (Figure 24) is generally described as follows:

- Construct addition to Building 8990 (16,812 sq ft) as a Multi-Purpose Terminal (mandatory, desired and commercial operations space)
- Construct additional solar vehicular parking area to accommodate an additional 67 parking spaces
- Refurbish building 8960 for Customs and Border Protection international flight passenger processing.

Alternative E may require the funding, relocation, environmental review, construction, and/or the acquisition of the following:

- Funding from the FAA requires FAA buy-in and ACIP update.
- Construction of Mandatory, Desired and Commercial Operations space needs. Refurbishment of Bldg 8960 for Customs and Border Protection passenger screening. Construction of an additional 67 parking spaces to accommodate parking needs. Construction of Solar parking shades for sustainability.
- This will require the relocation of tenants within Bldg 8960.
- This alternative will meet the entire need of the terminal building which requires 15,000 square feet total and provide CBP passenger processing for international flights.
- There are no known environmental impacts to this alternative and should be a CATEX with FAA.
- Property acquisition is not required with this alternative.

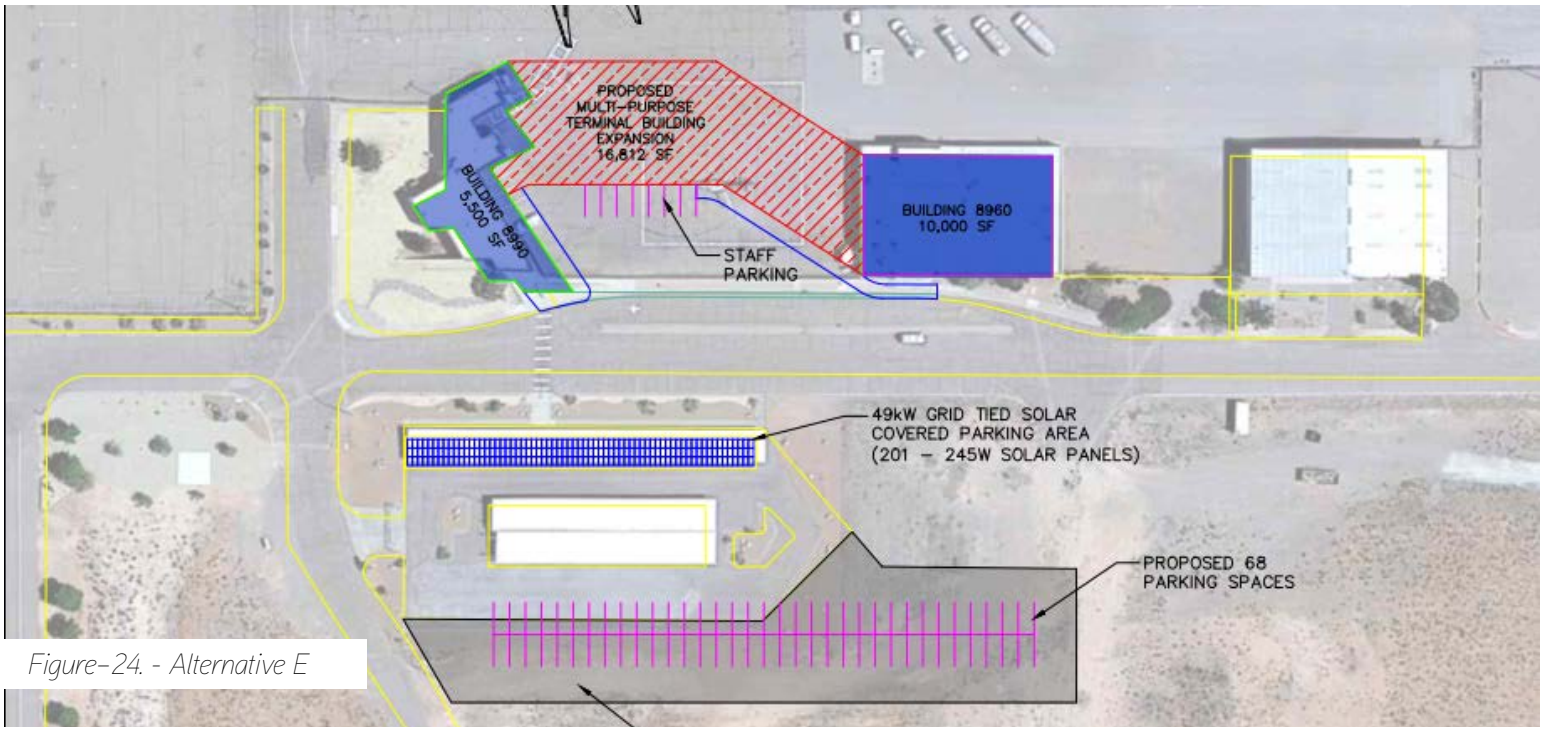


Figure-24. - Alternative E

With Alternative E, the airport does entirely meet its needs of 15,000 square feet of terminal space. It does meet the need to add space needed for ticketing, baggage, TSA, and ground transportation as well as space for international flight passenger processing. With engagement with the FAA, it may be possible to fund this with FAA AIP funding for the terminal addition, leaving the airport with a 5 percent match. It may also be possible that the FAA would fund the refurbishment of Bldg 8960 as a part of this project. With a conceptual/estimated refurbishment cost of $159 per square foot for Bldg 8960 and a conceptual/estimated construction cost of $225 per square foot the cost to refurbish Bldg 8960 ($1.6 million) and to construct this addition on to Building 8990 ($1.9 million) is $3.5 million. All or a portion of this project should be eligible under the FAA AIP program.

Therefore, Alternative E is considered a reasonable and feasible short-term alternative to evaluate further.

Alternative Evaluation Criteria

Evaluation criteria were developed to determine which terminal alternatives would best meet Las Cruces International Airport's requirements for the year 2022. These criteria are discussed in the following sections.

Fundability

Is the project fundable in the near future so that the airport may have adequate facilities to begin air service by 2022?

Environmental Impacts

This criterion was used to rate the terminal development alternatives on how they would affect the airport environment and the airport community. An environmental review of the possible impacts associated with each of the alternatives was undertaken as part of the rating process. This review included assessing how the environment could be affected by the proposed development, and to what degree (e.g., acres of ground disturbance). Chapter 3 facility requirements included diagramming of areas of disturbance on the Airport.

Development Costs

This criterion was used to rate each of the terminal development alternatives based on conceptual/estimated development cost.

Facility Requirements

This criterion was used to rate the Terminal development alternatives based on ability to satisfy the facility requirements identified in Chapter 3. Facility requirements are developed from an analysis of the air service study and the demand and capacity of the airport to reestablish air service. Specific projects associated with the Terminal development alternatives that are required to meet existing and future demand at the Airport include:

- Terminal space to meet Mandatory, Desired and Commercial Operations for 20,000 annual enplanements.
- Terminal space for CBP to process international flights
- A minimum of 67 additional parking spaces
- Solar sun shades in the parking area to improve airport sustainability

Implementation Feasibility

This criterion answers the question: What is the likelihood that this alternative will be implemented? The preferred development alternative must have the ability to be implemented through logical phases that meet the Airport's increasing requirements to reestablish air service by the year 2022. Therefore, each alternative was rated on its feasibility for implementation, considering both quantitative and qualitative factors. These include factors such as the urgency of the need to address terminal space deficiencies and safety concerns, the degree of environmental impacts, feasibility of needed land acquisition, and the sponsor's willingness to bear the development cost (along with funding from the FAA and the NMDOT-A).

Alternative Evaluation Matrix

Each alternative was evaluated based on the five criteria discussed previously: Fundability, environmental impacts, development costs, facility requirements, and implementation feasibility. The evaluation matrix (Table X-x) uses a scale of 1 to 5 to rate each alternative for its ability to satisfy each criterion. The alternative ratings are then totaled. This system allows each alternative to be judged on the whole and on each individual criterion. By totaling individual ratings for each of the evaluation criteria, the alternatives can be ranked in order of preference. The following matrix shows the evaluation of the alternatives based on the specified criteria.

The analysis of the five alternatives are ranked in order of precedence:

1. Alternative C - Refurbish Bldg 8960
2. Alternative E - Addition to Bldg 8990 (16,812 sf) and Refurbish Bldg 8960
3. Alternative D - Addition to Bldg 8990 (8,580 sf)
4. Alternative A - No Build
5. Alternative B - East side Commercial Terminal Building

Alternative C - Refurbish Bldg 8960 (10,000sf) This alternative is fundable and has few impacts to the environment. The development cost is reasonable due to the estimated cost per square foot to refurbish the building, however, this alternative does not meet all of the facility requirements. This alternative does not have the Desired space (restaurant, concessions, training/office space or CBP space, but will provide adequate space for Commercial air service operations and additional vehicular parking.

Alternative E - Addition to Bldg 8990 (16,812 sf) and Refurbish Bldg 8960 is fundable, all or in part. It is currently unknown what the FAA will entertain. It is possible the FAA will see the need of adding space to the Terminal to support commercial air service but not space for CBP to process international passengers. There will be environmental impacts due to the construction of an addition although the impacts should be minimal as this area is already disturbed and paved with bituminous materials. The estimated development cost is reasonable. The feasibility of implementing

Table –16 - LRU - Alternative Analysis Matrix

Alt.	Description	Fundability	Env. Impacts	Dev. Cost	Facility Reqs	Feasibility	Total Score
A	*No Build*	*5*	*5*	*5*	*1*	*5*	*21*
B	*East side Commercial Terminal Building*	*2*	*1*	*1*	*3*	*1*	*8*
C	*Refurbish Bldg 8960 (10,000 sf)*	*5*	*5*	*4*	*3*	*5*	*22*
D	*Addition to Bldg 8990 (8,580 sf)*	*5*	*4*	*3*	*3*	*5*	*20*
E	*Addition to Bldg 8990 (16,812 sf) and Refurbish Bldg 8960*	*4*	*4*	*4*	*5*	*4*	*21*

Note: Rating range from 1= worst to 5= best

Source: DuBois & King, Inc.

this alternative, as a whole, is unknown until the FAA is engaged regarding the CBP attribute. This alternative is the only alternative that meets all of the facility requirements and includes; Mandatory, Desired, Commercial Air Service Operations and CBP space as well as additional vehicular parking.

Alternative D - Addition to Bldg 8990 (8,580 sf) is fundable and has few impacts to the environment. The development cost is higher than Alternative C due to the estimated cost per square foot to construct. This alternative does have environmental impacts due to the construction of an addition although the impacts should be minimal as this area is already disturbed and paved with bituminous materials. The estimated development cost is higher than Alternative C due to the cost per square foot to construct versus refurbishment. This alternative does not provide the Desired space (restaurant, concessions, training/office space, etc) or CBP space, but will provide adequate space for Commercial Air Service Operations as well as additional vehicular parking.

Alternative A - No Build was not considered or evaluated. It does not meet the facility needs for Air Service.

Alternative B - East side Commercial Terminal Building is privately fundable however since the 2015 Action Plan was finalized, the airport does not have any viable offers by private developers. In addition, neither of the two FBO's, Francis and Southwest, have stepped forward as a developer. This is mentioned because it would be reasonable to expect an investor of the East side to want to be an FBO. This would add a third FBO to the airport and may create such competition that one of the FBO's dissolve. The environmental impacts to this development area would be the highest of the five alternatives as an estimated 29 acres would be disturbed during construction. This alternative does meet all of the facility requirements. The estimated construction costs are over $13 million and would need to be funded as a private/public partnership. The probability of this being funded, designed and constructed prior to 2022 and in time for air service to begin is low. For these reasons, Alternative B scored the lowest of all the alternatives.

Summary and Terminal / Vehicular Parking Spaces Alternatives Recommendation

Based on the air service demand research, the facility requirements discussed in Chapter 3 of this document and the City of Las Cruces 2017-2022 Strategic Plan, it is recommended that the Airport pursue Alternative E - Addition to Bldg 8990 (16,812 sf) and Refurbish Bldg 8960. This alternative provides the airport with the following:

- Mandatory, Desired and Commercial Air Operations space
- Customs and Border Protection (CBP) International passenger processing space
- 67 additional parking spaces to accommodate reestablished air service (expandable)
- Solar covered parking to assist with airport sustainability

Chapter 5. Implementation

Introduction

The research conducted during the development of this document identified the number one short fall at the airport that could limit the potential of air service to be reestablished is the Terminal building. A plan for the recommended terminal development was identified in Chapter 4: Alternatives Analysis based on the existing conditions, aviation air service research and facility requirements.

The implementation plan provides guidance on how to implement the preferred development recommendations from this Air Service Facilities Need document. This chapter includes the following sections:

- Considerations
- Implementation Summary
- Implementation Process
- Financial Overview
- Capital Improvement Plan
- Additional Improvements Recommended for Implementation

Considerations

Between now and the time air service begins the following will need to be accomplished:

- Terminal building expanded
- Additional vehicular parking spaces constructed
- Airport Certification Manual updated from Class IV to Class II or III
- Air service forecast created
- A lease and operating agreement written and executed between LRU and the Airline

The Terminal building expansion can be financially sequenced to balance the start date of air service, other competing projects on the current airport capital improvement plan, environmental/agency approval, and financial constraints. The recommended alternative for the Terminal building was to add 16,812 sf to Building 8990, refurbishment of Building 8960 and adding 67 additional parking spaces with solar canopies.

Sequencing of the terminal building expansion, from a financial perspective, can be accomplished with FAA consult and buy-in. This could be accomplished by the City of Las Cruces securing a 5-year treasury loan or similar instrument to fund and construct the terminal project now. Concurrently, and with FAA buy-in, the project is added to the ACIP for 2022 or 2023. The project would follow FAA procurement procedures so that the City can be refunded the cost of the project in the year identified in the ACIP.

Implementation Summary

The recommended terminal project is an immediate need of the airport if they want to begin air service and should be prioritized as such. The actual implementation will vary depending upon air service start date and financial considerations. The terminal project will require detailed planning, estimating, environmental documentation, design and construction steps prior to its completion.

Implementation Process

Assuming Federal funding will be utilized, the airport must go through an established process to receive the federal funds to complete an airport development project. The timing of air service may require the airport to accelerate the terminal project. The FAA requires long lead times to complete all project steps and incorporate projects into funding plans which is why the airport should consider alternative funding treasury loans or bonding, with reimbursement from the FAA at a later date. Additional coordination may be required if National Environmental Policy Act (NEPA) environmental documentation is needed. Common steps in the project implementation process for a project such as the Terminal include:

- Select a qualified consultant / engineer for the project planning, survey, design, construction administration, or environmental reviews for the project.
- Update the Capital Improvement Plan (CIP) to identify the project scope, eligibility, justification and funding. Coordinate closely with FAA Fort Worth Airports District Office (ADO).
- Assure the project is identified on the Airport Layout Plan, complete necessary airport planning studies and collect supporting documentation to demonstrate the project is justified for AIP funding, and is compatible with the Airport Layout Plan. Input proposed building into OE/AAA and conduct airspace analysis with FAA
- Solidify project funding plan and final justification with FAA.
- Complete any required NEPA environmental documentation and analysis for the proposed action. The Terminal may be Categorically Excluded (CATEX).
- Obtain environmental clearance and permits for the proposed action. Prepare detailed project plans and specifications including design report, airspace studies, Safety Management Systems (SMS) and construction safety/phasing plan. Finalize project schedule.
- Complete final design working closely with the airline, the Transportation Security Agency (TSA) and Customs and Border Protection (CBP) to ensure each entity's space needs and layouts are met. Solicit bid proposals from companies engaged in the project construction. Prepare grant application and submit to FAA. The project may be on an accelerated path and FAA grant funding may be programmed for a later date, however every step of the terminal project should be closely coordinated with FAA ADO. Issue notice to proceed and monitor construction. Maintain FAA grant compliance and payments.
- After Construction: Submit final report and close out paperwork to FAA for review. Confirm in writing with the FAA that all steps have met their satisfaction and the CIP reflects when the City of Las Cruces can expect a grant to reimburse the project.

Financial Overview

The implementation plan considers the airport's ability to fund the terminal alternative identified in Chapter 4: Alternatives Analysis. The terminal project has been discussed in detail for realistic project sequencing based on identified air service demand, City strategic priorities and available funding. Financial feasibility is a major consideration in developing the implementation plan and Capital Improvement Plan (CIP).

Sources of Funding

Airport funding for the terminal may be derived from many sources. Funding sources can be categorized into three main categories:

- Federal funding - FAA
- State funding - -A
- Local or Private funding - City of Las Cruces or Investors
- Non-traditional funding - Treasury Loans, General Obligation Bonds, etc.

The funding that is planned for Las Cruces International Airport is summarized as follows:

Federal

Most funding for airport development comes from federal government programs. Currently the most predominant program is the Airport Improvement Program, commonly referred to AIP, managed by the Federal Aviation Administration (FAA). Although there are some exceptions, the current legislation limits the federal share of allowable AIP costs at 90 percent for most non-hub primary or smaller airports. The remaining 10 percent is considered the local share. In New Mexico, the State provides a 5 percent match with all AIP funds leaving the airport sponsor with a 5 percent share of the project cost.

Non-Primary Entitlements

These funds are available to general aviation airports, enplaning less than 10,000 passengers per year. Las Cruces Int'l Airport is eligible to receive $150,000 of NPE each year.

Primary Entitlements

These funds are available to airports with scheduled passenger service and enplaning more than 10,000 passengers per year. Once Las Cruces reaches 10,000 annual enplanements, the airport will be eligible to receive primary entitlements in the amount of $1,000,000 per year. Although that amount is subject to annual Congressional appropriations, it is reasonable to expect continued funding at this level for the duration of the current FAA reauthorization law, which continues to be extended.

Discretionary

Discretionary funding is used for higher priority AIP funded projects where passenger entitlements are not sufficient to cover the total federal share. Most AIP-eligible projects would be eligible for discretionary funding. However, the assignment of discretionary funds is determined by the FAA, and extensive coordination with the FAA is required to determine the potential availability of discretionary funding for specific projects. Individual projects are given a weighted National Priority Rating based on project purpose, type, component and airport type. By coordinating with the FAA Fort Worth ADO, Las Cruces should rank high in this component given the City's desire to develop air service. Safety and preservation projects of AIP funded runways rank the highest, but projects such as the LRU Terminal building are ranked against other projects and facilities regionally and nationally.

In-depth discussions with FAA representatives are necessary to determine the potential availability of discretionary funding for an AIP-funded project.

State
State funding for airport development is managed by the New Mexico Department of Transportation's Division of Aviation. This funding, appropriated annually through the NM Legislature, comes primarily from aviation fuel taxes. The State of New Mexico currently provides a 5 percent match for AIP funded projects. This funding source has been factored into AIP-funded projects.

Local
An airport does not typically satisfy its capital development needs with internal funding sources alone. Federal, state, and private funding, together with airport funds and bond proceeds, are usually combined to produce the total funds required for capital projects.

Capital Improvement Plan
As discussed throughout this document, the Terminal building is the number one priority and potential impeding factor to develop air service at Las Cruces. The Capital Improvement Plan (CIP) is the key outcome of the implementation plan. The current CIP was prepared based on the FAA eligible projects identified in the LRU Action Plan and the needs of the airport as they present themselves. Without planning and vetting with the FAA, projects are not AIP eligible. The Implementation Plan has provided the necessary steps to planning, designing, permitting and constructing a terminal building to meet the Mandatory, Desired and Commercial Operations space needs. Given the CIP is subject to change on an annual basis it is recommended that a comprehensive review of the current CIP is conducted and re-prioritized with close coordination with the FAA and NMDOT-A.

Additional Recommended Improvements
In addition to the terminal, other improvements and efforts were identified, however, these items will not impact air service in the short term. The identified improvements are better suited as part of a Master Planning effort. A summary of these improvement include:

Master Plan Update
Numerous areas require further research to fully support air service development. The previous Action Plan did not fully anticipate the reestablishment of air service and with the City's intent, the Action Plan should be updated. The following areas should be considered as part of a technical master planning effort:

- Forecasting - Air Service forecasting
- Terminal Apron Space - Terminal Area Update Plan
- Vehicular Parking - Adequately sized vehicular parking based on unconstrained forecast
- Aircraft Storage - Space for larger commercial aircraft
- Fuel Farm Facilities - Adequately sized fuel farm to support the unconstrained forecast
- Instrument Approach Procedures - IAP's supporting 2 runways
- Airport Pavement Maintenance Plan (PMP) - A PMP that will strategically maintain pavement in accordance with Sponsor Assurance 11.

Recommendation:
It is recommended that the Airport engage the FAA and discuss funding of an Airport Master Plan update.

ARFF Equipment

As the airport develops air service, ARFF equipment will need to be considered. Currently the Airport is considered an ARFF Index A (aircraft less than 90 feet in length), Class IV (Unscheduled Air Carrier operations).

Preliminary research shows an initial air service with 2 daily departures, with potentially 50-seat aircraft (greater than 90 feet in length). It is recommended in a Master Plan Update that air service forecasting is developed. Without this forecasting, it will be difficult for the airport to forecast when ARFF Index B equipment should be acquired (Average of 5 daily departures with aircraft greater than 90 feet in length). It takes approximately 18 months to acquire equipment.

Recommendation:
Invest in a master plan with air service forcasting to plan for investments in ARFF Equipment.

Update Airport Capital Improvement Plan (ACIP)

In the short term, there is an immediate need for a terminal building that would provide, at a minimum, space for Commercial Air Service Operations. It is assumed that if the Airport utilizes FAA funding to pay for the terminal building, the ACIP will need to be updated to reflect this. This may impact projects that are currently planned and the airport will need to prioritize the projects based on safety first and then need.

A Master Plan Update (MPU) will provide the airport with more detailed information as it relates to facility needs and alternatives for the Terminal Area Plan which will include the Terminal Apron and aircraft tie-downs. The MPU will also evaluate the need for aircraft storage, an adequately sized fuel farm, the development of instrument approach procedures and a pavement maintenance plan. This planning effort will drive an updated capital improvement plan, additional projects and their prioritization.

Recommendation:
Update Airport Capital Improvement Plan as part of a Master Planning effort.

Airport Certification Manual Update

The Airport Certification Manual (ACM) provides in print form the standard operating procedures and standards used to implement the requirements specified in 14 CFR Part 139. It also provides a comprehensive description of facilities and equipment used to satisfy those requirements.

The document is maintained by the Las Cruces Int'l Airport Administrator and approved by the FAA. One of the most obvious changes that will need to happen to the ACM relates to the Airport Classification. Las Cruces is currently classified as a Part 139 Class IV airport which allows the airport to receive unscheduled, large air carrier operations. Large air carrier aircraft are defined as those designed for at least 31 passengers. Class IV airports, by definition, are not certificated to accommodate scheduled service and may only serve unscheduled passenger operations of large air carrier aircraft.

Recommendation:
It recommended that the Airport Administrator begin engaging with the FAA Airport District Office (ADO) and discuss air service potential and steps to amending the ACM prior to the commencement of scheduled air carrier operations. Updates may include Classification change, Sign and Marking Plan (Apron), security and lighting.

Chapter 6. Executive Summary

The Las Cruces International Airport Facilities Needs Assessment serves the City of Las Cruces and Las Cruces International Airport (LRU) by analyzing existing conditions and facilities in order to propose alternative investment and development scenarios to improve Airport operations and profits as well as preparing for scheduled air service in coming years.

This report develops and outlines five unique terminal expansion and renovation alternatives that can improve the airport's ability to host scheduled air service and increase annual enplanements. The preferred alternative in this report involves constructing an addition to building 8990 and refurbishing building 8960, connecting the two buildings. This recommendation has the potential to provide the airport with mandatory and desired commercial air operations space, transportation security administration and customs and border protection space for processing continental United States and international passengers, and additional parking spaces covered in solar panels aimed to improve airport sustainability.

These improvements are in line with the City of Las Cruces 2022 strategic plan goal #18, which states that "the airport terminal will be renovated to accommodate 20,000 enplanements per year." Cresting 10,000 annual enplanements per year will increase the airport's FAA derived funding from a current level of $150,000 annually for non-primary entitlement funds to $1,000,000 annually for primary entitlement funds.

To support these goals, the facility inventory chapter of this report provides a snapshot of current facility conditions and capacity at LRU. Facilities reviewed include terminals, apron space, vehicular parking, wind coverage, runways, hangars, taxiways, aircraft storage, fuel farm facilities, aircraft rescue and fire fighting facilities & equipment, ground support equipment, and navigation aids.

The facility requirement chapter builds upon an air service demand study in order to estimate the airport's share of future regional air passenger volume to various destinations. Through this air service demand study, future facility demands are forecast to identify existing deficiencies in regards to current facilities, and provide an understanding of how LRU can reach its stated goal of 20,000 annual enplanements.

The alternatives chapter of this document outlines five unique alternatives for terminal renovation and expansion, and provides concept level cost estimation and analysis of each alternative. Alternatives are then ranked and evaluated through a matrix which considers cost, environmental impacts, development feasibility and regulatory requirements to arrive at the preferred alternative of terminal building expansion and rennovation.

Executive Summary (continued)

In order to support the City of Las Cruces and LRU towards these goals, the fifth chapter of this document is developed as an implementation chapter which provides guidance towards funding sources and additional recommended improvements for the airport. In summary, for the airport to consider scheduled air service, it will need to plan for, design, permit and construct new infrastructure. The current terminal is not adequate in size and layout to accommodate the stated goal of 20,000 annual enplanements. The number of vehicular parking spaces will need to be increased from its current capacity to meet the demand of passenger vehicular parking. A master planning effort should be conducted in order to better understand how increasing the Terminal area apron space could deconflict short term scheduled air service with commercial air taxi aircraft. As a part of the master plan update, the fuel farm will need to be evaluated to ensure it is correctly sized to meet the fuel demands of long term scheduled air service.

A master plan update would also forecast airport operations. As scheduled air service increases, depending on the volume and type aircraft, the airport will need to be prepared to program for and acquire new airport rescue and firefighting equipment. Lastly, when the airport changes from unscheduled air service (Part 139 - Class IV) to a scheduled air service (Part 139 - Class I or II) then the airport certification manual will need to be updated to reflect airport operations, pavement markings, and proper classification.