



Introduction

Effective airport planning and development includes forecasting aviation demand as future activity levels drive the size and timing of necessary airport improvements of which become the basis for the airport’s capital improvement plan. For Steamboat Springs Airport (SBS or Airport), forecasts are prepared for the 20-year planning period in three stages: short-term (2023), intermediate-term (2028) and long-term (2038).

Aviation activity in 2018 represents the baseline for the forecasts. The best available aviation activity data is used to estimate the existing activity. Airport activity data addressed for SBS includes:

- **Based Aircraft** – the number and types of aircraft (fleet mix). An aircraft is “based” at an airport if it spends the majority of its time at that airport.
- **Airport Operations** - categorized by annual, local, itinerant, and type (air taxi, general aviation and military). “Local” includes those operations that remain in the airport vicinity and typically comprise training, including touch-and-go activity. “Itinerant” includes activity that departs for or arrives from another location. Air taxi operations can refer to passenger/cargo charter or air taxi, medical transport, and other “for hire” flights in various helicopter and fixed wing aircraft.
- **Critical aircraft (design aircraft) and Airport Reference Code (ARC)**

Generally, these forecasts are unconstrained and assume that the City of Steamboat Springs will develop SBS to accommodate demand in the future. Further, a proposed airpark adjacent to SBS aims to supplement the Airport’s facilities as based and seasonal/part-time aircraft demand increases.

It’s important to note that due to the cyclical nature of the economy, predicting activity with any certainty over two decades is not possible. However, key aviation industry trends and

socioeconomic characteristics can be studied to assess near-term to long-term potential growth at the Airport, which is presented in the forecasts.

The Federal Aviation Administration (FAA) is responsible for reviewing and approving the forecasts, so the figures may be used to update the FAA Terminal Area Forecasts (TAF). The master plan forecasts in this chapter provide the documentation to the FAA for the approval. The TAF supports the FAA’s planning, budgeting and staffing requirements, and it serves as a guide for planning airport improvements. Forecasting guidance outlined in FAA Advisory Circular (AC) 150/5070-6B is followed.

The forecasting process begins with a review of national, state and local aviation trends that influence aviation demand at SBS.

National Aviation Trends

National trends in the aviation industry often translate to shifts in demand at the local airport level. As a general aviation airport, SBS is influenced more specifically by GA trends. GA includes all activity other than scheduled commercial airline and military aviation.

The FAA monitors a range of industry trends and influencing factors, and with respect to what is observed, they project various segments of aviation activity. Examples include number of GA aircraft, pilots, and hours flown.

Figure 2.1 depicts FAA’s historical records on active GA aircraft and pilots, nationwide, as well their projected growth through 2038; both show minimal growth over 20 years—declining in the near-term and recovering in the long-term. This is representative of FAA’s conservative approach to forecasting following the recession.

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Source: FAA Aerospace Forecasts 2018-2038

Since GA serves a variety of air travel needs, the GA aircraft fleet is diverse, ranging from single-engine piston aircraft to business jets and helicopters. **Table 2.1** offers a snapshot of the active aircraft fleet and hours flown for GA in the U.S. Calculating the average hours flown per aircraft type clearly illustrates the disproportion. While single engine piston aircraft represent the vast majority of the fleet, they fly half of the hours flown. Turbojet fixed wing and rotorcraft both average around 300 hours per aircraft, while piston aircraft average 91 to 129 hours; this is a common disparity between costly, higher performance aircraft (high end GA segment) and piston airplanes (low end GA segment).

Figure 2.1: National GA Aircraft and Pilots



Table 2.1: Nationwide GA and Air Taxi Active Fleet and Hours Flown

Aircraft Type	Active Aircraft	% Fleet	Hours Flown	% Hours Flown	Hours per Aircraft
Piston SE Fixed Wing	130,330	73.4%	11,877,735	50.1%	91.1
Piston ME Fixed Wing	12,935	7.3%	1,665,676	7.0%	128.8
Turboprop Fixed Wing	9,430	5.3%	2,674,467	11.3%	283.6
Turbojet Fixed Wing	14,075	7.9%	4,273,872	18.0%	303.6
Rotorcraft	10,805	6.1%	3,237,145	13.6%	299.6
Total	177,575		23,728,894		133.6
Experimental	27,865	78.5%	1,248,478	76.1%	44.8
Sport Aircraft	2,585	7.3%	196,913	12.0%	76.2
Other	5,025	14.2%	194,623	11.9%	38.7
Total	35,475		1,640,014		46.2

Source: FAA Aerospace Forecast 2018-2038. (FAA derived fleet and hours data from a 2016 GA Survey.)
SE=Single Engine ME = Multi Engine

According to industry trends, the piston fleet is anticipated to continue its recent decline as older

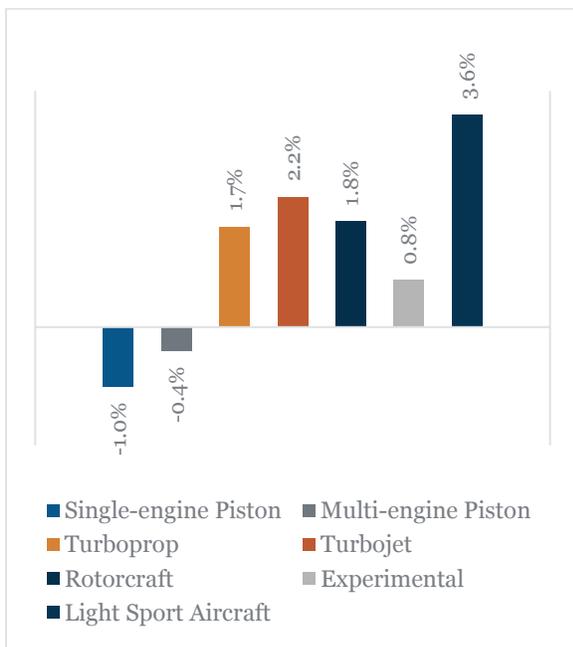
aircraft are retired. In contrast, other aircraft types have shown growth and the FAA projects that growth will continue. Jet aircraft, for example,



are expected to increase 2.2% annually as a result of strong growth in the business aviation segment of the industry.

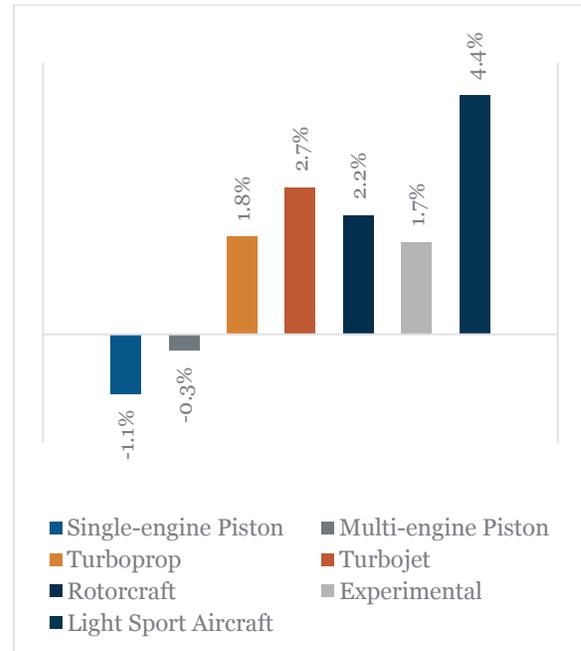
Figure 2.2 illustrates the variation in growth rates projected for the GA fleet. Further, **Figure 2.3** presents the anticipated growth in hours flown for each aircraft type. All growth in the active fleet is expected to be outpaced by its associated growth in hours flown as the industry expects an increase in aircraft use. The total fleet will remain generally level with a modest 0.2% annual growth while general aviation hours flown are projected to increase 0.8 % annually over the next two decades. For both measures, declining piston activity is offset by growth in the remainder of the fleet.

Figure 2.2: Annual Growth Rate for GA Active Aircraft, 2018-2038



Source: FAA Aerospace Forecasts, 2018-2038

Figure 2.3: Annual Growth Rate for GA Hours Flown, 2018-2038



Source: FAA Aerospace Forecasts, 2018-2038

The General Aviation Manufacturer Association (GAMA) is another essential source of industry data and trends. GAMA reports on aircraft shipments and billings on a quarterly basis. In its annual report, historical data back to 1994 is included (**Figure 2.4**). As shown, the recession, which started in late 2007 and ended in mid-2009, had a significant impact on the industry with shipments hitting a low in 2010 before recovery began.

GA activity was stable and growing prior to the recession; recovery since that time has been slow but an uptick the last couple of years shows stability and growth. As a result, FAA and industry projections are looking slightly more optimistic than in recent past—evident in FAA Aerospace Forecasts Fiscal Years 2018-2038, updated annually. An example includes recorded operations at the 517 FAA and contract towers; operations in 2017 were up 0.7 percent over 2016, which is the first time these operations have increased for three consecutive years since the

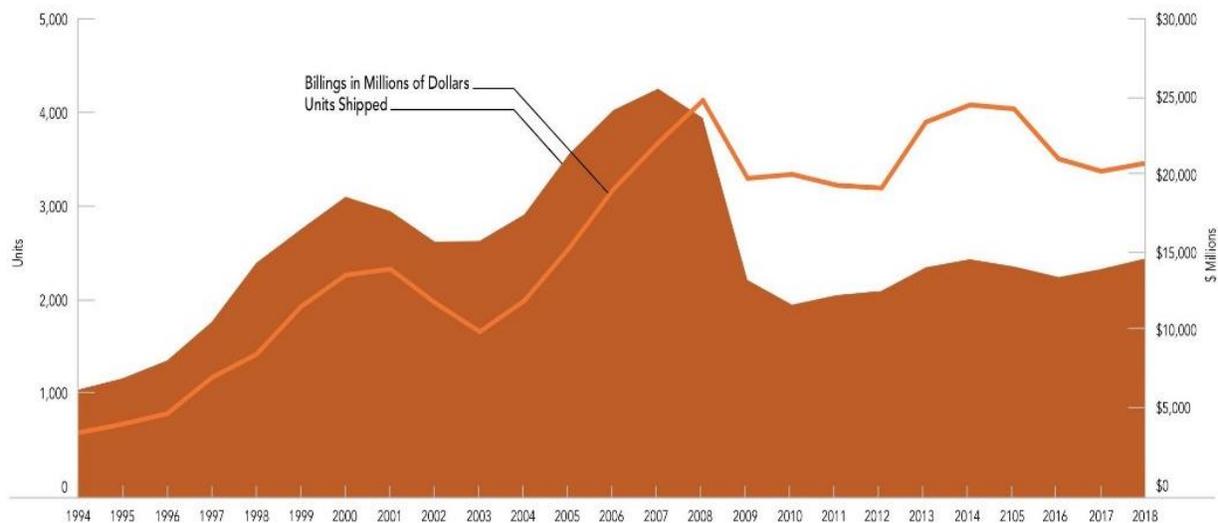
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1998-2000 increase. Regarding aircraft fleet, the FAA noted that “...steady growth in both GDP and

corporate profits results in continued growth of the turbine and rotorcraft fleets...”

Figure 2.4: GA Aircraft Shipments and Billings



In October 2018, Honeywell reported that in the coming years, strong growth is expected in the business jet industry that is driven, in part, by several new airplane models entering the market. The Global Business Aviation Outlook forecasts up to 7,700 new business jet deliveries over the next two decades, valued at \$251 billion, which is up from the 2017 forecast. These projections are based on input from operators who plan “...to make new jet purchases equivalent to about 20 percent of their fleets over the next five years as replacements or additions to their current fleet.” New models and improved economic performance are expected to support an average annual growth rate in the three to four percent range for the long-term.

Consideration of business aviation trends and projections is important to SBS and other GA airports as an indicator of overall GA industry health. With business aviation representing the highest growth segment of GA activity and one with great growth potential, considering this demand as part of the mix at SBS is important.

State Aviation Trends

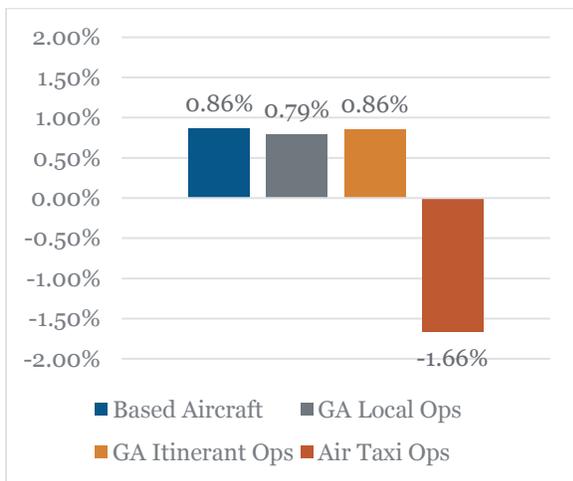
The latest available Colorado Aviation System Plan (CASP) was published in 2011 by the Colorado Department of Transportation (CDOT) Division of Aeronautics. An update to the CASP is underway with a published report anticipated in early 2020. The CASP includes 76 public use airports statewide comprised of 14 commercial service and 62 general aviation airports, including SBS. The CASP reviews the airport system to assess performance and identify needs. Such needs are determined in part by aviation activity forecasts. The CASP reported an estimated 5,245 based aircraft in Colorado for 2010, down 2.2% from the 2005 count. Total operations reported in 2010 totaled 2.43 million, down by 230,000 operations from 2005.

Statewide GA activity discussed in the CASP includes the full spectrum of aircraft types and users. Activity examples cited in the CASP include business and personal travel, recreational flying, flight instruction, emergency airlift, and agricultural spraying.



Like the CASP, the FAA TAF includes statewide aviation activity for Colorado—both historical and projected. According to the TAF, growth is anticipated in based aircraft as well as GA local and itinerant operations, while air taxi is expected to decline (**Figure 2.5**). This FAA projection is due in part to the recent decline in air taxi activity from 2016 to 2017, according to FAA records.

Figure 2.5: Projected 20-Year Colorado Growth Rates (FAA TAF)



Source: FAA TAF

Local Aviation Trends

Local aviation trends stem from a number of sources including airport management data such as based aircraft and tenant lists, aircraft operation counts, and fuel sales. Periodic use of motion-sensitive airfield cameras helps confirm the aircraft fleet mix served at the Airport. Pilot responses to a survey questionnaire help characterize airport activity and identify deficiencies that may be constraining aviation demand. Finally, historical data and projected activity published by the FAA and CDOT Aeronautics provide additional SBS-specific information.

FAA measures aviation activity in terms of based aircraft and operations.

An aircraft is “based” at an airport if it spends the majority of its time there. To ensure aircraft counts are not duplicated, the FAA established the National Based Aircraft Inventory Program requiring sponsors enter tail numbers into a database. The database validates the aircraft or flags it as a duplicate tail number entered for another airport. Further, aircraft are cross-referenced with the FAA Registry to ensure each is active (not de-registered) and to identify its place of registration (city, state). Airport managers can keep their based aircraft list current through the database.

Steamboat Springs is currently home to 63 aircraft including 50 single-engine piston, three multi-engine piston, five turboprops, one jet, two rotorcraft, one ultralight, and one glider. At least 10 additional aircraft are located at SBS on a seasonal/ part-time basis. While not officially counted by the FAA as a based aircraft, part-time aircraft must be considered in facility requirements (next chapter); their activity is already counted in operations.

The proposed airpark development next to SBS would have through-the-fence (TTF) access to on-airport facilities and could potentially attract more aircraft and operations in the future. The FAA has defined TTF operations as those activities permitted by an airport sponsor through an agreement that permits access to the public landing area by independent entities or operators offering an aeronautical activity or to owners of aircraft based on land adjacent to, but not part of, the airport property. Currently, FAA does not count TTF aircraft as “based” at that airport since they are not stored on airport property. Therefore, the presence of an airpark with TTF aircraft would not increase the based aircraft count for SBS but would increase the operations count.

Similar to other airports without a control tower, SBS must estimate operations. Fortunately, airport management documents aircraft activity during their operating hours, which helped define a more accurate estimate of annual operations for SBS. These operation counts have been recorded since 2011. Since some activity does occur beyond operating hours, it is estimated that after-hours operations represent an additional five percent of activity.

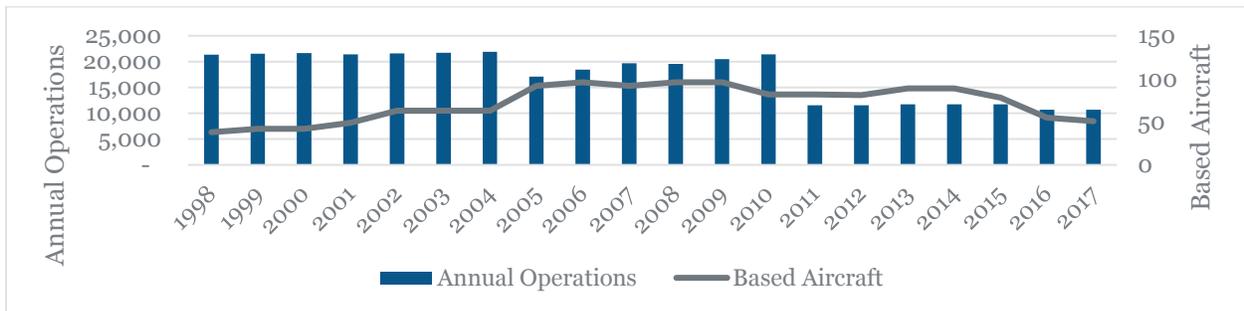
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While the documented operation counts by airport management are more accurate than FAA TAF records, TAF review remains a part of a master planning study. Looking back 20 years, SBS historical based aircraft and operations data from the TAF are presented in **Figure 2.6**. The large fluctuations suggest the figures may be unreliable,

which was not uncommon during a time when methods for collecting and documenting GA activity were inconsistent. With improved activity collection methods and airport master planning studies providing updated data to the FAA, records will ultimately offer more reliable data.

Figure 2.6: Historical SBS Records (FAA TAF)



Source: FAA TAF

In addition to historical data, the TAF provides projected activity for the Airport (**Table 2.2**). Data back to 1990 is included in five-year segments through 2010, with annual activity presented from 2011 to 2017.

The TAF forecasts show significant growth is anticipated for SBS in operations and based aircraft by 2038.

2012	11,522	81
2013	11,738	89
2014	11,738	89
2015	11,738	78
2016	10,658	55
2017	10,658	51
2018	11,112	53
2023	13,693	63
2028	16,873	73
2038	25,617	93

Source: FAA TAF

Table 2.2: FAA TAF Historical and Projected Activity for SBS

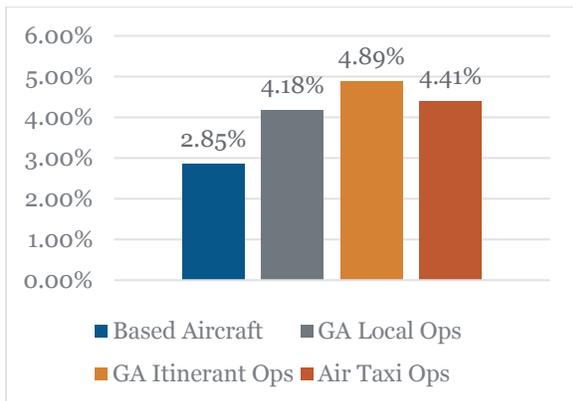
Year	Operations	Based Aircraft
1990	23,012	53
1995	14,522	34
2000	21,679	42
2005	17,092	92
2010	21,384	82
2011	11,522	82

Figure 2.7 breaks down the TAF-projected activity for SBS by growth rates for based aircraft and operations. Operations growth rates are presented by type: GA local, GA itinerant, and air taxi. As previously discussed, FAA TAF data is known to be uncertain and projections are often debatable. However, the FAA’s review and approval of the forecasts includes a comparison



between FAA TAF data and the master plan forecasts as part of study, so TAF-related projections are addressed.

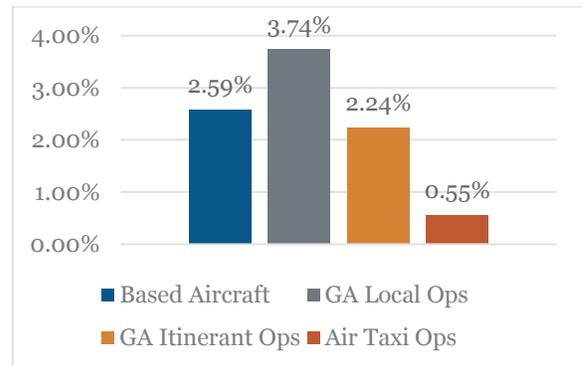
Figure 2.7: Projected 20-Year SBS Growth Rates (FAA TAF)



Source: FAA TAF for Steamboat Springs Airport (SBS)

Typically, the FAA TAF takes a more conservative approach to GA airport forecasting, so operations and based aircraft are often projected to remain unchanged for 20+ years. The FAA acknowledges that fluctuations may occur but predicts no overall increase. FAA’s strong growth rate projections for SBS deviate from that approach. For comparison, TAF growth rates projected for Yampa Valley Regional Airport (HDN) were reviewed (Figure 2.8). Strong growth is projected in based aircraft and GA operations at HDN.

Figure 2.8: Projected 20-Year Yampa Valley Regional Airport Growth Rates (FAA TAF)



Source: FAA TAF for Yampa Valley Regional Airport (HDN)

In contrast to both SBS and HDN, the FAA TAF projects no growth in based aircraft or operations at Craig-Moffat Airport (CAG) in the future.

Instrument Flight Rules (IFR) Operations

For the base year (FY 2018), FAA records of specific aircraft types flying by instrument flight rules (IFR) were helpful in estimating the mix of operations. Considering operations at SBS, the 1,994 IFR operations in 2018 represent approximately 23% of the annual activity at SBS, which means the remaining 77% of operations were under visual flight rules (VFR).

The IFR records include a broad range of turbine, piston and jet aircraft. Turbine aircraft conducted the highest number of IFR operations (over 1,000), with the most frequent activity by aircraft such as the Piper Malibu, Pilatus PC-12, King Air series and Socata TBM. Piston aircraft comprised 771 IFR operations with the most frequent activity by the Cirrus SR-22, Bonanza and Cessna Chancellor 414 aircraft, which represented 55% of the activity.

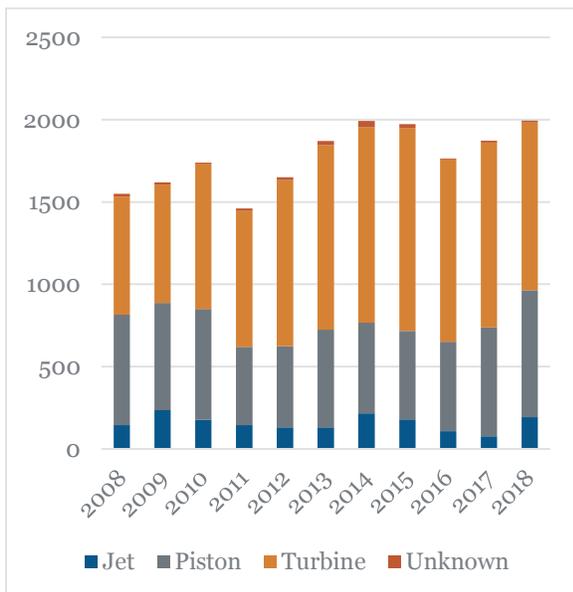
Various models of the Cessna Citation comprised the largest portion of the IFR jet traffic; total IFR jet operations were less than 200 for the year, but industry trends suggest jet traffic will continue with appropriate facilities and services available. Figure 2.9 depicts the last decade of IFR activity for SBS. While IFR Operations have fluctuated since 2008, activity has grown an average of 1.27% annually.

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airport management counts and other source data for the year suggest an average of 24 daily operations, or 8,700 annually. From the camera images, the various types of aircraft using SBS are identified. The images, combined with IFR operations and other source data, are helpful in determining the “critical aircraft” for SBS. Some of the key aircraft photographed include: King Airs, Pilatus PC-12s, Cessna Citations, and Learjets.

Figure 2.9: IFR Operations at SBS by Physical Class (FY 2008-2018)



Source: TFMSC

Aircraft Camera Data

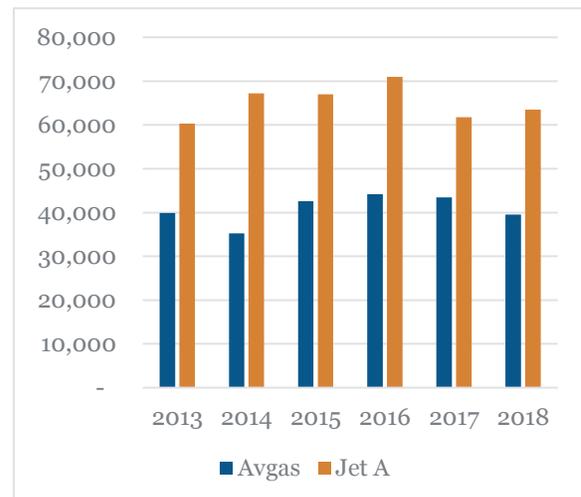
Beginning August 7, 2018, two motion-sensitive “game cameras” were placed at SBS to capture aircraft activity. One camera, placed on Taxiway A, photographed aircraft through December 2018, while the second camera, placed on Taxiway B, took photographs through January 2019.

The photos represent a large sample of activity as there were only minor gaps in the image collection process. Based on the images, a total of 3,341 operations were estimated for the August 7 to January 31 timeframe, which equates to an average of 19 operations daily. In comparison,

Fuel Sales

Historical SBS fuel sales data collected spans 2013 to 2018. **Figure 2.10** compares the annual fuel sales for Avgas and Jet A. Despite the fluctuations, total fuel sales increased an average of 0.6% annually over the 2013-2018 timeframe.

Figure 2.10: Historical 100LL and Jet A Fuel Sales (Gallons) for SBS

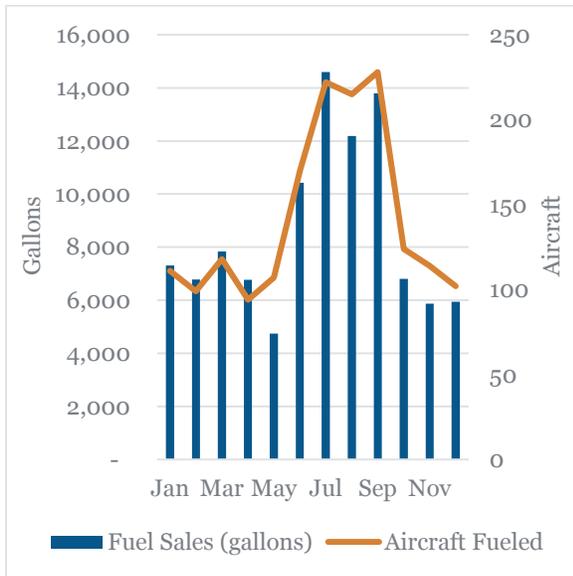


Source: Airport Management

Monthly fuel sales and transactions (aircraft fueled) help identify peak activity for SBS. **Figure 2.11** illustrates the gallons sold from January through December 2018, and clearly identifies peak activity in the summer months. Helicopter activity in the summer months often increases in support of fire firefighting, which is in addition to the typical increase in general aviation activity during the same time.



Figure 2.11: Monthly Fuel Sales and Aircraft Fueled at SBS



Airport Users and Survey Responses

The Airport is home to a multitude of tenants and serves a broad range of transient operators.

Early in the master planning study, an airport user survey was distributed to numerous tenants and transient users. Of the respondents, 56% base one or more aircraft at SBS; others base elsewhere.

Eleven respondents identified one or more issues impacting their use of SBS. While facility needs will be addressed in the next chapter, some needs were identified by users as limiting their ability to operate at SBS today. Consequently, these are mentioned since they impact aviation demand. Runway length was the main issue, and for some, the length drove their need to store their aircraft

elsewhere. An inadequate instrument approach was another key operations issue identified. Not surprisingly, several cited that inadequate hangar space was an issue, including space for transient operators.

Survey feedback is important in assessing aviation demand. While Yampa Valley Regional is a suitable alternative about 30 minutes from SBS, many users desire the convenience of SBS. According to airport management records, there is a wait list that has grown to 10 aircraft owners interested in hangar space. Waitlist aircraft owners may be interested in permanent or seasonal storage.

Also noteworthy is that many survey respondents use their aircraft for both personal and business purposes. Personal use was noted in 69% of responses and business in 50%. Further, 38% own local area businesses. For the non-based aircraft owners, the survey inquired about area home ownership. Results show that Steamboat Springs is the primary home to five pilots and a vacation/secondary home to eight. While tourists and part-time residents visit the area regularly, the Airport brings in visitors as well. In the past, fly-in pancake breakfasts, air shows, student tours, and pilot seminars, to name a few, have served as positive community outreach events that also generate additional aviation traffic.

Regional Demographic and Socioeconomic Influences

Regional demographics and socioeconomics often influence aviation demand. Increasing population, higher income, and growing employment can positively impact aviation demand. Declining economic indicators can have a similar negative impact. Key economic indicators for Routt County are presented in **Table 2.3**.

Table 2.3: Historical and Forecast Socioeconomic Factors for Routt County

Year	Total Population	Total Employment	Per Capita Income (2009 \$)	Economics Wealth Index (U.S. = 100)	Gross Regional Product (millions of)	Retail Sales Per Household (2009 \$)

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					2009 \$)	
1998	18,653	17,524	39,218	135.17	974.02	41,497
2003	20,893	19,658	52,278	159.72	1,284.96	46,010
2008	23,135	23,377	52,433	145.03	1,565.15	48,981
2013	23,587	22,033	55,792	151.86	1,474.17	41,070
2018	25,151	24,333	68,369	165.15	1,513.93	43,870
2023	26,478	26,604	72,577	164.69	1,672.42	44,726
2028	27,821	28,786	76,400	164.12	1,826.85	45,855
2038	30,320	32,358	81,955	162.70	2,083.96	48,279
Historical Average Annual Growth						
1998-2003	2.3%	2.3%	5.9%	3.4%	5.7%	2.1%
2003-2008	2.1%	3.5%	0.1%	-1.9%	4.0%	1.3%
2008-2013	0.4%	-1.2%	1.2%	0.9%	-1.2%	-3.5%
2013-2018	1.3%	2.0%	4.1%	1.7%	0.5%	1.3%
Projected Average Annual Growth						
2018-2023	1.0%	1.8%	1.2%	-0.1%	2.0%	0.4%
2023-2028	1.0%	1.6%	1.0%	-0.1%	1.8%	0.5%
2028-2038	0.9%	1.2%	0.7%	-0.1%	1.3%	0.5%

Source: Woods & Poole Economics

As shown, historical data goes back 20 years and forecasts look forward 20 years. Routt County’s economic history and outlook are positive, all supportive of potential growth in future aviation demand at SBS. Future economic development plans in the area can also promote growth in aviation demand. According to the local Chamber of Commerce, “The Steamboat Springs area has a diverse, year-round economy with a variety of strong industry sectors including tourism, mining, location-neutral businesses and employees, outdoor recreation products, creative industries, construction and regional health care.” U.S. News ranked Steamboat Springs as #3 among the best small towns to visit in the nation for its numerous year-round outdoor recreational opportunities. The *Denver Post* reported in June 2018 that statewide tourism was up in 2017 as a result of the population growth along the front range, noting that Colorado hit a record 86 million visitors with \$1.28 billion in tax revenue. This record followed consistent tourism growth since

the recession in 2009; domestic visitors have increased by 41 percent, compared to the U.S. growth of 20 percent. Strong tourism growth is more good news for Routt County and Steamboat Springs.

Forecasts

In this section, based aircraft and operations are projected. The first step is to establish the baseline activity for FY2018. **Table 2.4** lists the based aircraft fleet mix and the annual operations by type for SBS.

The based aircraft fleet mix is derived from National Based Aircraft Inventory Program database where airport management entered aircraft tail numbers. Some aircraft that moved to SBS permanently are still attached to other airports in the database but have been counted for SBS in anticipation of changes. A total of 63 aircraft are based at SBS. This does not include approximately 10 other aircraft stored at SBS on a seasonal/part-time basis.



Baseline operations are estimated using airport management records and FAA data. Total operations at SBS are estimated at 8,700 for 2018.

Table 2.4: Baseline Activity at SBS

Based Aircraft	
Single-engine Piston	50
Multi-engine Piston	3
Turboprop	5
Jet	1
Helicopter	2
Other	2

Total	63
Operations	
Air Taxi	550
GA Local	3,260
GA Itinerant	4,880
Military	10
Total	8,700

Source: Airport Management and FAA data.

Next, forecasts previously published for SBS are presented. **Table 2.5** summarizes the FAA TAF, 2008 Master Plan and 2011 CASP forecasts for the Airport, which are reviewed and considered for the current forecasting element.

Table 2.5: Comparison of Published Forecasts for SBS

	Based Aircraft (annual growth rate & count)	Operations (annual growth rate & count)	Timeframe
Current FAA Terminal Area Forecast	2.85% 51 to 93	4.26% 10,658 to 25,617	2017 - 2038
2008 Master Plan	2.74% 92 to 158	4.58% 17,092 to 41,870	2005 - 2025
2011 Colorado Aviation System Plan	0.41% 83 to 90	0.41% 11,520 to 12,510	2010 - 2030

Based Aircraft Forecasts

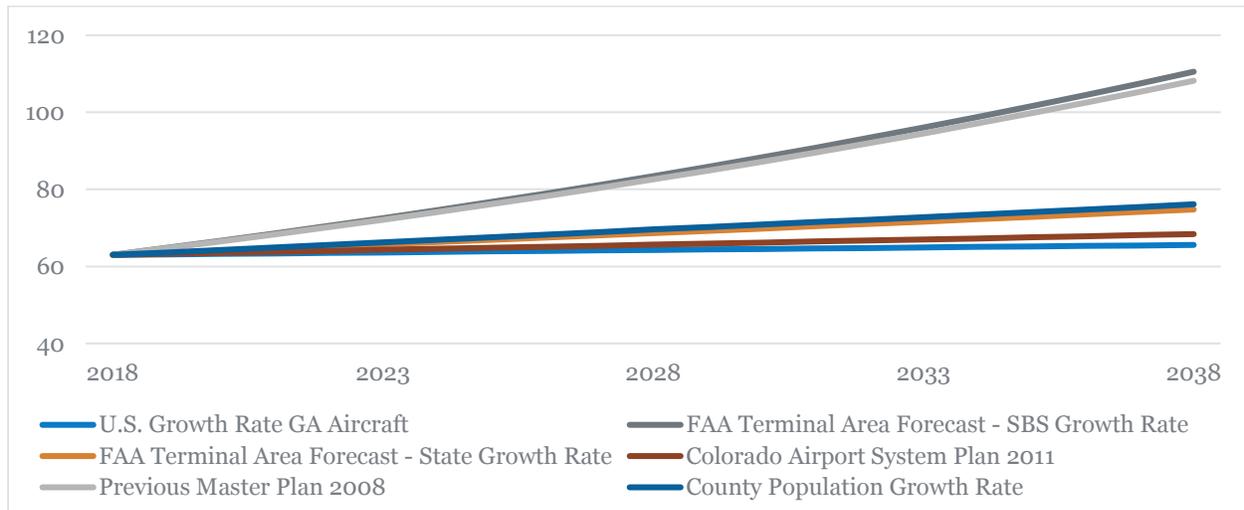
Since it is reasonable to expect continued growth in the Steamboat Springs area and the continuation of positive aviation industry trends, growth in based aircraft at SBS is anticipated. A number of forecasting models were applied to produce various SBS projections. Considering the

uncertain accuracy and significant fluctuations in historical data, regression analyses and trend line forecasting were excluded. **Figure 2.12** compares the various forecasting models with a description of each that follows. As shown, there is a broad range of results with a couple of the models aligning closely.

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Figure 2.12: Comparison of Based Aircraft Forecast Models for SBS



U.S. Growth Rate

As discussed earlier, FAA Aerospace Forecasts project that the national GA aircraft fleet will grow an average of 0.2% annually representing the anticipated decline in piston aircraft offset by growth in the remainder of the fleet. Applying this growth rate to SBS results in minimal growth, or three additional aircraft over the 20-year planning period for a total of 66.

FAA Terminal Area Forecast for Colorado

Statewide growth in based aircraft is projected to average 0.86% annually according to the FAA TAF. Applying this growth rate to SBS results in 12 more based aircraft for a total of 75 based aircraft by 2038.

Master Plan 2008

The previous master plan used an estimated 2.74% growth rate in forecasting based aircraft over a 20-year planning period. The 2008 master plan used 2005 as the base year when the airport had a total of 92 based aircraft (with an anticipated increase to 158). Applying the 2.74% growth rate to the airport's current count produces a total of 108 aircraft within the 20-year planning period, 2038. It's important to note that the 2008 plan was completed prior to the most severe recession impacts hitting the GA industry.

FAA Terminal Area Forecast for SBS

The FAA TAF projects 2.85% annual growth for SBS in its latest projections. This is an aggressive growth rate uncommon to FAA TAF projections at GA airports and it represents the highest growth rate model for the based aircraft. By 2038, aircraft would increase by 76% for a total of 111.

Colorado Aviation System Plan 2011

The CASP, published in 2011, projected based aircraft would grow at an average of 0.41% annually, below the current FAA national growth rate. This results in five additional aircraft at SBS by 2038 for a total of 68.

County Population Growth Rate

Aviation demand at SBS has not aligned with area population changes in the past. Instead, it has shown sensitivity to other economic drivers and industry factors. Still, population growth suggests potential for increased demand at SBS, particularly as business and employment grow as well. This model uses the Routt County population growth rate, 1.0% annually, which results in 13 additional aircraft by 2038, for a total of 76 based aircraft. This model represents the mid-range of the forecast models and is recommended as the preferred forecast. This forecast aligns well with recent trends in the GA industry.



However, a shift in the fleet mix is anticipated based on the projected growth rates for the various aircraft types. **Table 2.6** presents the fleet

mix for the based aircraft in the next 5-, 10, and 20-year timeframes.

Table 2.6: Based Aircraft and Fleet Mix Forecast for SBS

	SE Piston	ME Piston	Turboprops	Jet	Heli	Other	TOTAL
2018	50	3	5	1	2	2	63
2023	50	3	6	1	2	4	66
2028	50	3	7	2	3	5	70
2038	50	3	9	3	4	7	76
2018	79.4%	4.3%	7.9%	1.6%	3.2%	3.2%	100%
2023	75.8%	4.5%	9.1%	1.5%	3.0%	6.1%	100%
2028	71.4%	4.3%	10.0%	2.9%	4.3%	7.1%	100%
2038	65.8%	3.9%	11.8%	3.9%	5.3%	9.2%	100%

SE = Single Engine; ME = Multi Engine; Heli=Helicopter/Rotorcraft.

Operations Forecasts

Operations at SBS were estimated at 8,700 in 2018, considering airport management records, FAA data, user survey responses and airfield photos of aircraft activity. Air Taxi, general aviation and military comprise the SBS activity. The recommended forecast for operations examined each traffic segment individually, described as follows.

Air Taxi Forecast

According to the FAA records, there were an estimated 550 annual air taxi operations at SBS last year. As noted earlier, air taxi operations can refer to passenger/cargo charter or air taxi, medical transport, and other “for hire” flights in various helicopter and fixed wing aircraft. Contracted firefighting flights are often counted as air taxi, as well, but fluctuate significantly depending on the fire season. Classic Air Medical, which bases one Bell 407 helicopter at SBS, transports an average of 160 patients annually, which translates to an estimated 320 operations. In addition to their medical flights out of SBS, they conduct training flights, assist with search and

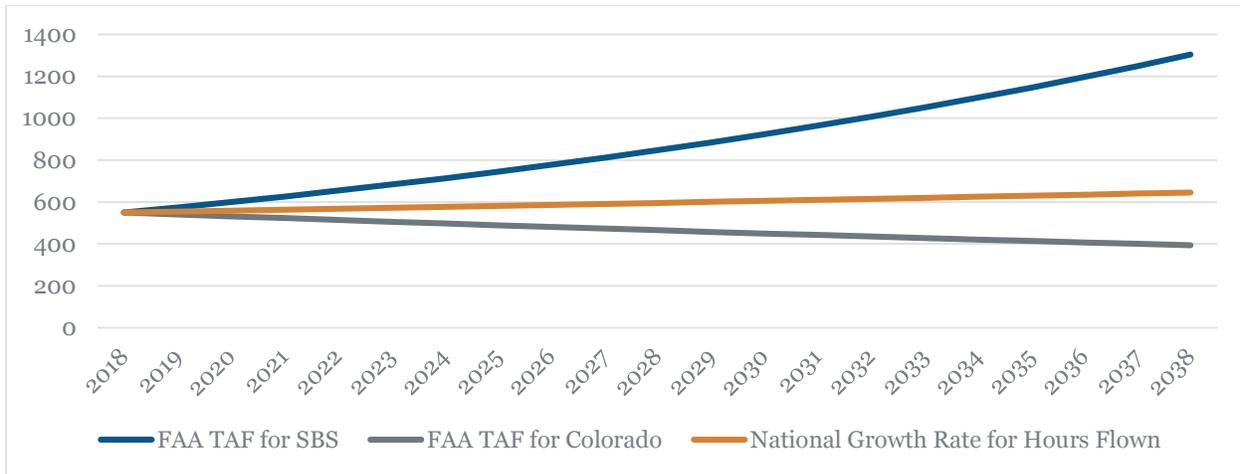
rescue, attend community events, and conduct ferry flights for emergency service and law enforcement personnel. Their fixed wing aircraft, while not based at SBS, fly in for medical transport when weather prohibits use of the helicopter or it’s already been called out. Fixed wing aircraft are typically called in from Craig (CO), Riverton (WY), or Page (AZ).

The FAA TAF projects 4.41% annual growth in air taxi operations at SBS, in stark contrast to FAA’s typical conservative growth projections at most GA airports. In fact, TAF projects total air taxi operations across Colorado will decline 1.66% annually. An intermediate growth rate comes from the *FAA Aerospace Forecasts*, where the FAA projects “GA and Air Tax Hours Flown” to grow at an annual rate of 0.8%. User survey respondents suggested that runway length and instrument approach limitations have been constraining air taxi demand, so improvements may support increased activity. The preferred forecast for SBS is the National Growth Rate model that increases air taxi operations from 550 to 645 over the planning period, or 0.8% annually.

Figure 2.13: Air Taxi Forecast Models for SBS

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GA Operations Forecast

A common practice in projecting GA operations at airports like SBS includes the use of an operations-per-based-aircraft (OPBA) ratio. The current OPBA ratio is determined by using the estimated annual GA operations, 8,140, and the current number of based aircraft, 63. Dividing the operations by based aircraft equates to a current OPBA of 169. For the GA operations forecast, an OPBA is established that is to be multiplied by the forecast number of based aircraft. While it is recognized that these operations are conducted by both based and transient aircraft, the OPBA is simply a guideline and tool for estimating and forecasting operations.

The existing OPBA falls below the typical OPBA at airports similar to SBS, but this can be attributed to local pilots flying their small aircraft less frequently. For SBS, the OPBA is forecast to increase to 170 in the short-term, 175 in the intermediate-term, and 185 in the long-term. Considering industry trends for GA operations and hours flown, user survey responses regarding use for business, recreational, and training, this suggests stability and growth in operations for SBS. As a result, a slight increase in OPBA over the 20-year period is anticipated. Further, the GA local/itinerant operations split for 2018 is estimated at 40/60 percent. Local operations typically represent training activity. Local operations, like itinerant, are projected to increase, so the split is projected to remain at 40/60 through the planning period. With flight instruction on the field and opportunities to

partner with college programs considering private pilot instruction, local GA local/training activity growth will remain strong at SBS.

For SBS, it's important to address the diversity of airport users served. Examples of GA activity include medical, flight training, corporate/business, personal, tourism, recreational, utility inspections, search and rescue and other law enforcement activity. As mentioned previously, some activity such as medical transport or contract firefighting is counted as air taxi, but it's not uncommon for these operations to be counted as GA. The low number of air taxi operations in the IFR records suggests that numerous air taxi flights at SBS have been identified as GA.

Flight training, for SBS, is of significance as there are four flight instructors routinely providing training. The Steamboat Flying Club has a fleet of three aircraft that are used by its members for flight instruction as well as personal and business purposes.

Zephyr Helicopters, which previously offered helicopter training on a regular basis, is primarily conducting pipeline inspections. An estimated 98% of their activity includes pipeline inspections with approximately 2% comprising occasional scenic tours and flight instruction and even less frequent charter, search and rescue and photo flights.

Military Operations Forecast

Military operations are minimal at SBS but fluctuate. According to the FAA records, existing



military operations are estimated at 10 annually, which is 0.1% of total operations. The FAA typically projects no growth in military operations unless significant changes are expected with area military activity that is public knowledge. For security reasons, military operations are not typically shared. The FAA TAF projects no change in current military operations for SBS or statewide. Accordingly, military operations at SBS

are forecast to remain unchanged for the planning period.

Forecast Summary

In **Table 2.7**, a summary of the SBS forecast of based aircraft and operations is presented. The variance between the master plan forecast and FAA TAF projections is also noted.

Table 2.7: SBS Aviation Demand Forecasts 2018-2038

SBS Airport Master Plan Based Aircraft Forecast				
AIRCRAFT TYPE	BASE YEAR 2018	SHORT TERM FORECAST 2023	INTERMEDIATE TERM FORECAST 2028	LONG TERM FORECAST 2038
Single Engine Piston	50	50	50	50
Twin Engine Piston	3	3	3	3
Turboprop (see note)	5	6	7	9
Jet	1	1	2	3
Helicopter	2	2	3	4
Other	2	4	5	7
Total Based Aircraft Forecast	63	66	70	76
FAA TAF Based Aircraft forecast	51	63	73	93
% Difference Between Forecast and TAF	24%	5%	-4%	-18.3%
SBS Airport Master Plan Operations Forecast				
Air Taxi	550	572	596	645
GA Local	3,260	4,488	4,900	5,624
GA Itinerant	4,880	6,732	7,350	8,436
Military	10	10	10	10
Total Aircraft Operations Forecast	8,700	11,802	12,856	14,715
Current TAF Aircraft Operations	10,658	13,693	16,873	25,617
% Difference Between Forecast and TAF	-18%	-14%	-25%	-43%

Note: Turboprop aircraft at SBS are all single engine. Baseline figures used for the Master Plan are different than TAF records resulting in larger percentage variations.

This forecast will be submitted to the FAA on their FAA TAF Comparison worksheet, so a review and approval process may be completed before subsequent planning tasks are initiated.

Operations Fleet Mix

The existing and projected fleet mix of operations at SBS is presented in **Table 2.8**. Operations include single- and multi-engine piston,

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turboprops, jets, helicopters and other. Fleet mix figures are estimated and consider available aircraft and operations data, aircraft photos on the airfield from August through January, user surveys, and FAA’s forecast of hours flown for different types of air taxi and GA aircraft. Turboprops, jets, helicopters and the “other” category will have increasing proportions of aircraft operations, consistent with recent trends and the FAA’s national forecast. Despite the decline in piston aircraft operations, they will maintain the majority share of operations throughout the planning period.

Table 2.8: Operations Fleet Mix for SBS

	2018	2023	2028	2038
SEP	68.8%	65.1%	61.0%	55.0%
	5,983	7,683	7,842	8,093
MEP	6.9%	6.8%	6.7%	6.5%
	596	803	861	956
Turboprop	15.6%	16.9%	18.0%	19.9%
	1,356	1,995	2,314	2,928
Jet	2.1%	2.8%	3.8%	5.0%
	180	330	489	736
Helicopter	6.0%	6.7%	8.0%	9.1%
	526	791	1,028	1,339
Other	0.7%	1.7%	2.5%	4.5%
	60	201	321	662
Total Ops	8,700	11,802	12,856	14,715

IFR Operations

As discussed earlier, IFR operations reached 1,994 in 2018, representing 23% of annual activity at SBS. IFR operations have fluctuated over the last decade but grown at an average rate of 1.27%. This trend is projected to continue with total IFR operations comprising 27% of annual operations by 2038.

Through-the Fence (TTF) Operations

As part of the master planning study, it’s important to acknowledge the proposed development of an airpark adjacent to SBS with proposed TTF access. The city planning department, airport management and airpark developers have been in communication over the past year regarding the proposal. This is of particular importance to future SBS activity since the hangar storage will be available off-airport if facility capacity is consumed on-airport. Airpark development may attract additional users to SBS, increasing operations.

Peaking Characteristics

Typical of most airports is that activity fluctuates throughout the year, the month, and the day. For busy airports, it may be essential to calculate peak demand to ensure facility capacity is adequate and necessary improvements are completed in a timely manner. Peak activity has minimal impact on low activity airports.

Peak demand forecasts are determined by starting with total annual operations and identifying the “peak month”—month with the highest activity levels. According to airport counts of aircraft operations and fuel sales data, the busiest time is in the summer months, and the slowest period in recent history has been April and May. On average, peak month demand represents approximately 13 percent of annual operations. Next, “design day” is calculated by dividing the peak month operations by the number of days in the month. Finally, “design hour” is determined, which represents the busiest hour. For SBS, the busiest hour is estimated at 14% of the day, or currently five operations, and growing to nine operations in the 20-year planning period. **Table 2.9** is a summary of the peak demand.



Table 2.9: Peak Demand Forecast for SBS

	BASE YEAR 2018	SHORT- TERM 2023	INTERMEDIATE TERM 2028	LONG-TERM 2038
Annual Operations	8,700	11,802	12,856	14,715
Peak Month (13% of Annual)	1,131	1,534	1,671	1,913
Design Day	38	51	56	64
Design Hour (14% of Design Day)	5	7	8	9

Critical Aircraft and Airport Reference Code

Identification of the critical, or design, aircraft at SBS is essential to determine the design standards applicable to the Airport. The critical aircraft is defined as the most demanding aircraft that regularly uses the airport. FAA’s definition of regular use (or substantial use) is at least 500 annual itinerant operations.

The critical aircraft is not necessarily one specific model. Often, a family of aircraft defined by common features determines an Airport Reference Code (ARC). FAA design standards are tied to an ARC for the Airport.

As addressed in the Inventory Chapter, an ARC consists of a letter representing Aircraft Approach Category (1.3 x stall speed) and a Roman Numeral representing the Airplane Design Group (based primarily on wingspan, sometimes tail height).

For SBS the critical aircraft was identified by IFR records and airfield photographs of aircraft activity. As a result, the Super King Air is identified as the existing critical aircraft at SBS.

The Super King Air is a B-II aircraft, so the ARC identified for the Airport is B-II. B-II has an approach speed up to 120 knots, and a wingspan up to 78 feet. The airport will remain a B-II facility through the planning period. However, jet traffic will be growing and by 2038, it is anticipated that the critical aircraft will be Citation, also a B-II aircraft. The airport currently serves occasional C-I and -II operations, but the activity is infrequent and is not anticipated to be near the 500 annual operations threshold during the planning period to require an upgrade to C-II standards.

Implications of the forecasting effort will be presented in Chapter 3, Facility Requirements.