6. FACILITY REQUIREMENTS

This chapter presents the airside and landside facility requirements necessary to accommodate existing and forecasted demand at St. George Regional Airport in accordance with Federal Aviation Administration (FAA) design criteria and safety standards. The facility requirements are based upon several sources, including the aviation demand forecasts presented in Chapter 4, *Forecast*; FAA Advisory Circular (AC) 150/5300-13A (Change 1), *Airport Design;* and 14 Code of Federal Regulations (CFR) Part 77, *Safe, Efficient Use, and Preservation of the Navigable Airspace.* The findings of this chapter serve as the basis for the formulation of Airport alternatives and development recommendations.

I. AIRFIELD CAPACITY ANALYSIS

Airfield capacity refers to the ability of an airport to safely accommodate a given level of aviation activity. The FAA has prepared several publications and computer programs to assist in the calculation of capacity. This report will use the methodologies described in FAA AC 150/5060-5, *Airport Capacity and Delay*.

Capacity is described using three metrics: ASV, VFR hourly capacity, and IFR hourly capacity. The ASV is a reasonable estimate of the annual capacity, or the maximum annual level of aircraft operations, that can be accommodated at an airfield. It should be noted that airports could, and often do, exceed their stated ASV. However, delays begin to increase rapidly once the ASV has been exceeded. For prudent planning purposes, once regular airport operational levels reach 60 percent of the ASV, planning for capacity-increasing measures should take place. Once an airport reaches 80 percent ASV, construction of capacity-increasing measures should begin, or demand strategies be put in place.

The VFR and IFR hourly capacities are the maximum number of aircraft operations that can take place on the runway system in one hour under VFR or IFR conditions, respectively. When hourly demand approaches or exceeds the hourly capacity, delays may force traffic into the succeeding hours or cause aircraft to divert to other airports.

Factors Affecting Capacity

It is important to consider the various factors that affect the ability of an air transport system to process demand. Once these factors are identified and their effect on the processing of demand is understood, efficiencies can be evaluated. The airfield capacity analysis considers several factors that affect the ability of the Airport to process aviation demand. These factors include:

Meteorological Conditions - As weather conditions change, airfield capacity can be reduced by low ceilings and visibility. Runway usage will change as the wind speed and direction change, also impacting the capacity of the airfield.

As mentioned in *Chapter 2 – Inventory*, VFR conditions occur at the Airport approximately 99.49 percent of the time, while IFR conditions occur approximately 0.51 percent of the time.

Runway/Taxiway Use Configurations - The configuration of the runway system refers to the number, location, and orientation of the active runway(s), the type and direction of operations and the flight rules in effect at a particular time. SGU has a single runway which includes a full-parallel taxiway.

Aircraft Fleet Mix - The capacity of a runway is also dependent upon type and size of aircraft that use it. FAA AC 150/5060-5 places aircraft into one of four weight classes (A through D) when conducting capacity analysis. These classes are based on the amount of wake vortex turbulence created when the aircraft passes through the air. Class A aircraft are small (less than 12,500 pounds), Class B aircraft are also less than 12,500 pounds but with multiple engines, Class C aircraft are greater than 12,500 pounds, but less than 300,000 pounds, and Class D aircraft are greater than 300,000 pounds. The formula for finding the mix index is %(C + 3*D). At airports with only Class A and B aircraft, the separation distance required for air traffic is lower than at airports with use by aircraft in Class C or D, as small aircraft departing behind larger aircraft must hold longer for wake turbulence separation. The greater the separation distance required, the lower the airfield's capacity. Using this formula, the existing mix index is 43 percent, and the future mix index is anticipated to be 50 percent through the end of the planning period.

Percent Arriving Aircraft - The capacity of a runway is also influenced by the percentage of aircraft arriving at an airport during the peak hour. Arriving aircraft are typically given priority over departing aircraft; however, arriving aircraft generally require more time to land than departing aircraft need to takeoff. Therefore, the higher the percentage of aircraft arrivals during peak periods of operations, the lower the ASV. The percent arriving aircraft for SGU is 50 percent.

Percent Touch-and-Go Operations - A touch-and-go operation refers to an aircraft maneuver in which the aircraft performs a normal landing touchdown followed by an immediate takeoff, without stopping or taxiing clear of the runway. A touch-and-go is counted as two operations. These operations are normally associated with training and are included in the local operations. The touch and go factor for SGU is expected to be between 10 and 20 percent of operations throughout the planning period.

Exit Taxiway Locations - A final factor in analyzing the capacity of a runway system is the ability of an aircraft to exit the runway as quickly and safely as possible. The location, design, and number of exit taxiways affect the occupancy time of an aircraft on the runway. The longer an aircraft remains on the runway, the lower the capacity of that runway. **Table 6-1** below identifies right-angle exit taxiway locations from the landing threshold.

Table 6-1: Exit Taxiway Locations

Landing RWY	TWY A1	TWY A2	TWY A3	TWY A4
RWY 19	Threshold	3,000 ft	6,500 ft	9,300 ft
RWY 1	9,300 ft	6,300 ft	2,800 ft	Threshold

Source: McFarland Johnson analysis, 2021.

Table 6-2 summarizes the percentage of aircraft, categorized by weight class, that can exit right-angled taxiways on a wet runway based on distance from the landing threshold. This information is given in FAA AC 150/5300-13B.

Table 6-2: Exit Taxiway Cumulative Utilization Percentages

Distance (ft)	Wet Runway		
	A	B	C
2,000	60%	0%	0%
2,500	84%	1%	0%
3,000	96%	10%	0%
6,000	100%	100%	48%
6,500	100%	100%	71%
9,000	100%	100%	100%

Note: A = single engine 12,500 lbs. or less, B = multi-engine 12,500 lbs. or less, C = aircraft greater than 12,500 lbs. & less than 300,000 lbs.
Source: FAA AC 150/5300-13B, Airport Design.

Peaking Characteristics - Peak periods of aviation activity are defined in terms of peak month and peak hour operations, with a focus on the number of aircraft operations accommodated by the runway at any given time. In Chapter 4, *Forecasts*, the peak hour operations were determined to be 19 in 2020 and 22 in 2040.

Capacity Calculations

FAA AC 150/5060-5 offers guidance used to calculate airfield capacity and provides planning estimates for hourly airfield capacity under both VFR and IFR conditions, which are the theoretical maximum number of aircraft operations (takeoffs and landings) that can take place on the runway system in one hour under VFR or IFR conditions. The various capacity elements are then consolidated into a single ASV for the Airport.

With the existing information outlined above and FAA capacity guidance, the following summarizes the key capacity analysis elements that were used for the hourly and annual capacity calculations for the Airport:

- Runway 1-19 is the primary runway.
- In all-weather and IFR conditions, Runway 19 is favored over Runway 1.
- Aircraft fleet mix index is anticipated to be approximately 50 percent through the planning period.
- Arrivals represent 50 percent of operations during the peak period for existing and future conditions.
- Touch-and-go operations comprise approximately 10-20 percent of total operations at the Airport. This is anticipated to remain the same within the planning period.
- A full-parallel taxiway is available for Runway 1-19, which allows aircraft to exit the runway efficiently. The Airport can accommodate 48-71 percent of weight Class C aircraft in wet conditions, depending on direction of landing operation.
- Runway 19 is equipped with an LDA approach.
- There are airspace limitations affecting runway use since the Airport shares a CTAF with a neighboring general aviation airport in the vicinity.

According to AC 150/5060-5, *Airport Capacity and Delay*, the ASV of the Airport is approximately 195,000 operations per year, with an hourly capacity of approximately 74 VFR and 57 IFR operations per hour. This capacity is based on the airfield configuration, airspace operational practices from the lack of a control tower result in lower IFR capacities depending on the type of operation.

II. AIRFIELD FACILITY REQUIREMENTS

Airside facility requirements address the items that are directly related to the arrival and departure of aircraft, primarily runways and taxiways and their associated safety areas. To assure that all runway and taxiway systems are correctly designed, the FAA has established criteria for use in planning and design of airfield facilities. The selection of appropriate FAA design standards for the development of airfield facilities is based on the characteristics of the most demanding aircraft expected to use an airport, or a particular facility at an airport, on a regular basis (500 operations or more per year). Correctly identifying the future aircraft types that will use an airport is particularly important, because the design standards that are selected will establish the physical dimensions of facilities, and the separation distances between facilities that will impact airport development for years to come. Use of appropriate standards will ensure that facilities can safely accommodate aircraft using the Airport today, as well as aircraft that are projected to use the Airport in the future.

Runway Design Code

FAA AC 150/5300-13A presents runway design standards based on RDC, comprised of the AAC, ADG, and visibility minimums associated with the most sophisticated approach to the runway. In recent years, the RDC of Runway 1-19 at SGU has been C-II-2400, however with the introduction of regular use of the larger CRJ-900, the SGU RDC is considered to be C-III-2400.

Chapter 4 - SGU Forecast identified the critical aircraft that would be operating at the Airport by the end of the planning period. The critical aircraft include the Embraer 175, CRJ-900, Boeing 737-800 (or 737 Max 8), and the Airbus A320 (or A320 NEO), which are all C-III or D-III aircraft. Therefore, runway requirements for the planning period will be based around C/D-III aircraft.

Approach Reference Code

Similar to the RDC, the APRC is comprised of AAC, ADG, and visibility minimums, yet is based on existing runway to taxiway separation intended to identify the maximum RDC that could be accommodated within standards at the airport. The Airport has a runway to taxiway separation of 600 feet for Taxiway A and 400 feet for Taxiway B, and visibility minimums at lower than ¾ mile but not lower than ½ mile. The APRC is therefore D/IV/2400.

Departure Reference Code

The DPRC is also based on existing runway to taxiway separation and is comprised of the AAC and ADG. The DPRC varies because of the runway to taxiway separation differences between Taxiway A and Taxiway B. The DPRC is D/VI when in reference to aircraft on Taxiway A, and D/V when in reference to aircraft on Taxiway B.

Runway Length

A wide variety of aircraft use SGU on a daily basis. These aircraft, both large and small, have different runway requirements. In some cases, smaller or older aircraft may require more runway length than larger or more efficient aircraft. A significant number of factors go into determining the runway performance of an aircraft such as airport elevation, ambient environmental conditions, aircraft weight, payload, flap settings and runway condition (wet/dry), which then dictate the runway length requirements that must be met in order for an aircraft to utilize that runway.

The FAA has published AC 150/5325-4B, *Runway Length Requirements for Airport Design*, to assist in the determination of the required runway length. The recommendations for runways are based on the performance of specific aircraft or a family of similar aircraft and assume unobstructed runway ends.

For aircraft over 60,000 pounds MTOW, AC 150/5325-4B recommends determining runway length using the runway length requirement of the most demanding aircraft regularly utilizing the airport. The runway length for the maximum performance of a specific aircraft can be found in the aircraft planning manual of the critical aircraft. As previously noted, the existing critical aircraft is a composite comprised of the CRJ-900, the Embraer E175, the Airbus A320, and the Boeing 737-800, which constitute an AAC-ADG of C/D-III. Per AC 150/5325-4B, runway lengths should be identified for MTOW and MLW at the mean daily maximum temperature of the hottest month. Table 6-3 identifies the MTOW and MLW of each of the critical aircraft.

Table 6-3: Critical Aircraft Weight Characteristics

Aircraft	MTOW	MLW
E175	85,517 lbs.	74,957 lbs.
CRJ-900	84,500 lbs.	73,500 lbs.
Airbus A320	174,165 lbs.	146,166 lbs.
Boeing 737-800	174,200 lbs.	146,300 lbs.

Source: Embraer, Bombardier, Airbus, Boeing Airport Planning Manuals, 2021.

For this study, runway length requirements will be calculated by taking into consideration the elevation and average hot temperature at the airport, the performance characteristics of the individual aircraft, runway conditions, the operating weight, and the amount of payload (passengers, baggage, and cargo) being carried. The following sections identify FAA recommended adjustments to runway length calculations as well as the assumptions made specific to this analysis used to guide the realization of preferred runway lengths at SGU.

Density Altitude

When aircraft operate during periods of high temperatures, the relative increased density altitude decreases an aircraft's operational performance. Density altitude is defined as the altitude at which the density of the ISA is the same as the density of the air being evaluated. Actual density altitude for any given location at any specific time is a function of ground elevation, temperature, atmospheric pressure, and dew point (or the amount of water vapor in the air). Being that the density altitude changes over time and has the potential to impact aircraft operational performance, it is prudent to plan a runway to accommodate its traffic demand during times of elevated density altitudes when aircraft operate with less efficiency.

Runway Gradient

The FAA recommends that the determined runway lengths required for an airport be adjusted, if necessary, to account for specific conditions including the maximum difference in runway centerline elevation along the runway's length and runway surface conditions. The maximum difference of runway centerline elevation has the potential to impact recommended runway lengths. A runway that has variation in centerline elevation between runway ends produces uphill and downhill conditions, which in turn, impose additional limitations on aircraft when arriving or departing the airfield. For instance, an aircraft departing a runway on its uphill alignment will require additional power and runway length to compensate for the uphill situation. Conversely, aircraft landing on a runway will require additional distance to come to a full stop if oriented on the runways' downhill alignment. To adjust for this and ensure runways are appropriately sized to accommodate aircraft in all conditions, the FAA encourages an additional 10 foot of runway length be added to the runway length calculation for each foot of elevation difference between the high and low points of the runway.

Contaminated Runway Conditions

An adjustment is made to a determined runway length relative to the runway's surface condition to address wet and/or slippery runways for landing operations. Wet, slippery, or otherwise contaminated runway conditions decrease traction and reduce the deceleration performance of aircraft during landing operations. To account for this, the required runway length for landing under dry/uncontaminated conditions is increased by 15 percent, as prescribed by the FAA, to adjust landing length requirements for wet conditions.

Input Data and Assumptions

To perform initial calculations and determine a baseline understanding of the optimal runway lengths for SGU, the following input data was used, and assumptions made:

- The fleet mix of aircraft include the critical aircraft identified in *Chapter 4 – Forecast*.
  - CRJ-900 flight to Minneapolis (1,000 NM)
  - Embraer 175 flight to Chicago (1,200 NM) and Atlanta (1,400 NM)
- The elevation of the Airport is 2,883.6 feet MSL.
- The temperature at takeoff is assumed to be the average maximum daily temperature of the hottest month for the St. George area (101.4° F).
- Landing distances increased to 15 percent to account for contaminated runway conditions.
- Wind speed was assumed to be zero.
- Aircraft were assumed to operate with their optimal flap settings for takeoff and landings.

Runway Length Findings

Given that the mean maximum temperature of the hottest month is 101.4°F (38.5°C), and the Airport elevation is 2,883.6 feet MSL, there are limitations on aircraft takeoff performance regardless of runway length. In such high temperatures and altitude, aircraft may not be able maintain a safe rate of climb after takeoff at MTOW, so payload must be reduced in order to accommodate these conditions. Short route lengths do not require large amounts of fuel, so payload will typically not be an issue for short flights. However, the number of passengers on a flight may need to be reduced depending on the required fuel for a longer route when taking off in high temperatures and altitude in order to achieve a safe rate of climb after takeoff.

SkyWest Airlines currently operates the Embraer 175 and CRJ-900. Within the planning period, it is anticipated that future operations at SGU will include these aircraft with longer route lengths, such as to Minneapolis, Atlanta, and/or Chicago. Due to the required fuel to reach each destination, the number of passengers onboard will be limited on hot summer days as the temperature nears the mean maximum daily temperature of 101.4°F. This is due to the required climb rate for safe climb, rather than runway length. **Table 6-4** details the weight restrictions of each aircraft based on temperature for takeoffs on Runway 1-19 at SGU.

Table 6-4: Takeoff Weight Limitations by Temperature at SGU

Temp (°F)	Embraer 175	CRJ-900
68°	85,517 lbs.	85,330 lbs.
77°	85,517 lbs.	84,850 lbs.
86°	84,300 lbs.	81,750 lbs.
95°	81,510 lbs.	77,790 lbs.
104°	78,230 lbs.	73,370 lbs.
112°	75,320 lbs.	69,640 lbs.

Source: SkyWest Airlines, 2021.

Although temperatures in the St. George region regularly exceed 101.4°F in the summer months, temperatures for the rest of the year are generally milder. Therefore, aircraft will be able to take off for long routes at MTOW. With a MTOW of 85,517 pounds, the Embraer 175 will need approximately 8,400 feet for takeoff. The CRJ-900, with a MTOW of 84,500 pounds, will need approximately 8,500 feet for takeoff.

With a MTOW of 174,165 pounds, the Airbus A320 will need approximately 8,000 feet for takeoff.

With a MTOW of 174,200 pounds, the Boeing 737-800 will need approximately 10,300 feet for takeoff at an altitude of approximately 2,883 feet MSL. At MTOW, the 737-800 range can be over 3,000 NM, which extends beyond continental North America, meaning that the SGU runway requirement for the 737-800 will be lower. The aircraft may be able to take off from SGU if its weight is reduced to below 170,000 pounds.

Table 6-5 and **Table 6-6** outline the assumptions used to calculate takeoff and landing lengths and their outcomes for each aircraft.

Table 6-5: Takeoff Length Requirements

Inputs	Embraer 175	CRJ-900	Airbus A320	Boeing 737-800
- ISA+15°C - Elevation: 2,883 ft MSL - MTOW	8,400 ft	8,500 ft	8,000 ft	10,300 ft

Source: Embraer, Bombardier, Airbus, Boeing Airport Planning Manuals; McFarland Johnson analysis, 2021.

Table 6-6: Landing Length Requirements

Inputs	Embraer 175	CRJ-900	Airbus A320	Boeing 737-800
- ISA - Elevation: 2,883 ft MSL - MLW	4,800 ft	5,900 ft	5,300 ft	6,200 ft

Source: Embraer, Bombardier, Airbus, Boeing Airport Planning Manuals; McFarland Johnson analysis, 2021.

Recommendation: The length of Runway 1-19 is sufficient to serve the critical aircraft throughout the planning period. Land to the south of Runway 1-19 was previously reserved for a potential ultimate extension. This land should be preserved though no extension is warranted or proposed during the 20-year planning period.

Runway Width

Runways that serve C/D-III aircraft are required to be 100-150 feet wide, regardless of visibility minimums. For aircraft in excess of 150,000 lbs. MTOW, the standard width is 150 ft. At 150 feet wide, Runway 1-19 meets FAA standards for a runway that serves all C/D-III aircraft, including the future design aircraft of the Airbus 320 and Boeing 737-800 which are in excess of 150,000 lbs. MTOW.

Recommendation: Maintain the width of Runway 1-19 to meet FAA design standards for the existing and future critical aircraft.

Runway Orientation

A significant factor in evaluating a runway's orientation is the direction and velocity of the prevailing winds. Ideally, all aircraft take off and land in the direction of the wind. A runway alignment that does not allow an aircraft to go directly into the wind creates what is known as a crosswind component (i.e., winds at an angle to the runway in use), which makes it more difficult for a pilot to guide the airplane down the intended path. The commonly used measure of degree to which a runway is aligned with the prevailing wind conditions is the wind coverage percentage, which is the percent of time crosswind components are below an acceptable velocity. Essentially, this measure indicates the percentage of time aircraft within a particular design group will be able to safely use the runway. Current FAA standards recommend that airfields provide 95 percent wind coverage.

Chapter 2 – Inventory details the all-weather and IFR wind data obtained from NOAA. The RDC of C/D-III coverage is shown by the 16-knot crosswind component. According to the wind analysis, Runway 1-19 meets the FAA required minimum 95 percent wind coverage for the 16-knot crosswind component in either weather condition. Therefore, a crosswind runway is not necessary.

Runway Strength

The weight bearing capacity of Runway 1-19 is 75,000 pounds for single-wheel landing gear and 150,000 pounds for double-wheel landing gear.

Recommendation: Although there is no available PCN for Runway 1-19, the weight bearing capacity is within the limits of the critical aircraft's MLW, which will be sufficient throughout the planning period. The MLW of the 737-800 and Airbus A320 is 146,300 lbs. and 146, 166 lbs., respectively. Both aircraft have double-wheel landing gear, and with a weight bearing capacity of 150,000 lbs., Runway 1-19 is sufficient to serve the critical aircraft at SGU.

Runway Safety Areas

RSAs that serve C/D-III aircraft are required to have a width of 500 feet, a length of 1,000 feet beyond the runway departure end and 600 feet prior to the runway threshold.

Recommendation: The RSA surrounding Runway 1-19 meets standard RSA requirements.

Runway Object Free Areas

ROFAs surrounding runways with an RDC of C-III-2400 (Runway 1-19) have a standard width of 800 feet, originate 600 feet prior to the landing threshold, and extend 1,000 feet beyond the runway end.

Recommendation: The ROFA surrounding Runway 1-19 meets standard ROFA requirements.

Runway Protection Zones

RPZs are located at each runway end and include both approach and departure RPZs. The approach RPZ dimensions for a runway end is a function of the AAC and approach visibility minimum associated with the approach runway end. The departure RPZ for a runway end is a function of the AAC and departure procedures associated with the runway. For a particular runway end, the more stringent RPZ requirements, usually the approach RPZ requirements, will govern the property interests and clearing requirements the airport owner should pursue.

The approach RPZ for the Runway 19 end has an outer width of 1,750 feet, an inner width of 1,000 feet, and a length of 2,500 feet. The approach RPZ for the Runway 1 end has an outer width of 1,010 feet, an inner width of 500 feet, and a length of 1,700 feet.

The departure RPZs for both ends of Runway 1-19 have an outer width of 1,010 feet, an inner width of 500 feet, and a length of 1,700 feet.

Recommendation: The RPZs at each end of Runway 1-19 meet standard RPZ requirements. In the case of decreased visibility minimums due to a change in approach capabilities, increase RPZ dimensions to accommodate the change.

Runway Pavement Markings

Runway 1-19 is equipped with precision runway markings in good condition.

Runway designations are based on the magnetic heading of the runway. A shifting earth magnetic field requires a prudent examination of the runway designations to ensure they are within 10 degrees of the current and future magnetic heading given magnetic declination.

The magnetic azimuth is determined by correcting the runway's true bearing for magnetic declination. To accomplish this calculation, westerly magnetic declination values are added to a runway's true bearing, while easterly magnetic declination values are subtracted.

According to NOAA, the current magnetic declination at SGU is 11°08' east ± 0°36' changing by 0°09' west per year. Since the magnetic declination is easterly, the magnetic azimuths associated with the runways at the Airport are determined by subtracting the declination value to the true bearing values. **Table 6-7** details the results of the future magnetic declination calculation.

Table 6-7: Magnetic Declination Calculations

Factor	Value
Runway 1-19 True Bearing	22.99°
Magnetic Declination	11°08' = 11.08°
Existing Magnetic Bearing	203° - 11.08° = 191.92°
20-Year Declination Change	0°09' W per year = 9/60*20 = 3
Future Runway 1-19	22.99° + 3° = 25.99°

Source: Airnav.com; McFarland Johnson analysis, 2021

Recommendation: Runway 1-19 will not need to be renamed through the planning period. Runway markings should be maintained in compliance with marking standards set forth under the airport's FAR Part 139 Certification.

Instrument Approach Procedures

Runway 19 is equipped with an LDA approach and an RNAV (GPS) approach. Runway 1 is equipped with an RNAV (GPS) approach. Each of the instrument approach procedures provide vertical guidance.

Recommendation: IFR conditions are uncommon for SGU, with IFR conditions only occurring 0.51% of the time, and beyond that the majority of these times conditions favor Runway 19 by approximately 20%. Runway 1 has limited approach capabilities due to rising physical terrain that begins 6 NM south of the Airport. Opportunities for an improved approach to Runway 1 may exist in technology and airspace improvements outside the confines and control of the Airport itself. Minimums near that of precision are not expected for Runway 1 but any improvements in airspace and approach technology will improve access to the Airport during the rare Runway 1 IFR conditions.

Taxiways

Planning standards for taxiways include taxiway width, taxiway safety areas, taxiway object free areas, taxiway shoulders, taxiway gradient, and for parallel taxiways, the distance between the runway and taxiway centerlines. The dimensions of each standard vary based on the identified ADG and TDG for each taxiway. The critical aircraft, namely the Boeing 737-800 and Airbus A320, are TDG-3 aircraft. Each taxiway that serves the passenger terminal building will need to be TDG-3 in order for the critical aircraft to safely operate at the Airport. In general, all taxiways that serve the east side of the Airport will need to have TDG-3 standards, while the taxiways on the west side of the Airport may have TDG-2 standards.

Taxiway A

Taxiway A is a TDG-3 full-parallel taxiway on the east side of Runway 1-19. The taxiway is 50 feet wide, with 20-foot paved shoulders, and has a runway centerline to taxiway centerline separation of 600 feet.

Stub Taxiways (A1, A2, A3, A4)

Taxiway A1, A2, A3, and A4 are TDG-3 perpendicular entrance taxiways that connect Taxiway A to Runway 1-19 and are 50 feet wide with 20-foot paved shoulders. Taxiway A3 provides direct access from the terminal apron to Runway 1-19. Direct access from an apron to a runway is not recommended according to AC 150/5300-13B, as it may cause confusion when a pilot expects to encounter a parallel taxiway but may end up taxiing onto an active runway.

Taxiway B

Taxiway B is a TDG-2 partial-parallel taxiway on the west side of Runway 1-19. The taxiway is 50 feet wide and has a runway centerline to taxiway centerline separation of approximately 400 feet at its closest point.

Stub Taxiway B1

Taxiway B1 is a TDG-2 perpendicular entrance taxiway that connects the Runway 19 threshold to Taxiway B and is 70 feet wide.

Recommendation: It is recommended that Taxiway A3 be relocated to avoid direct access and require pilots to turn onto the parallel taxiway before entering the runway.

To accommodate aircraft at the West Apron area, it is necessary to begin construction of a Taxiway B extension to reach the Runway 1 end. This includes exit taxiways from Taxiway B to Runway 1-19 and will make Taxiway B a full-parallel taxiway. This will increase overall Airport capacity and eliminate the need for aircraft parked at the West Apron to cross Runway 1-19 and taxi down Taxiway A in order to take off on Runway 1.

Additionally, it may be prudent to enhance taxiway shoulders to accommodate for larger aircraft expected to operate at the Airport through the planning period. A dry environment mixed with desert sand and clay may not be suitable for larger aircraft with jet engines that may kick up unwanted debris and cause safety hazards for the aircraft. Widening taxiway shoulders, or adding buffer zones around taxiways, may help prevent this issue.

Taxilanes

Both the East Apron and West Apron feature taxilanes that lead aircraft to hangars and designated parking positions.

Taxilanes on each of the apron areas are designed for ADG-II aircraft, with a TLOFA of 115 feet, a wingtip clearance of 18 feet, and a taxilane centerline to parallel taxilane centerline distance of 97 feet.

Multiple tiedown spots stemming from taxilanes on the East Apron are designed for ADG-III aircraft, with a taxilane centerline to fixed or moveable object distance of 81 feet and a wingtip clearance of 22 feet. There are also tiedown spots on the East Apron and West Apron designed for ADG-I aircraft, with a taxilane centerline to fixed or moveable object distance of 39.5 feet and a wingtip clearance of 15 feet.

Recommendation: Additional apron pavement space should feature taxilanes that are designed to ADG-II standards. In areas with additional aircraft parking positions for ADG-III aircraft, the taxilanes may be designed to ADG-III standards.

Taxiway Pavement Markings

All taxiways on the airfield include yellow, continuous centerlines and continuous taxiway edge line markings which denote the beginning of taxiway shoulder pavement. Prior to each runway/taxiway intersection, runway holding position markings are placed 250 feet from the runway centerline, with enhanced taxiway centerline markings beginning 150 feet prior to the runway holding position marking. The surface-painted runway holding position markings include the runway designation prior to the hold line with a red background and white inscription.

Recommendation: Maintain existing markings to meet FAA standards, additional taxiway construction should include the pavement markings present at the existing taxiways at the Airport.

Airfield Lighting and Signage

Approach Lighting

The approach end of Runway 19 is equipped with a four-light PAPI to the left of the runway with a 3.10-degree glide path angle, as well as a 1,440-foot MALSR approach lighting system with 1,000-foot runway alignment indicator lights. Runway 1 is equipped with REILs and a four-light PAPI to the left of the runway with a standard three-degree glide path angle.

Recommendation: In the case of the addition of a precision approach to Runway 1, it will be necessary to install an approach lighting system such as a MALSR to the Runway 1 end and will replace the existing REILs.

Runway Lighting

Runway 1-19 is equipped with HIRL lighting, which is suitable for the precision approach capabilities of Runway 19.

Recommendation: Maintain HIRL on Runway 1-19.

Taxiway Lighting

All taxiways are equipped with MITL, which is the standard taxiway edge lighting system.

Recommendation: Maintain MITL on all existing and future taxiways at the Airport.

Airfield Facility Requirements Summary

Table 6-8 provides a summary of the recommended airfield facility requirements as detailed in the analyses above.

Table 6-8: Summary of Airfield Facility Requirements

Item/Facility	Existing Facility or Capacity		Ultimate Requirement		Recommendation
	Runway 1	Runway 19	Runway 1	Runway 19	
Runway Length	9,300’		9,300’		Maintain area beyond Runway 1 end for contingency
Runway Width	150’		150’		None
Runway Pavement Markings	Precision		Precision		Maintain markings per AC 150/5340-1M
Runway Safety Areas	Length: 1,000’ Width: 500’		Length: 1,000’ Width: 500’		None
Runway Object Free Areas	Length: 600’ prior to and 1,000’ beyond Width: 800’		Length: 600’ prior to and 1,000’ beyond Width: 800’		None
Runway Protection Zones	Length: 1,700’ Inner Width: 500’ Outer Width: 1,000’	Length: 2,500’ Inner Width: 1,000’ Outer Width: 1,750’	Length: 1,700’ Inner Width: 500’ Outer Width: 1,000’	Length: 2,500’ Inner Width: 1,000’ Outer Width: 1,750’	Adjust dimensions of Runway 1 RPZ if/when approach minima decrease
Instrument Approaches	RNAV	LDA, RNAV	RNAV	LDA, RNAV	Possibility for precision approach to Runway 1
Taxiways	Full parallel Taxiway A 600’ separation Hold lines 250’		Full parallel Taxiway A 600’ separation Hold Lines 250’		Extend Taxiway B to become full parallel Reposition direct access taxiways (Taxiway A3) Construct additional exit taxiways Enhance/widen taxiway shoulders to prevent safety hazards caused by debris
Taxiway Width	50’		50’		Maintain TDG-3 standards for future construction
Runway Lighting	HIRL		HIRL		None
Taxiway Lighting	MITL		MITL		None
Visual Approach Aids	PAPI-4L, REILs	PAPI-4L, MALSR	PAPI-4L, REILs	PAIP-4L, MALSR	Replace REILs with approach lighting system if/when Runway 1 receives precision approach capability

Source: McFarland Johnson analysis, 2021.

III. LANDSIDE FACILITY REQUIREMENTS

Landside facilities must be able to support a wide range of aircraft from small privately-owned propeller aircraft used for recreation to medium-sized corporate jet aircraft used for business travel. Landside facilities for general aviation includes hangars and apron space. At a commercial service airport, landside facilities also include the passenger terminal building and associated automobile parking spaces, rental car facilities, and regional access, which will be included in *Chapter 7 – Terminal Area Requirements*.

Hangars

General aviation hangars are planned for both itinerant and based aircraft. Requirements are calculated based on the size and quantity of aircraft based at the Airport. While each aircraft will vary in size, the following planning factors were used to calculate the approximate hangar space requirements for aircraft based at the Airport:

- 1,200 SF for single-engine and rotor aircraft
- 1,600 SF for multi-engine/turboprop aircraft
- 3,200 SF for jet aircraft

Hangar Demand Assumptions

When calculating hangar demand, it is assumed that 70 percent of single engine and 35 percent of multi-engine aircraft will be stored in small box hangars. It is also assumed that 15 percent of single engine, 55 percent of multi-engine, and 100 percent of jet aircraft will be stored in conventional hangars.

Covered Tie-Downs

In addition to conventional and t-hangars, the Airport has expressed interest in covered tie-down spaces. As covered tie-downs become more available, it is anticipated that there will an increase in desire for covered tie-down parking as compared to small box hangars and traditional uncovered parking. By the end of the planning period, it is assumed that 40 percent of single engine and 20 percent of multi-engine aircraft could be parked in a covered tie-down spot.

Forecast of Based Aircraft

Chapter 4 – Forecasts, shows a 1.25% - 1.75% increase in total based aircraft at SGU for the planning period. This range is based on the FAA TAF growth rate of 1.32% for based aircraft at the Airport and allows for a range of growth rates due to the uncertain factors presented in the FAA Aerospace Forecast of based aircraft, which suggests a decline in single/multi-engine piston aircraft and an increase in turboprop/jet aircraft and rotorcraft. Jets based at SGU are expected to double in the planning period. Overall, the forecast of based aircraft at the Airport through the planning period is expected to range from 256 to 283 aircraft from an existing 200 based aircraft, representing an increase of 56 to 83 based aircraft.

A record of based aircraft provided by UDOT shows that approximately 12% of based aircraft are jet/turboprop aircraft, 86% are piston aircraft, and 2% are rotorcraft.

The FAA Aerospace Forecast includes a prediction of general aviation aircraft trends, by aircraft type, from 2020-2040. The forecast states that there will be a 1% decrease in piston aircraft (both single-and multi-engine), a 1.8% increase in jet and turbine aircraft, and a 1.6% increase in rotorcraft. Based on the existing breakdown of based aircraft provided by Airport management and the trends predicted in the FAA Aerospace Forecast of general aviation aircraft from 2020-2040, it is anticipated that 25% of forecast based aircraft will be jet/turboprop aircraft, 70% will be piston aircraft, and 5% will be rotorcraft.

Based on this assumption, of the 56 to 83 aircraft forecast to be based at the Airport by the end of the planning period, 15 to 21 will be jet/turboprop aircraft, 39 to 58 will be piston aircraft, and 2 to 4 will be rotorcraft. Of the 15 to 21 jet/turboprop aircraft, it is anticipated that 8 to 11 of these will be jet aircraft. It is anticipated that of the 39 to 58 piston aircraft, 22 to 32 will be multi-engine. **Table 6-9** below details the future hangar needs of the Airport through the planning period.

Table 6-9: Hangar Requirements

Hangar Type	Demand	# of Hangars
Small box	26,660-39,760	20-29
Conventional	48,020-68,040	23-33
Total	**74,680-107,800**	**43-62**

Note: Values in square feet.
Source: McFarland Johnson analysis, 2021.

There is currently a waiting list of over 20 individuals for small box hangars on the West Apron, indicating that existing small box hangar capacity has been reached. Airport management has indicated that construction will begin on an additional 15 conventional hangars by the end of 2021 on the East Apron. These hangars will likely be medium-large size, suitable for turboprop/jet aircraft that fall into ADG II and III.

Recommendation: Construction of small box hangars and/or covered tie-down spaces for small aircraft, such as piston single engine aircraft, may begin immediately. Given the existing waiting list for small box hangars, it is necessary to begin construction of at least 20 small box hangars and would most likely take place at the West Apron area. As based aircraft counts increase through the planning period, it will be necessary to begin construction of medium-large size conventional hangars that are suitable for ADG II and III aircraft, since counts of jets/turboprops will increase at a faster pace than piston aircraft. This may coincide with an expansion of the East Apron area, including additional taxilanes and apron parking area.

Aprons

There are four components that typically determine the required ramp area for GA users. They are:

- Based aircraft parking
- Itinerant aircraft parking
- Aircraft fueling ramp
- Staging and maneuvering areas

The sum of these components determines the total area of apron required to meet the forecasted level of GA activity at the Airport. For the purposes of this analysis, the East Apron area will be 60% based aircraft parking and 40% itinerant aircraft parking, while the West Apron area will be 100% based aircraft parking.

East Apron

The East Apron has approximately 185,000 square yards of pavement for aircraft maneuvering and parking. There is no fueling ramp on the East Apron since aircraft are served by fuel trucks from the FBO. The parking areas include 62 ADG I tiedown spots, 13 ADG II and III parking positions, 2 small-medium cargo tiedown spots, and 5 rotorcraft tiedown spots. The forecast of based aircraft and operations concludes that additional parking locations will be needed, especially for ADG II and III aircraft.

West Apron

The West Apron has approximately 68,400 square yards of pavement for aircraft maneuvering and parking. A self-service fueling pad is located adjacent to the apron yet will not be included in the calculation for apron space. The parking area includes 82 ADG I tiedown spots.

Based and Itinerant Aircraft Parking

There is approximately 35,000 square yards of apron space dedicated to based and itinerant aircraft parking on the East Apron, and approximately 10,000 square yards of based aircraft parking on the West Apron. In total, there is approximately 45,000 square yards of based and itinerant aircraft parking space at the Airport. This includes the parking areas for ADG I, II, and III aircraft, as well as for cargo and rotorcraft.

FAA AC 150/5300-13A suggests the below methodology for determining space requirements for itinerant aircraft. Since based and itinerant aircraft share parking space on the East Apron, results will be quadrupled to determine the total space required for both.

- Calculate the itinerant aircraft by assuming all GA itinerant and 50 percent of annual air taxi operations
- Calculate the total peak month design day operations for transient operations using an 11.5 percent peak month factor.
- Calculate itinerant arrivals on the design day assuming that half of the operations are arrivals.
- Assume that approximately 75 percent of these aircraft will require transient parking space during the course of the day. The other 25 percent of the itinerant arrivals are based aircraft that will return to their designated parking areas on the airport (hangar).
- Assume an overnight factor that up to that up to 50 percent will remain one night, 25 percent will remain two nights, and 10 percent will remain three nights.
- Allow an area of 400 SY (3,600 SF) per itinerant airplane, due to the need for taxiing space and aircraft of different sizes.

Table 6-10 through **Table 6-12** present the results of these computations, which have been done for the low, medium, and high operations scenarios presented in *Chapter 4 – Forecasts*. Each scenario increases the GA itinerant operations counts by 10%.

Table 6-10: Low Scenario Itinerant Apron Demand

Year	Peak Mo Itinerant Ops	Daytime Itinerant Demand	Overnight Itinerant Demand	Required Apron Space (SY)
Base	1,123	14	12	10,049
2025	1,202	15	12	10,764
2030	1,284	16	13	11,495
2040	1,466	18	15	13,127

Table 6-11: Medium Scenario Itinerant Apron Demand

Year	Peak Mo Itinerant Ops	Daytime Itinerant Demand	Overnight Itinerant Demand	Required Apron Space (SY)
Base	1,230	15	13	11,013
2025	1,317	16	14	11,793
2030	1,407	17	14	12,594
2040	1,606	19	17	14,380

Table 6-12: High Scenario Itinerant Apron Demand

Year	Peak Mo Itinerant Ops	Daytime Itinerant Demand	Overnight Itinerant Demand	Required Apron Space (SY)
Base	1,338	16	14	11,976
2025	1,432	17	15	12,821
2030	1,529	19	16	13,691
2040	1,746	21	18	15,633

To determine the total demand for both based and itinerant aircraft, the results are multiplied by 5. This is because itinerant aircraft generally make up approximately 20% of the aircraft parking on the East and West Apron. When the required apron space for itinerant aircraft is quadrupled, the total required apron space, for both based and itinerant aircraft, will be determined. The results are taken from the high scenario itinerant apron demand and represent the maximum required apron space for the planning period and are detailed in **Table 6-13** below.

Table 6-13: Apron Parking Demand

Year	Itinerant Demand (SY)	Total Demand (SY)	Requirement (SY)
Base	11,976	59,880	14,880
2025	12,821	64,105	19,105
2030	13,691	68,455	23,455
2040	15,633	78,165	33,165

The total demand for based and itinerant apron parking and maneuvering space for the planning period is up to 78,165 square yards. Given the existing parking space at the Airport is approximately 45,000 square yards, apron parking space will need to be expanded by up to 33,165 square yards by 2040.

Staging and Maneuvering Areas

Approximately 150,000 square yards of the East Apron, and approximately 58,400 square yards on the West Apron, is dedicated to the staging and maneuvering of aircraft. Given that the available apron parking area will need to be expanded, the available apron space for staging and maneuvering will need to increase as well.

It is assumed that proportions of staging and maneuvering areas as compared to the total apron area will remain the same. The current staging and maneuvering areas make up approximately 83% of the total apron area on the East Apron. The future staging and maneuvering areas will need to increase up to 195,000 SY in order to keep the current proportion of staging and maneuvering areas to total apron area.

Recommendation: Apron parking areas will require an increase of up to 33,165 SY and staging and maneuvering areas will require an increase up to 195,000 SY. In total, apron areas will need to be expanded up to 228,165 SY, representing a 60% to almost 100% increase from the existing apron space.

Landside Facility Requirements Summary

Table 6-14 summarizes the requirements for landside facilities at the Airport. Landside facilities for this analysis include the required number and type of hangars as well as required apron space to accommodate the additional itinerant and based aircraft through the end of the planning period.

Table 6-14: Landside Facility Requirements

Item/Facility	Existing Facility or Capacity	Ultimate Requirement	Recommendation
Apron	~45,000 SY parking space ~200,000 SY maneuvering and staging space	Up to ~80,000 SY parking space ~400,000 SY maneuvering and staging space	Expand up to ~230,000 SY (~35,000 SY parking space + ~195,000 SY maneuvering and staging space)
Hangars	15 small-box, 51 medium-large hangars	Up to 107,800 square feet of additional hangar space	Construct 20-29 small-box hangars for ADG I and II aircraft and 23-33 conventional hangars for ADG III and III aircraft

Source: McFarland Johnson analysis, 2021.

IV. SUPPORT FACILITY REQUIREMENTS

Air Traffic Control Tower

Although the Airport receives commercial service, there is currently no ATCT. Commercial and general aviation operations communicate through a CTAF, which is shared with Mesquite Airport (67L). Through the planning period, as commercial and general aviation operation counts increase, activity will likely warrant the construction of an ATCT at the Airport. The airport has filed applications under the FAA Contract Tower Program in recent years. The master plan alternatives will identify potential sites for an ATCT with the recommendation that a full site selection study be conducted to properly site the ATCT for maximum visibility of the airfield.

ARFF/Maintenance Building & Equipment

As discussed in *Chapter 2 – Inventory*, the ARFF station at the Airport is a multi-use ARFF/maintenance/operations facility and operates as an Index B under FAR Part 139. The index is determined by the longest scheduled passenger aircraft utilizing the airport an average of five times per day. The 10,336 square-foot facility is located north-northeast of the passenger terminal building, east of Taxiway A.

Recommendation: The Airbus 320 and Boeing 737-800 represent aircraft that fall within Index C; however, these aircraft are not expected to use the airport in excess of 5 times daily, therefore Index B should be maintained.

SRE Building

The Snow Removal Equipment building, completed in 2019, is a 3,700 square-foot facility located directly east of the ARFF/maintenance building that houses vehicles and equipment primarily used for snow removal purposes. Building size and necessary equipment is based on the equipment needed to clear the Priority 1 area identified in the Airport's snow removal plan, which is typically the primary runway and parallel taxiway at an airport.

Recommendation: With no major changes to Runway 1-19 and Taxiway A (Priority 1 area), the existing SRE facility and equipment are at a sufficient capacity for the planning period and should be maintained in its existing condition.

Fuel Facilities

There are two aviation fuel storage facilities at the Airport. All fuel is stored in above-ground storage tanks.

The primary fuel farm, located southeast of Taxiway A in the vicinity of the Runway 1 end, includes three Jet-A tanks, one 100LL tank, and one diesel tank. SkyWest Airlines owns a 20,000-gallon Jet-A tank and a 24,000-gallon Jet A tank, and Above View FBO and Jet Center owns a 12,000-gallon Jet-A tank and a 12,000-gallon 100LL tank. Additionally, there is an empty 10,000-gallon tank, owned by the Airport for shared use, primarily used to store fuel sludge.

The second fueling facility, located in the West Apron area, includes one 10,000-gallon self-service 100LL tank for general aviation.

The total Jet-A capacity is 56,000 gallons, and the total 100LL capacity is 22,000 gallons. Since the tanks are owned and operated by entities at the Airport (Above View and SkyWest), it is assumed that additional tanks will be installed by the entities when necessary.

Due to the growing demand for electric aircraft, it is prudent to consider a plan for the implementation of electric aircraft charging stations. It is likely that demand for electric aircraft will grow significantly by 2040, so it is necessary to plan the location and utilities infrastructure necessary for electric aircraft charging stations.

Recommendation: The need and timing of additional fuel tanks will be an operational and business decision by SkyWest and/or the FBOs. While operations and demand is expected to continue to grow, aircraft are getting increasingly fuel efficient and this relationship should be considered prior to installing additional tanks, however space should be reserved for up to three additional tanks similar in size to the existing ones.

Security and Fencing

The Airport property is secured by a 6-foot chain-link fence with access points at the East Apron and West Apron areas, as well as the passenger terminal building and ARFF/maintenance facility. Airport security systems and fencing details are available on a need-to-know-basis and should be maintained in compliance with the airport security plan under TSR 1542.

Utilities

All future construction should address utility concerns in preliminary plans, including but not limited to water, power, natural gas, telephone, and internet. Construction and development plans should be mindful of existing utility infrastructure. Contact the appropriate utility authority to outline and mark existing infrastructure early in the planning stage of development.

Support Facility Requirements Summary

Table 6-15 provides a summary of the recommended facility requirements for support facilities. The support facilities include the need for an air traffic control tower, the ARFF/Maintenance and SRE Buildings, the capacity of fuel facilities, and existing security and utilities.

Table 6-15: Support Facility Requirements Summary

Item/Facility	Existing Facility or Capacity	Ultimate Requirement	Recommendation
Air Traffic Control Tower	None	Construct Air Traffic Control Tower	Conduct full site selection study to identity proper site
ARFF	Part 139 Index B	Part 139 Index B	Index B should be maintained through the planning period
SRE/Maintenance Building	Three-bay, 3,700 square-foot facility	Three-bay, 3,700 square-foot facility	Maintain existing condition of SRE Building
Fuel Facilities	56,000 gallons Jet-A, 22,000 gallons 100LL	Additional fuel capacity needed Space for charging electric aircraft	Additional fuel capacity will be provided by SkyWest and FBO; Consider installation of electric charging stations
Security & Fencing	6-foot chain-link fence, access points at GA aprons, terminal, ARFF/maintenance building	Compliance with security plan under TSR 1542	Maintain airport security per TSR 1542
Utilities	Water, power, natural gas, telephone, internet	Maintain existing utility infrastructure	Consider utility infrastructure during construction and development

Source: McFarland Johnson analysis, 2021.

V. SUMMARY OF FACILITY REQUIREMENTS

Table 6-16: Summary of Facility Requirements

Item/Facility	Existing Facility or Capacity		Ultimate Requirement		Recommendation
	Runway 1	Runway 19	Runway 1	Runway 19	
Runway Length	9,300'		9,300'		Maintain area beyond Runway 1 end for contingency
Runway Width	150'		150'		None
Runway Pavement Markings	Precision		Precision		Maintain markings per AC 150/5340-1M
Runway Safety Areas	Length: 1,000' Width: 500'		Length: 1,000' Width: 500'		None
Runway Object Free Areas	Length: 600' prior to and 1,000' beyond Width: 800'		Length: 600' prior to and 1,000' beyond Width: 800'		None
Runway Protection Zones	Length: 1,700' Inner Width: 500' Outer Width: 1,000'	Length: 2,500' Inner Width: 1,000' Outer Width: 1,750'	Length: 1,700' Inner Width: 500' Outer Width: 1,000'	Length: 2,500' Inner Width: 1,000' Outer Width: 1,750'	Adjust dimensions of Runway 1 RPZ if/when approach minima decrease
Instrument Approaches	RNAV	LDA, RNAV	RNAV	LDA, RNAV	Possibility for precision approach to Runway 1
Taxiways	Full parallel Taxiway A 600' separation Hold lines 250'		Full parallel Taxiway A 600' separation Hold Lines 250'		Extend Taxiway B to become full parallel Reposition direct access taxiways (Taxiway A3) Construct additional exit taxiways Enhance/widen taxiway shoulders to prevent safety hazards caused by debris
Taxiway Width	50'		50'		Maintain TDG-3 standards for future construction
Runway Lighting	HIRL		HIRL		None
Taxiway Lighting	MITL		MITL		None
Visual Approach Aids	PAPI-4L, REILs	PAPI-4L, MALSR	PAPI-4L, REILs	PAIP-4L, MALSR	Replace REILs with approach lighting system if/when Runway 1 receives precision approach capability
Aprons	~45,000 SY parking space, ~200,000 SY maneuvering and staging space		Up to ~80,000 SY parking space, ~400,000 SY maneuvering and staging space		Expand up to ~230,000 SY (~35,000 SY parking space + ~195,000 SY maneuvering and staging space)
Hangars	15 small-box, 51 medium-large hangars		Up to 107,800 square feet of additional hangar space		Construct 20-29 small-box hangars for ADG I and II aircraft and 23-33 conventional hangars for ADG III and III aircraft
Air Traffic Control Tower	None		Construct Air Traffic Control Tower		Conduct full site selection study to identify proper site
ARFF	Part 139 Index B		Part 139 Index B		Index B should be maintained through the planning period
SRE/Maintenance Building	Three-bay, 3,700 square-foot facility		Three-bay, 3,700 square-foot facility		Maintain existing conditions of SRE Building
Fuel Facilities	56,000 gallons Jet-A, 22,000 gallons 100LL		Additional fuel capacity needed Space for charging electric aircraft		Additional fuel capacity will be provided by SkyWest/additional airline and/or FBO; Consider installation of electric charging stations
Security and Fencing	6-foot chain-link fence, access points at GA aprons, terminal, ARFF/maintenance building		Compliance with security plan under TSR 152		Maintain airport security per TSR 1542
Utilities	Water, power, natural gas, telephone, internet		Maintain existing utility infrastructure		Consider utility infrastructure during construction and development

Source: McFarland Johnson analysis, 2021.