SGU REGIONAL AIRPORT MASTERPLAN

PLANNING SUCCESSFUL TOMORROWS

4 – FORECAST

4. FORECAST

General aviation activity is largely determined by local population, corresponding business activity, per capita income, the cost of flying, the national economy, and, more directly, the number of based aircraft at an airport. Forecasts of aviation demand are presented in this chapter for a 20-year planning period (2020-2040). The projections of aviation activity provide a basis for the type, size, and timing of aviation facility development in the future. As a result, the forecast will influence all subsequent chapters of this report.

Forecasting future activity involves both quantitative and qualitative considerations. The forecasting approach in this analysis identifies several methodologies to project future aviation demand, applies those methodologies to each forecast area of interest, and identifies a preferred forecast of activity growth at SGU.

At the time of this forecast effort (Winter 2020/2021), there is a great deal of short-term uncertainty and volatility in demand due to the impacts of the global Covid-19/Coronavirus crisis. The initial sharp reduction in demand and following economic ramifications may result in much lower demand in all aviation segments, especially those related to commercial aviation in the immediate short-term. Though the full impacts remain to be seen, the situation is currently being viewed as more of a temporary shock/interruption to the market as opposed to a shift in demand.

Key characteristics of the SGU market such as the climate, outdoor recreation, and abundance of second homes, have resulted in preliminary data showing SGU as more resilient than peers. The majority of airline seat capacity has been restored within one year of the initial Covid-19 impacts. In this period of uncertainty, rather than analyze and select a specific forecast, this analysis will focus on a reasonable range of activity for analysis in the SGU master plan. Throughout this chapter, the low forecasts represent the more conservative approaches, while the high forecasts represent an enhanced recovery should the SGU market characteristics prove to be a strong asset in the years that follow. Additional details on the application of this forecast are discussed at the end of the chapter.

I. PASSENGER ENPLANEMENTS

Passenger enplanements are a key measure in the forecasting efforts for commercial service airports such as SGU. The enplanements forecast focuses on the total annual enplanements as well as the peak hour characteristics of busier traffic periods. The results of these forecasts are particularly useful in the assessment of the passenger terminal building and associated facilities such as vehicle parking lots. Beyond that, the types and quantities of growth extend beyond the terminal area itself to impact elements such as roadway and transportation networks, helping to ensure that they are adequately sized for future demand.

Historical Activity

This historical data for passenger traffic is presented in **Table 4-1** depicts strong growth up until 2018. In 2019, the runway was closed for three months for reconstruction and therefore, a decline can be seen. In 2020, with the onset of the Covid-19 pandemic, additional decline is noted. However, most of the market was recaptured towards the end of the calendar year. Due to the resiliency of the Airport, strong growth is expected to return once the Covid-19 market interruption subsides. While the airport reports activity in terms of total passengers (both ways), the master plan will present the forecast in terms of enplanements (one-way) as used by the FAA.

Table 4-1: Historical Passenger Activity (Total Passengers)

Year	Total Passengers (Both Directions)
2011	136,816
2012	144,099
2013	140,803
2014	148,814
2015	165,066
2016	184,511
2017	237,775
2018	277,520
2019	226,850
2020	180,090

Source: St. George Regional Airport, 2021.

Forecast Methodologies

The following forecast methodologies were used/developed to allow for a range of options for forecasted enplanements at SGU. All forecast scenarios have a base demand of 154,000 enplanements (308,000 total passengers) which represents the theoretical demand levels of 2019 without the 3-month long runway closure.

FAA Terminal Area Forecast (TAF) – The FAA TAF is basic forecast generated by the FAA that features national and regional growth attributes in its composition. While the local market considerations are minimal, it is a required benchmark in the development of new forecasts which are required to be within 10% of the TAF. Since the forecast does not consider the robust local socioeconomic conditions in its composition, this scenario was derived by increasing the FAA TAF forecast by 10%. The FAA data reported and used in the development of the TAF only considers revenue passengers, meaning that non-revenue passengers such as those working for SkyWest (based in St. George) would not be captured in the activity counts. Historically this difference has accounted for 12-15% of the total passengers so this methodology also adds 15% on to what is reported in the FAA TAF. This forecast methodology represents the low end of forecast enplanements at SGU.

Market Catchment – In 2018 the airport conducted a market studies that identified that the airport was only capturing 37% of the total passenger demand in the identified catchment area which was identified as Southwest Utah and portions of Northern Arizona. This methodology grows the total market size of 330,000 annual enplanements by 2.2% annually which is derived from the FAA National Aerospace forecast for commercial passengers and assumes that each year of the planning period the airport increases their market capture by 1%. The resulting market retention by 2040 under this approach would be just under 60% which correlates to approximately 318,519 annual enplanements. This enhanced market capture increase would occur by offering more flight options (choices and lower fares) and enhanced marketing of the benefits of flying SGU understanding that for a variety of reasons there will always be a notable number of passengers that choose other options like Las Vegas's McCarran International Airport or Salt Lake City International. This methodology includes the provision for non-revenue passengers and represents the medium forecast methodology for enplanements at SGU.

Air Service Trends – A more qualitative forecast approach is a methodology that looks more at air service patterns and trends based on the grown experienced at SGU and similar sized airports. This methodology manually accounts for aircraft upgauging and additional frequencies and destinations as well as account for new entrant airlines such as a regional carrier/brand or a less than daily low-cost-carrier like Allegiant which previously served SGU. The resulting manually created flight schedule takes the airport from an average of 12 daily flights in 2019 up to 20.3 daily flights by 2040 and grows the average seats per departure from 50 to 80. The 2040 enplanement level under this methodology exceeds 400,000 annual enplanements. This methodology includes the provision for non-revenue passengers and represents the high forecast scenario of forecast enplanements at SGU.

Collectively these different methodologies compared in **Table 4-2**, reflect a range of reasonableness for passenger enplanements at SGU. The low and medium case scenarios are those which may be more prudent for use in FAA coordination and funding as they are more conservative in nature and will soundly meet or exceed FAA justification thresholds for funding. The high case scenario is recommended for passenger terminal planning as these longer lead time projects such as a terminal, will have a useful life that extends beyond the planning period.

Table 4-2: Forecast Enplanements

	Low	Medium	High
Base	154,000	154,000	154,000
2025	154,254	172,166	230,342
2030	184,301	213,380	293,830
2040	252,586	318,519	400,520
AAGR	2.50%	3.70%	4.90%

Source: McFarland Johnson Analysis, 2020.

Forecast Scenarios

In addition to the various methodologies generating a range of projections, planning scenarios that are additive to baseline forecasts have also been developed for consideration in the planning process.

New ULCC Service - This scenario involves the introduction of an Ultra-Low-Cost Carrier (ULCC) to SGU with an additional 3 weekly flights to one or more destinations with an additional weekly frequency added in every two years subsequently. This scenario would involve mainline sized aircraft, in the 150-175 seat range. This scenario is included in the air service trends methodology long term forecast.

New Regional Carrier - This scenario involves the introduction of a new regional airline (or brand) flying aircraft with 76 seats to a nearby regional hub in the southwest. Service would start at 12 weekly frequencies and add 6 weekly flights every 5 years of the forecast period. This scenario is included in the air service trends methodology long term forecast.

New Boutique Carrier – This scenario would consider the introduction of a new carrier flying aircraft with 9 seats to key regional business markets in the southeast (i.e., 2 daily flights to 4-6 destinations) on aircraft such as a PC-12 or a Cessna Caravan. *[Note this type of airline does not operate in the region, though examples can be found in other regions such as Surfair, Boutique, or Southern Air Express]*

Enhanced Aircraft Upgauging - This scenario would consider the impacts associated with a faster than anticipated increase in aircraft gauge, likely as result of the limited availability of pilots. This scenario would phase out 50-seat regional jets by 2025, 70 seats by 2030.

Peaking Characteristics

Annual enplanement numbers, when divided equally over the year and throughout the day, will not accurately identify capacity constraints or facility needs during busier periods. To accurately identify airport requirements for facility planning, peaking characteristics are broken down into the following elements:

Peak Month – The peak month at an airport represents the busiest month during a calendar year. The peak month may not be the same each year; for SGU, the peak months typically occur during the spring and fall months. Peak month enplanements at SGU account for approximately 9.3 percent of total annual operations.

Average Day Peak Month – The average day of the peak month (ADPM) is the industry standard measure used when planning and analyzing an airport's peaking characteristics. In the case of SGU, the peak month activity is divided by 30 days.

Peak Hour – Peak hour enplanements is a critical metric when planning for airspace and passenger terminal capacity. Traditionally the enplanements peak hour typically represents between 12 percent and 17 percent of the daily operations total but at smaller airports with a busy morning start of originating flights, a planning factor of 25% is more representative.

Peaking characteristics for enplanements at SGU are shown in **Table 4-3** for the low case, **Table 4-4** for the medium case, and **Table 4-5** for the high case.

Table 4-3: Enplanements Low Case

Year	Peak Month	ADPM	Peak Hour
2020	12,962	432	108
2025	12,983	433	109
2030	15,512	517	129
2040	21,259	709	177

Source: McFarland Johnson analysis, 2021.

Table 4-4: Enplanements Medium Case

Year	Peak Month	ADPM	Peak Hour
2020	12,962	432	108
2025	14,491	483	121
2030	17,959	599	150
2040	26,809	894	224

Source: McFarland Johnson analysis, 2021.

Table 4-5: Enplanements High Case

Year	Peak Month	ADPM	Peak Hour
2020	12,962	432	108
2025	19,387	646	162
2030	24,731	824	206
2040	33,710	1,124	281

Source: McFarland Jonson analysis, 2021.

II. OPERATIONS

The FAA defines an aircraft operation as a takeoff or a landing and categorizes the operations by aircraft type and purpose. These categories include commercial (all airline operations at the passenger terminal), general aviation (both recreational and corporate), and military. The forecasting of these operations by category is used in the planning of terminal buildings, runways, taxiways, and other airport infrastructure.

The growth elements discussed for each operation type below include both local and airline industry factors that could impact aircraft operations at SGU.

Historical Activity

Typically, commercial service airports have an air traffic control tower (ATCT) that records aircraft operations that will provide an accurate representation of historical operations counts. However, since SGU is a non-towered airport, there are no accurately recorded operations counts available. SGU has been recording operations using a GARD system that uses acoustic noise to estimate aircraft operations counts, but this system does not accurately record these counts, and some years do not have complete data. The GARD data most likely accounts for only 60-70% of total aircraft operations. As per FAA requirements, beginning in January 2020 SGU has been equipped with an ADS-B system that has been accurately recording traffic counts, however one year is insufficient to serve as historical data. In this case, the FAA TAF, which has been informed by the historical airport GARD data, is the best estimate of actual aircraft operations at the Airport. This historical data for aircraft operations is presented in **Table 4-6**.

Table 4-6: Historical Aircraft Operations

Year	Air Carrier Ops	Air Taxi Ops	GA Itinerant Ops	GA Local Ops	Military Ops	Total Ops
2011	8,280	9,255	8,500	36,000	175	62,210
2012	8,280	9,255	8,500	36,000	175	62,210
2013	3,640	1,500	10,125	40,000	80	55,345
2014	3,640	1,500	10,125	40,000	80	55,345
2015	3,640	1,500	10,125	40,000	80	55,345
2016	40	3,600	10,125	40,000	50	53,815
2017	6,000	150	10,125	40,000	250	56,525
2018	58	6,824	9,125	27,000	1,800	44,807
2019	214	5,619	9,243	27,246	1,800	41,122

Source: FAA TAF, 2020.

Forecast Methodology

The following forecast methodologies were used/developed to allow for a range of options for forecasted operations at SGU. All forecast scenarios have a base demand of 5,480 air carrier operations since the FAA TAF did not include air carrier operations in the forecast.

Low – As discussed with passenger enplanements, the FAA TAF is basic forecast generated by the FAA that features national and regional growth attributes in its composition. While the local market considerations are minimal, it is a required benchmark in the development of new forecasts which are required to be within 10% of the TAF. The current TAF published by the FAA does not contain air carrier operations (60+ seats) and only reflects the equivalent of 1.6 commuter operations (Commercial less than 60 seats), per day, so operations consistent with the corresponding enplanements forecast were manually added in to the TAF operations counts. This methodology represents the low-end forecast operations at SGU.

Medium – The medium forecast scenario represents the middle of forecast operations at SGU. This scenario considers the omitted air carrier counts in the FAA TAF, plus a 10% increase in general aviation itinerant operations.

High – The high forecast scenario represents the high end of forecast operations at SGU. This scenario considers the omitted air carrier counts in the FAA TAF, plus a 20% increase in general aviation itinerant operations.

Table 4-7: Operations Forecast Scenarios

	Low	Medium	High
Base Year	45,294	45,294	45,294
2025	48,778	50,507	53,696
2030	51,561	54,088	57,344
2040	57,491	61,628	65,035
AAGR	1.20%	1.55%	1.83%

Source: McFarland Johnson analysis, 2020.

Table 4-8: Operations by Type

Category	Percent	Representative Aircraft
Single Engine	12%	Cessna 172, Cirrus SR22
Multi Engine/Turboprop	33%	Pilatus PC-12, Beechcraft Model 99, Cessna 402, Beechcraft 200 Super King Air, Cessna 208 Caravan, Embraer EMB 120 Brasilia
Jet	18%	Cessna Citation Excel, Learjet 45, Gulfstream 4, Embraer Phenom 300
Commercial	35%	Bombardier CRJ 200, Bombardier CRJ 900, Airbus A320
Rotor	2%	AgustaWestland AW109, Eurocopter 45

Source: FAA TFMSC, 2021; McFarland Johnson analysis, 2021

Forecast Scenarios

In addition to the various methodologies generating a range of operations projections, planning scenarios that are additive to baseline forecasts have also been developed for consideration in the planning process like those developed for passenger enplanements.

New MRO/Major Tenant - This scenario considers the impacts of a new major tenant such as an MRO. The scenario would consider facilities and operations, but not any potentially ancillary scheduled air service.

Expanded Air Cargo Operations - This scenario would consider a significant expansion of air cargo operations, upgrading the existing feeder-only service to a daily larger narrow-body cargo operation consistent with a cargo network provider.

These scenarios are operational and facility-oriented, while there is only a minor impact on operations, the master plan will identify a facility location for these scenarios.

Peaking Characteristics

Peaking characteristics for operations at SGU are shown in **Table 4-9** for the low scenario, **Table 4-10** for the medium scenario, and **Table 4-11** for the high scenario.

Table 4-9: Low Scenario Peaking Characteristics

Year	Peak Month	ADPM	Peak Hour
Base Year	3,937	127	19
2025	4,247	137	19
2030	4,495	145	20
2040	4,991	161	20

Source: McFarland Johnson analysis, 2020.

Table 4-10: Medium Scenario Peaking Characteristics

Year	Peak Month	ADPM	Peak Hour
Base Year	3,937	127	19
2025	4,402	142	20
2030	4,712	152	20
2040	5,363	173	21

Source: McFarland Johnson analysis, 2020.

Table 4-11: High Scenario Peaking Characteristics

Year	Peak Month	ADPM	Peak Hour
Base Year	3,937	127	20
2025	4,681	151	20
2030	4,991	161	21
2040	5,642	182	22

Source: McFarland Johnson analysis, 2020.

III. BASED AIRCRAFT

Forecasting the number and type of based aircraft is critical to planning future general aviation facilities, especially for the type and size of hangars and aircraft movement and parking areas.

Historical Based Aircraft

The FAA defines a based aircraft as an aircraft that is operational and airworthy which is based at the facility in question for most of the year. Based aircraft are major contributors to the economics of an airport as they generate revenue from tie-down, hangar rentals, and fuel sales. Airport records are consistent with the FAA TAF has a record of the total number of based aircraft on the field. Since SGU was opened in 2011, the total number of based aircraft has increased from 177 in 2011 to 198 in 2019 which equates to a 1.41% growth rate. This historical data for based aircraft is presented in **Table 4-12**.

Table 4-12: Historical Based Aircraft

Year	Based Aircraft
2011	177
2012	177
2013	183
2014	185
2015	185
2016	185
2017	195
2018	195
2019	198
2020	200

Source: FAA TAF, 2020.

Growth Factors

A variety of factors influence the total number of aircraft forecast to be based at SGU.

Single/Multi Piston – Piston (single and multi) aircraft are forecasted to follow a negative growth rate over the next 20 years. As the economic advantage of aircraft leasing, renting, fractional ownership, and flying clubs become more popular, the number of individually owned piston engine aircraft is decreasing in most regions. While the aircraft counts are negative, the negative aspects are offset from enhanced utilization from a broader based not burdened by high-entry costs.

Turbine/Jet – Advancements in fuel efficiency and aircraft technology has resulted in a wide variety of new products entering the turbine and jet aircraft market. More aircraft operations at lower costs have increased the number of aircraft in the business aviation market not only as a lease/purchase capacity but also more fractional ownership and charter options. With this, and the national forecast for based turbine aircraft following a positive trend, it is forecasted that turbo propeller and turbo jet aircraft will increase throughout the planning period.

Unmanned Aerial Systems (UAS) – Presently the FAA does not have a counting metric for UAS aircraft based at airports as their integration into the national airspace system has been limited. Based aircraft forecasts should be reviewed and updated as UAS integrate as part of the national airspace system and airport operations, and the FAA identifies a metric/category in which to account for this activity.

Based Aircraft Forecast

Forecasting the number and type of based aircraft is critical to planning future general aviation facilities, especially for hangars, aircraft movements areas, and aircraft parking areas. The FAA TAF provides a forecast of based aircraft with an average annual growth rate of 1.32% which is relatively consistent with historical trends. The master plan will use the FAA TAF based aircraft forecast; a comparison of other growth rates is shown in **Table 4-13** which present a range of what could reasonable be considered at SGU.

Table 4-13: Forecast of Based Aircraft

	TAF	1.25%	1.5%	1.75%
2020	200	200	200	200
2025	215	213	215	218
2030	230	226	232	238
2040	260	256	269	283

Source: McFarland Johnson analysis, 2020.

The FAA Aerospace Forecast suggests a decline in single/multi-engine piston aircraft longer term and an increase in turboprop/jet aircraft and rotorcraft, which is a trend that will likely be seen un the SGU based aircraft market. Based jets at SGU will likely more than double over the planning period.

IV. CRITICAL AIRCRAFT

The methodologies described in FAA AC 150/500-17, *Critical Aircraft and Regular Use Determination* were used to determine the current and future critical aircraft for the Airport. Ten-year historical operations data from the FAA TFMSC was used to determine the critical aircraft for SGU. The TFMSC from 2010 to 2020 captured 96,920 operations when normalized between approaches and departures. While this source does not capture 100 percent of all airport activity, particularly local operations not filing formal flight plans, the database does provide a reasonable understanding of airport activity and should be considered to be the most accurate with respect to the more complex aircraft as they are more likely to fly under IFR with a field flight plan.

Table 4-14 reveals the level of airport activity by AAC and ADG for the January 1st, 2010 to January 1st, 2020 time period. During this period, a significant number of AAC-C aircraft and ADG-II aircraft were identified though this database.

Table 4-14: SGU TFMSC 2010-2020

Design Group	Aircraft Approach Category				Total
	A	B	C	D	
I	10,067	15,080	1,034	271	26,452
II	3,043	29,807	36,467	413	69,730
III	6	25	342	316	689
Total	13,116	44,912	37,843	1,000	96,871

Source: SGU TFMSC January 1st, 2010 – January 1st, 2020, McFarland Johnson, 2020.

However, in 2020 SkyWest began operating the larger CRJ-900 (C-III) on some routes and it is anticipated SkyWest Airlines will upgauge some routes to larger the Embraer 175 which is also a C-III aircraft. Based on this, the critical aircraft for SGU in the short-term, likely by 2025, will be a C-III aircraft, represented by the Embraer 175 and the CRJ-900.

By the end of the planning period in 2040 the critical aircraft is expected to remain a C-III aircraft, however represented by aircraft with additional seating capacity, such as the Boeing 737 and the Airbus A320. The planning scenarios considering new service by a ULCC would likely involve the Boeing 737 or Airbus 320 which are also C-III, as are cargo variants of the Boeing 737 operated for Amazon Air. No change in the RDC attributed of the critical aircraft would be necessary under any of these planning scenarios incorporated in the master plan. The Airbus A320 has previously operated at SGU with commercial service from Allegiant Air. **Table 4-15** below highlights the important features of each critical aircraft for SGU in both the short-term (2025) and the long-term (2040).

Table 4-15: Critical Aircraft

Characteristics	2025		2040	
	Embraer 175	CRJ-900	Boeing 737-8	Airbus A320
Length	103.9	118.9	129.6	123.3
Wingspan	85.3	81.5	112.5	111.9
Tail Height	31.9	24.1	41.2	39.6
MTOW	82,673	84,500	174,200	171,961
Approach Speed	124	140.7	142	136
AAC	C	C	D	C
ADG	III	III	III	III

Source: FAA AC 150/5300-13A, 2020.

Critical Aircraft

Short Term 2025

Embraer 175

Bombardier CRJ-900

Long Term 2040

Airbus A320

Boeing 737

V. SUMMARY & COMPARISON TO TAF

To confirm validity, master plan aviation forecasts are often compared with other aviation forecasts prepared for the Airport and the region. Ideally, this report's forecasts should be reasonably consistent with other forecasts of future airport activity, and compatible with forecasts for the larger region. With master plan forecasts being much more specific to an airport, it is not unusual to see some variation from national forecasts. The most useful forecasts for comparison are those prepared by the FAA with the standard being the TAF and the national and regional forecasts previously referenced in this report. The TAF is prepared annually and includes airport forecasts for all active National Plan of Integrated Airport Systems (NPIAS) airports. V shows the compared results between the selected forecast and that of the FAA's TAF.

Table 4-16Forecast Comparison to TAF

	Actual	Forecast		
	Baseline	2025	2030	2040
FAA TAF				
Enplanements	107,713	121,940	139,358	183,033
Total Operations	44,831	41,478	43,531	48,001
Based Aircraft	200	215	230	260
Master Plan Forecast				
Enplanements	154,000	154,254	184,301	252,586
Enplanements w/o Non-Rev	118,484	134,134	160,262	219,640
Total Operations	45,294	48,778	51,561	57,491
Based Aircraft	200	213	226	256
Pct. Difference From TAF				
Enplanements	42.97%	26.49%	32.25%	38.0%
Enplanements w/o Non-Rev	9.99%	10.0%	15.0%	20.0%
Total Operations	1.03%	17.59%	18.44%	19.77%
Based Aircraft	0.00%	-0.93%	-1.74%	-1.54%

Source: FAA TAF, 2020; St. George Regional Airport, 2021; and McFarland Johnson analysis, 2021.

Table 4-17: Planning Activity Levels Forecast

	Enplanements			Operations			Attributes
	Threshold	Implement (80%)	Planning (60%)	Threshold	Implement (80%)	Planning (60%)	
PAL 1	**140,000**	**112,000**	**84,000**	**40,000**	**32,000**	**24,000**	**FAA TAF**
	160,000	**128,000**	**96,000**	**42,000**	**33,600**	**25,200**	
	180,000	**144,000**	**108,000**	**44,000**	**35,200**	**26,400**	
	200,000	**160,000**	**120,000**	**46,000**	**36,800**	**27,600**	
	220,000	**176,000**	**132,000**	**48,000**	**38,400**	**28,800**	
	240,000	**192,000**	**144,000**	**50,000**	**40,000**	**30,000**	
	260,000	**208,000**	**156,000**	**52,000**	**41,600**	**31,200**	
PAL 2	280,000	**224,000**	**168,000**	54,000	**43,200**	**32,400**	**FAA TAF planning thresholds, Market catchment area analysis, air service trends**
	300,000	**240,000**	**180,000**	56,000	**44,800**	**33,600**	
	320,000	**256,000**	**192,000**	58,000	**46,400**	**34,800**	
	340,000	272,000	**204,000**	60,000	**48,000**	**36,000**	
	360,000	288,000	**216,000**	62,000	**49,600**	**37,200**	
	380,000	304,000	**228,000**	64,000	**51,200**	**38,400**	
	400,000	320,000	**240,000**	66,000	**52,800**	**39,600**	
PAL 3	420,000	336,000	**252,000**	68,000	54,400	**40,800**	**Air Service Trends**
	440,000	352,000	264,000	70,000	56,000	**42,000**	
	460,000	368,000	276,000	72,000	57,600	**43,200**	
	480,000	384,000	288,000	74,000	59,200	**44,400**	
	500,000	400,000	300,000	76,000	60,800	**45,600**	
PAL 4	520,000	416,000	312,000	78,000	62,400	**46,800**	**Historical Trends (Since 1990)**
	540,000	432,000	324,000	80,000	64,000	**48,000**	
	560,000	448,000	336,000	82,000	65,600	**49,200**	
	580,000	464,000	348,000	84,000	67,200	**50,400**	
	600,000	480,000	360,000	86,000	68,800	**51,600**	

Source: McFarland Johnson analysis,

VI. FORECAST APPLICATION

Forecasts of activity are a key component of the master planning process by measuring the activity levels against existing facilities to determine what improvements are necessary. The master plan will categorize these improvements into the appropriate intervals of short (0-5 years), intermediate (5-10 years) and long term (10+ years). With airports, the project development timeframe can be lengthy between planning, environmental, design, procurement, and construction, all while relying on annual grant cycles. It is important that required facilities and infrastructure are planned and constructed prior to becoming a critical need. In addition to the lengthy project development timeline, larger capital projects can be costly and require coordination with major funding agencies well in advance of project formulation. When applying the forecast numbers, the master plan will apply these values at two different trigger thresholds: ***Planning*** and ***Implementation***. An important measure of when the trigger thresholds will be reached is reviewed in the section titled, ***Timing***.

Planning - Upon reaching 60% of the activity level threshold, there should be a plan in place for meeting 100% of the corresponding demand. This plan should be reflected on the ALP and updated as warranted. Depending on how quickly this threshold has been reached, the airport's CIP should include a project for the design of the required improvements. Demand growth should be monitored from this point to determine the proper timeframe for the construction and implementation of the necessary improvements.

Implementation – Upon reaching 70% of the activity level threshold, the airport's CIP should include the construction of the necessary

facilities Upon reaching 80%, the facilities required to meet 100% of the corresponding demand should be implemented or under construction. When new facilities/infrastructure is constructed, the capacities should be recalculated and continue the planning and project development cycle.

Table 4-17 outlines the application for the activity level thresholds relative to the FAA TAF baseline forecast. For passenger enplanements, this approach suggests that the Airport should begin planning for a terminal capable of accommodating over 420,000 enplanements and implement a facility capable of accommodating over 320,000 enplanements. Operations wise, the airport should plan to accommodate over 86,000 annual operations. It is anticipated that much of the improvements to be implemented to meet the operations planning activity level will be more operational (airspace) in nature as opposed to physical infrastructure. This will be detailed in *Chapter 6 – Facility Requirements*.

These activity levels and subsequent requirements will be grouped into different planning activity levels (PALs) that will be referenced in the facility requirements and alternatives analysis. While only PALs 1 and 2 are covered by the approved FAA forecast, requirements and needs will be analyzed for PALs 3 and 4 at a cursory review to better inform the plan, should growth outpace the approved forecast.

Timing – It is important to understand a time frame of when planning will need to occur for certain activity level thresholds. Since operations are not expected to reach 90,000 by the end of the planning period, this only applies to the planning trigger threshold of each of the four PALs.

The methodology for obtaining a time frame for each PAL includes the low, medium, and high-end forecast operations at SGU. The low-end forecast scenario allows for a slightly more relaxed approach to timing when compared to the medium or high-end forecast scenarios. Each scenario begins in the year 2021 and depending on whether future operations move towards the low, medium, or high-end scenario, timing for planning will be relaxed or expedited. Table 4-18 details the timing of low, medium, and high-end forecast scenarios for each of the four PALs.

Table 4-18: Planning Activity Level Timing

	Enplanements	Timing		
		Low	Medium	High
PAL 1	Up to 156,000	2021-2026	2021-2025	2021-2024
PAL 2	Up to 240,000	2028-2039	2027-2034	2025-2030
PAL 3	Up to 300,000	2040-2044	2035-2039	2030-2034
PAL 4	Up to 360,000	2045-2050	2040-2045	2035-2039

Source: McFarland Johnson analysis, 2021.