4. Forecast of Aviation Demand

SECTION OVERVIEW

This chapter will analyze the existing aviation activity at Heber Valley Airport (HCR), and using approved forecasting methodologies, determine a realistic forecast of aviation demand. This analysis will determine a baseline of activity for the year 2020, and forecast short (5-year), medium (10-year), and long (20-year) term projections. The information provided in this chapter will determine the FAA design standards used to for planning and future airport development.

4.1 GENERAL

Forecasts of future levels of aviation activity at an airport are the foundation for effective decisions in airport planning and development. The projections are used to determine the need and timing for new and/or expanded facilities or to decommission old facilities. Forecasts are based on the most up-to-date available information and include an analysis of both local and national industry trends. The forecast is then used to determine appropriate time frames or trigger points for phasing of capital investments which ensures the airport avoids unnecessary operating expenses or a loss of economic benefits through the airport for the community.

The forecasting element is focused on two primary objectives to be incorporated in the facility requirements analysis. The first objective is to identify total operations at the airport in order to estimate how busy the airport will be at various milestones during the planning period. This analysis will assist the community in understanding the overall strategic-capacity needs for the airport.

The second objective is to determine the airport's "critical" or "design" aircraft. The critical aircraft sets the dimensional requirements to be used for specific airport elements such as separation distances between taxiways and runways, and the size of defined protection areas. The critical aircraft is the most demanding aircraft type, or family grouping of aircraft with similar characteristics, that make regular use at the airport. Regular use is further defined as 500 annual operations of both itinerant and local operations, excluding touch-and-go operations. An operation is either a takeoff or landing. For determining the critical aircraft the FAA provides guidance in Advisory Circular 150/5000-17, *Critical Aircraft and Regular Use Determination*.

It is important to note that neither the Airport Sponsor nor the community choose the critical aircraft. Through the guidance referenced above, the planning effort determines the aircraft (or combination of aircraft), based on existing operations at the airport. The future critical aircraft is determined by the forecast and the ongoing trends in the aircraft fleet.

The forecast provides a framework to guide the analysis for future development and alternatives at the airport. It should be realized there are always short and long-term fluctuations in an airport's activity due to a variety of factors that cannot be anticipated. Thus, it is important to include flexibility and dynamic strategies within an

airport's forecast. Data acquisition for this study occurred during the COVID-19 Pandemic, where the full impacts are yet to be determined on the economy and aviation industry. This forecast is based on the most up-to-date information possible, with the understanding that future activity is volatile as the affects of the pandemic on the economy continue to unfold.

4.2 GENERAL AVIATION (GA) INDUSTRY TRENDS

The aviation industry follows economic trends, and the nature of the industry is cyclical. At the national level, fluctuating trends in GA usage and economic upturns/downturns resulting from the nation's business cycle have impacted GA demand. In general, slow economic recovery and economic uncertainties will impact demand for GA at many airports throughout the U.S., including HCR, over the next several years.

It is important to understand the two main types of aviation present in Utah, commercial service and general aviation. Commercial service consists of those operations which are scheduled and reach a threshold of annual enplanements, and general aviation encompasses all other operations. Heber Valley Airport is a general aviation airport, meaning there are no scheduled services, however, the airport has significant use by business aviation.

The following section presents trends for the United States, which are intended to provide a general frame of reference. The analysis of the national trends provides an understanding of how aviation activity within the region compares to aviation activity throughout the country. The analysis may also provide a basis for predicting how aviation may be expected to develop in the future.

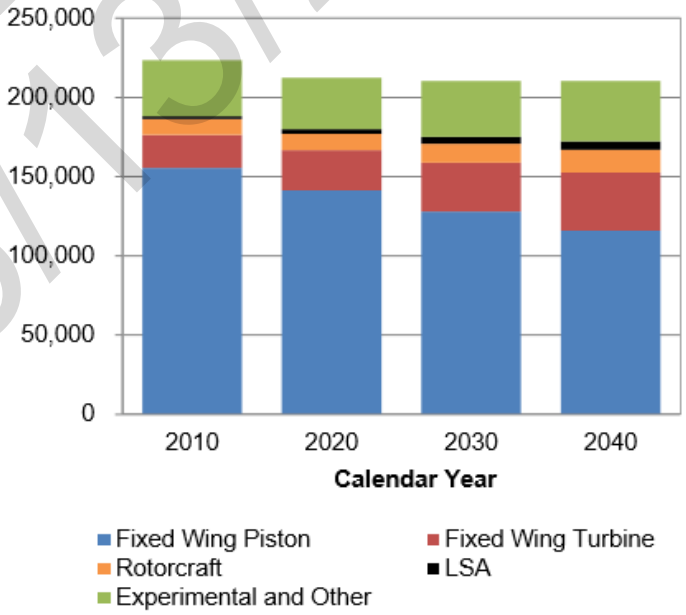
FAA AEROSPACE FORECAST 2020-2040

The highlights from the FAA Aerospace Forecast 2020-2040 reveal the longterm outlook for commercial air carrier and passenger demand are expected to see continuous growth. It is anticipated global economic growth will accelerate in 2021 following the slump in 2019-2020, as it is expected economies will return to the long-run trend rates of growth.

General aviation will remain relatively stable with continued growth in corporate and business aviation offsetting a decline in traditional and low end fleets. The active GA fleet is expected to decline at 0.9% as fixed wing piston aircraft are being retired and replaced with a more sophisticated turbine powered fleet (***Figure 4.1***). There is an expected increase in experimental and Light Sport Aircraft (LSA) fleets with an associated increase in hours. The increase of turbine, experimental, and LSA fleets remain just below the decline of piston aircraft, thus an overall decline in the active GA fleet. Although the fleet is expected to decrease, the number of hours flown are expected to increase by 16% during the same period as new aircraft are expected to fly more hours[1].

Fixed wing piston hours are expected to decline at the same rate as fleet decline, with turbine aircraft hours increasing 2.2% annually. GA jet aircraft are

Figure 4.1 Active GA Aircraft Fleet

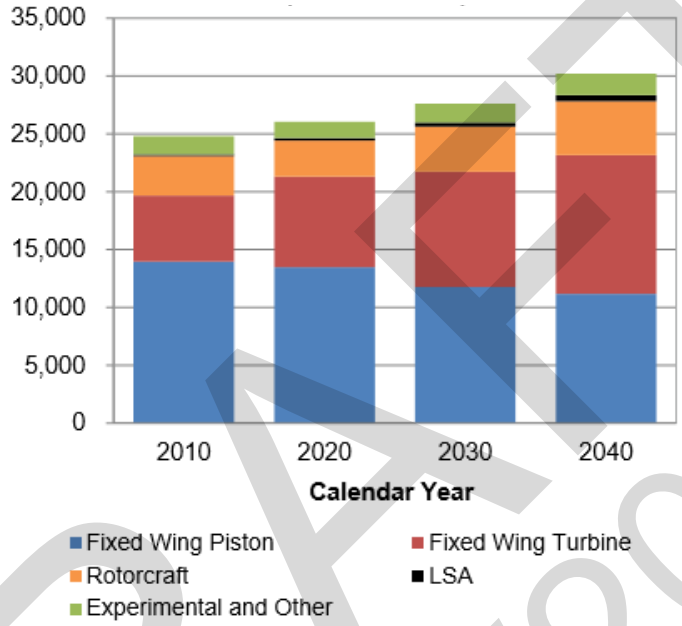


Source: FAA Aerospace Forecast 2020-2040

expected to account for the greatest increase in hours flown at 2.7% annually throughout the planning period as the business jet fleet increases (***Figure 4.2***).

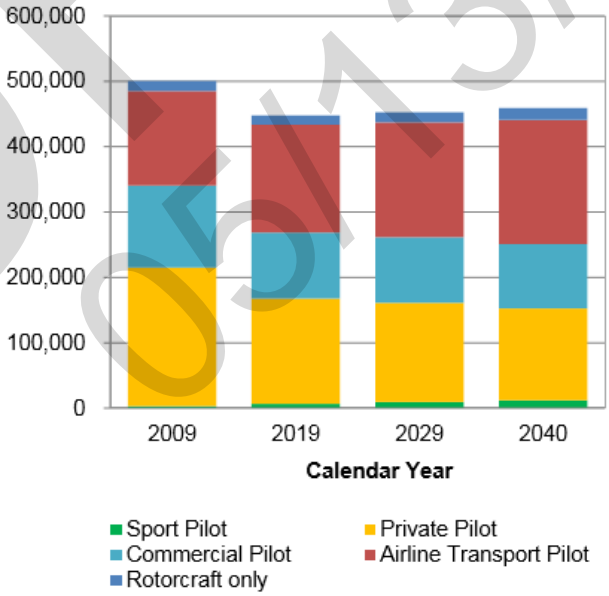
The number of active pilots at the end of 2019 was 664,565 with growth in every certificate type except for rotorcraft and recreational pilot certificates. The number of GA pilots is expected to decrease between 2019 and 2040, except for commercial and air transport pilots (ATP), which are expected to increase over the same forecast period. This follows the aircraft fleet trends and hours flown trends for the types of operations expecting to occur ***(Figure 4.3).***

Figure 4.2. GA Hours Flown (in thousands)



Source: FAA Aerospace Forecast 2020-2040

Figure 4.3 Active GA Pilots by Certificate



Source: FAA Aerospace Forecast 2020-2040

GENERAL AVIATION AIRCRAFT SHIPMENTS

The 2008-2009 economic recession negatively impacted GA aircraft production, and the industry has been slow to recover. The General Aviation Manufacturers Association (GAMA) offers additional optimism in their most recent publication for the continued growth of GA aircraft manufacturing in the near future. ***Table 4.1*** summarizes the historical data related to GA aircraft shipments[2].

Table 4.1 Annual General Aviation Airplane Shipments

Year	Total	Single Engine Piston	Multi-Engine Piston	Turboprop	Business Jet	% Change from Previous Year
1995	1,251	605	61	285	300	-
1996	1,437	731	70	320	316	15%
1997	1,840	1,043	80	279	438	28%
1998	2,457	1,508	98	336	515	34%
1999	2,808	1,689	112	340	667	14%
2000	3,147	1,877	103	415	752	12%
2001	2,998	1,645	147	422	784	-5%
2002	2,677	1,591	130	280	676	-11%
2003	2,686	1,825	71	272	518	0.3%
2004	2,962	1,999	52	319	592	10%
2005	3,590	2,336	139	375	750	21%
2006	4,054	2,513	242	412	887	13%
2007	4,277	2,417	258	465	1,137	6%
2008	3,974	1,943	176	538	1,317	-7%
2009	2,283	893	70	446	874	-43%
2010	2,024	781	108	368	767	-11%
2011	2,120	761	137	526	696	5%
2012	2,164	817	91	584	672	2%
2013	2,353	908	122	645	678	9%
2014	2,454	986	143	603	722	4%
2015	2,331	946	110	557	718	-5%
2016	2,268	890	129	582	667	-3%
2017	2,325	936	149	563	677	3%
2018	2,441	952	185	601	703	5%
2019	2,658	1,111	213	525	809	9%

Source: GAMA Databook 2019

4.3 AIRPORT SERVICE AREA

A vital step in the determination of an airport's aviation demand forecast is to define its service area for various sectors of aviation. The service area for an airport is a geographic region from which an airport can be expected to attract the largest share of its activity. The service area is determined by evaluating the location of contending airports and their capabilities and services, as well as their relative attraction and convenience. The definition of the service area can then be used to identify other factors, such as socioeconomic and demographic trends, which influence aviation demand at an airport.

In determining the aviation demand for an airport, it is necessary to identify the role of the airport, as well as the specific areas of aviation demand the airport is intended to serve. HCR's primary role is accommodating GA demand in north-central Utah. The airport is classified as a public use, regional airport that does not have scheduled passenger service. The NPIAS defines a regional airport as being located in a metropolitan area, serving a relatively large population. Regional airports support regional economies with some interstate and some long-distance flying, and have high levels of activity including some jets and multi-engine propeller aircraft[3].

Aviation demand can also be impacted by the proximity and strength of aviation services at nearby airports, fuel prices, hangar availability and costs, and local and regional surface transportation networks. The more a facility can offer in terms of services and capabilities, the more viable it will be.

As a general rule, a GA airport's service area extends for approximately 30 miles. There are three other public-use airports within 30 nautical miles of Heber Valley Airport with instrument approaches and designed to serve GA aircraft. Although Provo Municipal Airport (PVU) offers limited commercial service and is classified as a primary nonhub airport, it is still heavily used by GA aircraft. ***Table 4.2*** summarizes HCR in comparison to competing nearby airports. Notably, Salt Lake City International Airport (SLC) is located 31 nautical miles northwest of HCR. While not a direct competitor to HCR, multiple aircraft divert to SLC during poor weather conditions due to the higher approach minimums at HCR.

Table 4.2 Competing Airports within Primary Service Area

Airport	Distance from HCR (nm)	NPIAS Role	Based Aircraft	Annual Operations	Longest Runway (ft)	Lowest Approach Visibility Minimums (mile)
Heber Valley Airport (HCR)		Regional	82*	8,332*	6,898	1 1/2
Provo Municipal Airport (PVU)	21 NM SW	Primary, Nonhub	111	171,915	6,628	3/4
Spanish Fork Airport Springville-Woodhouse Field (SPK)	23 NM SW	Local	138	27,375	6,500	1 1/4
South Valley Regional Airport (U42)	27 NM W	Regional	219	75,920	5,862	1 1/2
Salt Lake City International Airport (SLC)	31 NM SW	Large Hub	331	344,683	12,002	1/2

Source: airnav.com, FAA 5010 Airport Master Record, NPIAS 2019-2023

**Verified as part of this Master Plan*

4.4 AIRPORT REFERENCE CODE

The FAA has developed an airport coding system referred to as the Airport Reference Code (ARC) which establishes the specific design criteria for facility development. The ARC is determined from the critical aircraft, therefore the design criteria for a facility is appropriate for the types of operations an airport receives.

The ARC is based on two separate components of aircraft design: Aircraft Approach Category (AAC), and Airplane Design Group (ADG). The AAC is designated by a letter (A through E) and associated with the approach speed of the critical aircraft. The ADG is designated by a Roman numeral (I through VI) and represents the dimensional characteristics of tail height and wingspan of the critical aircraft.

Table 4.3 Aircraft Approach Category

Category	Speed
A	less than 91 knots
B	91 knots or more, less than 121 knots
C	121 knots or more, less than 141 knots
D	141 knots or more, less than 166 knots
E	166 knots or more

Source: FAA

Table 4.4 Airplane Design Group

Group	Tail Height (Feet)	Wingspan (Feet)
I	<20	<49
II	20 - <30	49 - <79
III	30 - <45	79 - <118
IV	45 - <60	118 - <171
V	60 - <66	171 - <214
VI	66 - <80	214 - <262

Source: FAA

4.5 GENERAL AVIATION FORECAST METHODOLOGIES

The FAA has several accepted forecasting techniques, including regression analysis, trend analysis, exponential smoothing, and cohort analysis. For regional general aviation airports, like Heber Valley Airport, an "operations per based aircraft" or OPBA methodology is commonly used. However, HCR is a poor candidate for this method given the relatively small local population and number of based aircraft.

Given the limited amount of data sources available for HCR due to not having an Air Traffic Control Tower (ATCT), a time series analysis will be utilized. A time series analysis is another fundamental technique used to analyze and forecast aviation activity by projecting historical activity without using independent (explanatory) variables. This allows a blend of different statistical methodologies to be used to support and project a time series analysis. In this case, simple growth rates will be applied to the available historical data. These growth rates are derived from a variety of sources.

A summary of the general aviation forecast methodology is as follows:

- Count aircraft operations from motion-activated cameras deployed on airfield in 2015.
- Count aircraft operations from motion-activated cameras deployed on airfield in 2019/2020.
- Review data from IFR filed flight plans to supplement photographic operation totals.
- Extrapolate data linearly to create a complete 12-month period of aviation activity.
- Breakdown operation counts by aircraft type (single engine, multi-engine, jet, etc.).
- Convert aircraft type operation totals into aircraft Airport Reference Code (ARC) totals and aircraft mix (itinerant, local, etc.) totals.
- Compare annual operation totals to FAA Terminal Area Forecast (TAF) and Utah system plan forecasts.

4.6 GENERAL AVIATION FORECAST

MOTION ACTIVATED CAMERA DATA

General aviation accounts for all of the traffic at Heber Valley Airport. The forecast is based on photographed operations and IFR filed flight plans. An aircraft operation is defined as a takeoff or landing, with a touch-and-go counting as two operations. This planning forecast covers a 20-year period, beginning in 2021 and ending in 2041.

From 01/13/15 to 09/09/15, all aircraft operations at HCR were photographed and logged using motion-activated cameras. Cameras were located at the taxiway connectors where aircraft typically move slower or stop. Locations of the four cameras are displayed in ***Figure 4.4*** followed by a sample of photographs captured which show the variety of operations occurring at the airport. Hundreds of photographs were examined by the consultant staff in two stages. Each photograph was categorized as either: aircraft traffic, other traffic (e.g., maintenance, snowplow), or other (e.g., animals, joggers, empty picture.) Next, all aircraft traffic was further identified. A spreadsheet was used to log all relevant information, such as the aircraft make, model, N-number, and number of engines. This data helped set the minimum baseline operations number for use in the forecast later in this chapter. Importantly, the cameras also provided evidence of the exact types of aircraft that use the airport.

Based on this information, the number of annual operations performed in 2015 was extrapolated. 6,312 operations were captured over the course of 191 activity days, resulting in approximately 33 operations per day or an estimated 12,070 operations per year.

Additionally, from 09/26/19 to 04/01/20, aircraft operations at HCR were again photographed and logged using motion-activated cameras. The extrapolated number of annual operations performed during this time-period resulted in an estimated 8,030 operations per year (approximately 22 operations per day).

The difference in estimated annual operations between the 2015 data and the 2019 data may be attributed, in part, to the time of year during which the cameras were utilized. In 2019, the cameras were not in place during Quarter 3 (July through September), which historically experiences an increased number of operations, but they were in place during Quarter 3 in 2015. Further, it is important to note that a flight training school operated at HCR until September 2019. It was reported that approximately 16,000 training flights were being performed annually when the flight training school relocated to a different airport.

Figure 4.4 Motion Activated Camera Placement

Photo Source: Google Earth

SR22T SE Turbo ARC A-I

B-55 ME Piston ARC A-I

SF50 SE Jet ARC A-I

PC-12 SE Turboprop ARC A-II

C-421 ME Piston ARC B-I

C-525A Jet ARC B-II

Gyroplane

Hot Air Balloon

Learjet 60 Jet ARC C-I

CL-600 Jet ARC C-II

Gulfstream IV Jet ARC D-II

TRAFFIC FLOW MANAGEMENT SYSTEM COUNTS (TFMSC) DATA

The number of aircraft flying under Instrument Flight Rules (IFR) at HCR was retrieved from the FAA's Traffic Flow Management System Counts (TFMSC) for calendar years 2015-2019, as outlined in ***Table 4.5.***

Using the number of estimated operations performed during 2015 determined from the motion-activated camera data, it was determined that 25.23% of the operations at HCR were conducted under IFR. This means that 74.77% of total operations were conducted under Visual Flight Rules (VFR). Using this information, the total number of operations performed each year between 2015 and 2020 was calculated.

Table 4.5 Total Operations

Year	IFR Operations (25.23%)	VFR Operations (74.77%)	Total Annual Operations
2020	5,846	17,325	23,171
2019	3,968	11,759	15,727
2018	4,046	11,990	16,036
2017	3,644	10,799	14,443
2016	3,490	10,343	13,833
2015	3,046	9,024	12,070

Based on Adjusted Total IFR Operations (Arrivals x 2) and 2015 Camera Data

The total number of IFR operations performed each quarter by Airport Reference Code (ARC) between 2015 and 2019 was also examined to determine if HCR experiences fluctuations in operations based on the time of year. Quarters are comprised of the following months:

Quarter 1 - January 1 through March 31

Quarter 2 - April 1 through June 30

Quarter 3 - July 1 through September 30

Quarter 4 - October 1 through December 31

Table 4.6 Quarterly Operations

Year	Q1	Q2	Q3	Q4	Total*
2019	1,122	709	1,278	777	3,886
2018	1,242	739	1,246	734	3,961
2017	941	697	1,136	1,111	3,885
2016	1,049	666	1,060	658	3,433
2015	1,062	405	898	556	2,921

**Annual totals do not equal the total number of IFR operations listed above because there is no ARC data available for some of the operations.*

Historically, Quarter 3 experiences the greatest number of operations, followed by Quarter 1. In comparison, the 2019 camera data captured a total of 4,207 operations during a period of approximately six months (09/26/19 to 04/01/20). Review of the TFMSC data for this same time-period is shown in ***Table 4.7*** and shows the ARC breakdown and totals for the aircraft that flew IFR operations.

Table 4.7 ARC Breakdown			
ARC	Q4 2019	Q1 2020	Total
A-I	68	100	168
A-II	84	71	155
B-I	105	116	221
B-II	357	617	974
B-III	4	6	10
C-I	34	65	99
C-II	95	161	256
C-III	7	15	22
C-IV	0	0	0
D-I	0	0	0
D-II	21	28	49
D-III	2	6	8
Total	**777**	**1,185**	**1,962**

Based on this information, the percentage of IFR operations captured by the cameras in 2019 can be calculated: 1,962 total IFR operations / 4,207 total operations = 46.64%. The remaining 53.36%, or 2,245, of the total operations were VFR operations.

Using this split between IFR and VFR operations, it was determined that a total of 12,234 operations were conducted at HCR in 2020 (5,706 IFR operations / 46.64% = 12,234 total operations and 6,528 VFR operations). The ARC breakdown totals from the 2020 TFMSC are provided in ***Table 4.8***.

Table 4.8 2020 Total Operations by ARC	
ARC	2020
A-I	512
A-II	506
B-I	591
B-II	2,765
B-III	18
C-I	344
C-II	765
C-III	51
C-IV	0
D-I	7
D-II	118
D-III	29
Total	**5,706**

Table 4.9 Total Operations by Operating Rules			
Year	IFR Operations (46.64%)	VFR Operations (53.36%)	Total Annual Operations
2020	5,706	6,528	12,234
2019	3,886	4,446	8,332
2018	3,961	4,532	8,493
2017	3,885	4,445	8,330
2016	3,433	3,928	7,361
2015	2,921	3,342	6,263

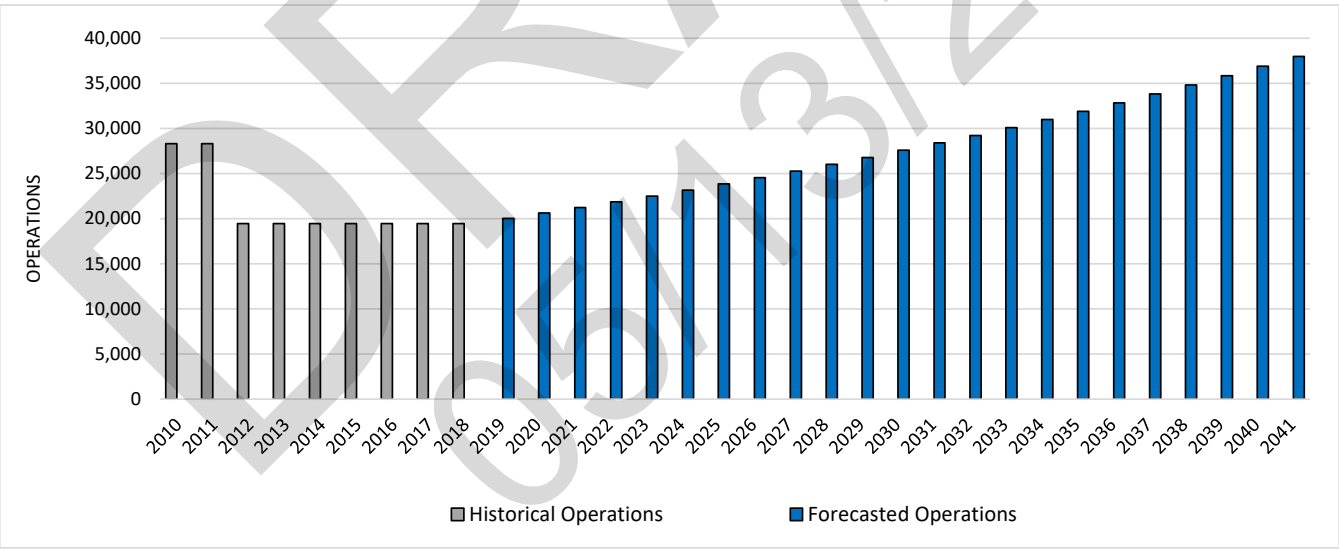
Based on Total IFR Operations (excluding No Data/Unknown Aircraft Type) and 2019 Camera Data

FAA TERMINAL AREA FORECAST (TAF) DATA

The Terminal Area Forecast (TAF) is prepared to assist the FAA with meeting planning, budgeting, and staffing requirements. It is also used by the state aviation authorities as a basis for planning airport improvements. The TAF assumes an unconstrained demand for aviation services based upon national economic conditions, as well as conditions within the aviation industry.

The TAF uses operations at non-towered airports as reported by airport operators on the FAA Form 5010, Airport Master Record. Form 5010 reports on aviation activity at the airport as estimated by FAA inspectors or information provided by airport managers, state aviation activity surveys, and other sources. Based aircraft data is also taken from the FAA Form 5010. The total operations for Heber Valley Airport, from 2010 to 2040, are shown below in ***Figure 4.5***.[4]

Figure 4.5 TAF Total Operations



In 2010 and 2011, the TAF indicated that over 28,000 annual operations were conducted at HCR. In 2012, that number was reduced by approximately 30%, where it remained until 2019 when gradual increases of about 2.9% per year were forecasted. Increases of approximately 2.9% per year continue to be forecasted by the FAA through 2040. Operations are typically divided into two categories: local operations are performed by aircraft that operate in the local traffic pattern, or within sight of the airport, are known to be operating for or arriving from flight in local practice areas within a 20-mile radius of the airport, or executing simulated instrument approaches or low passes at the airport. Itinerant operations are all aircraft operations other than local operations.

Figure 4.6 depicts the TAF forecasted operations from 2020 through 2040, divided by itinerant and local operations. According to the FAA, 35% of all operations at Heber Valley Airport are forecasted to be local.

Figure 4.6 TAF Total Operations

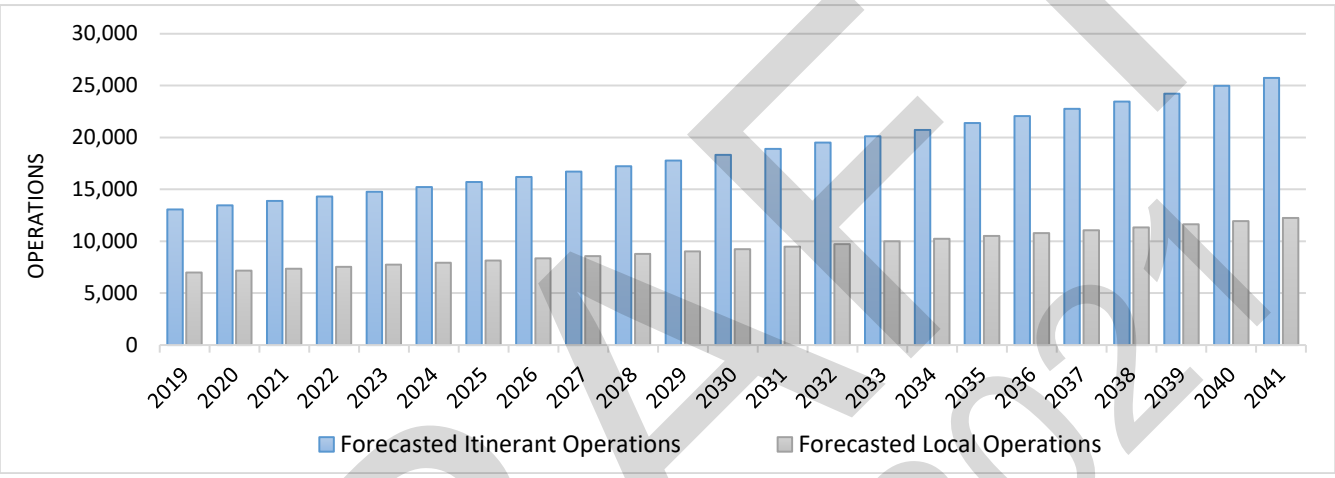


Figure 4.7 shows the historical and forecasted number of operations for Heber Valley Airport from 2010 through 2040. Operations are split between itinerant and local, and then further divided into additional categories: itinerant general aviation, itinerant air taxi and commuter, and local civil. No air carrier or military operations, itinerant or local, are forecasted.

Air carrier operations represent either takeoffs or landings of commercial aircraft with seating capacity of more than 60 seats. Although air taxi and commuter operations are one category, it is important to note their difference. Air taxi operations include takeoffs and landings by aircraft with 60 or fewer seats conducted on non-scheduled or for-hire flights. Commuter operations include takeoffs and landings by aircraft with 60 or fewer seats that transport regional passengers on scheduled commercial flights. Heber Valley Airport does not currently have commuter operations; in this case, this category represents air taxi operations only.

Figure 4.7 TAF Totals by Operation Type

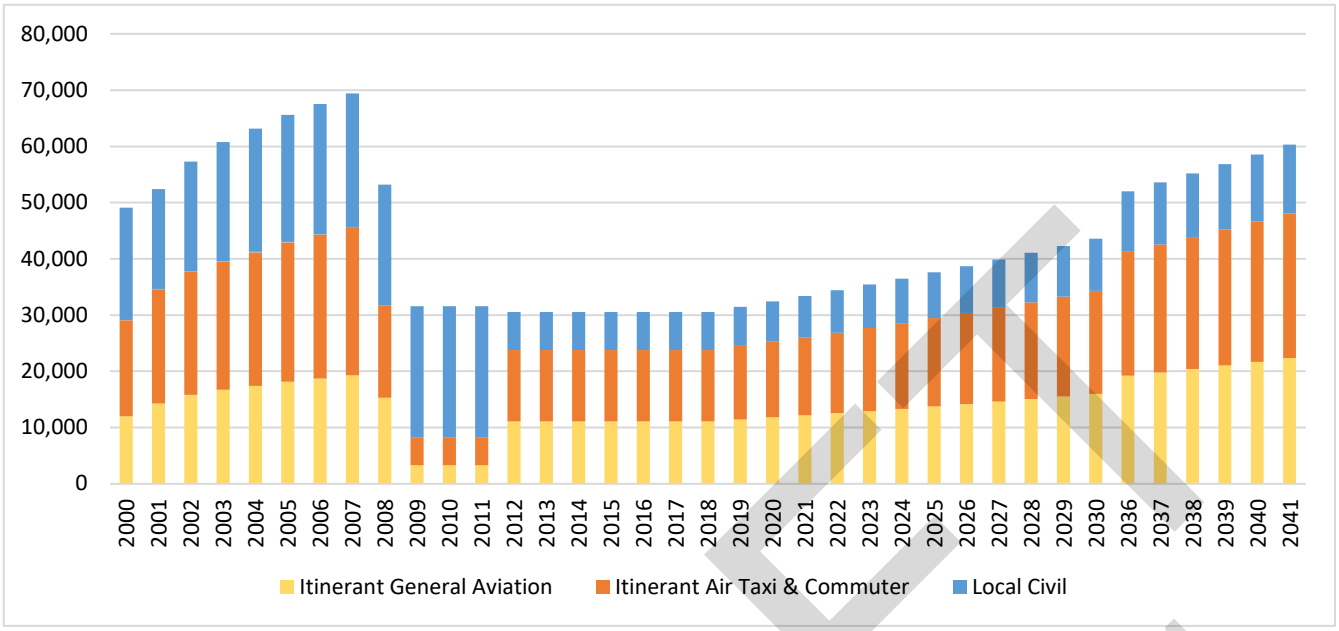
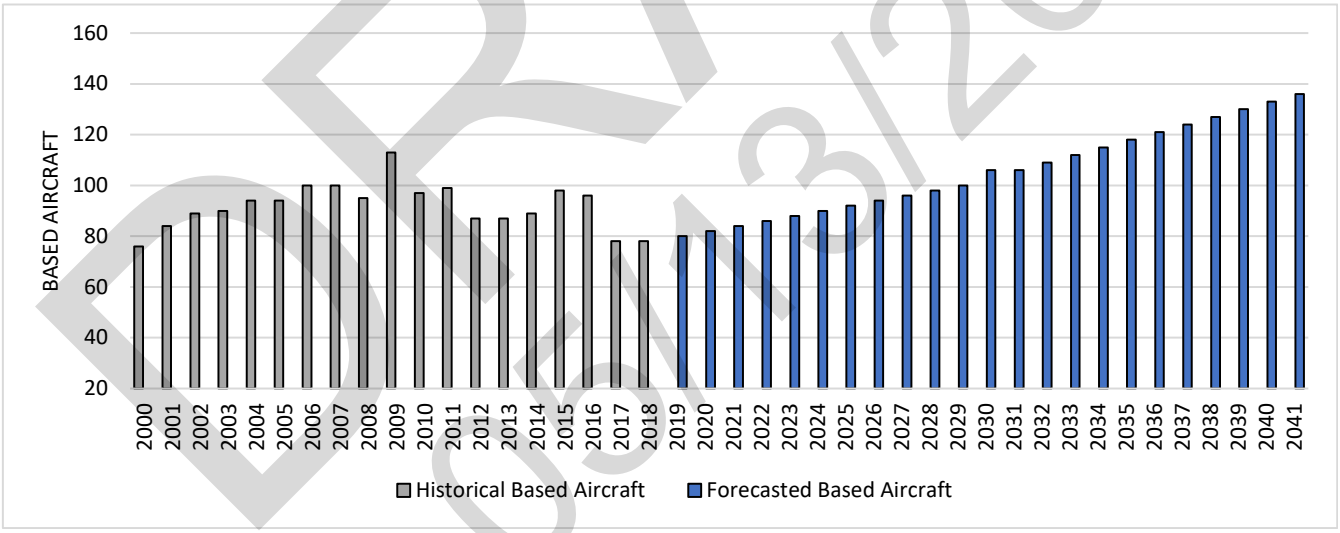


Figure 4.8 graphs the based aircraft at Heber Valley Airport, both historic and forecasted. Historically, the number of based aircraft has varied from 78 to 99 between 2010 and 2019. The FAA forecasted an annual increase of based aircraft between 2% and 3% per year from 2020 to 2040.

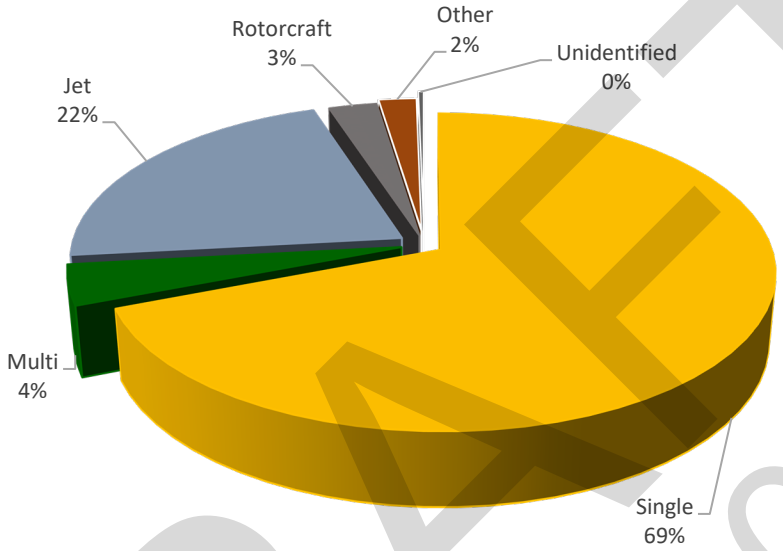
Figure 4.8 TAF Based Aircraft



BASELINE FORECAST DATA

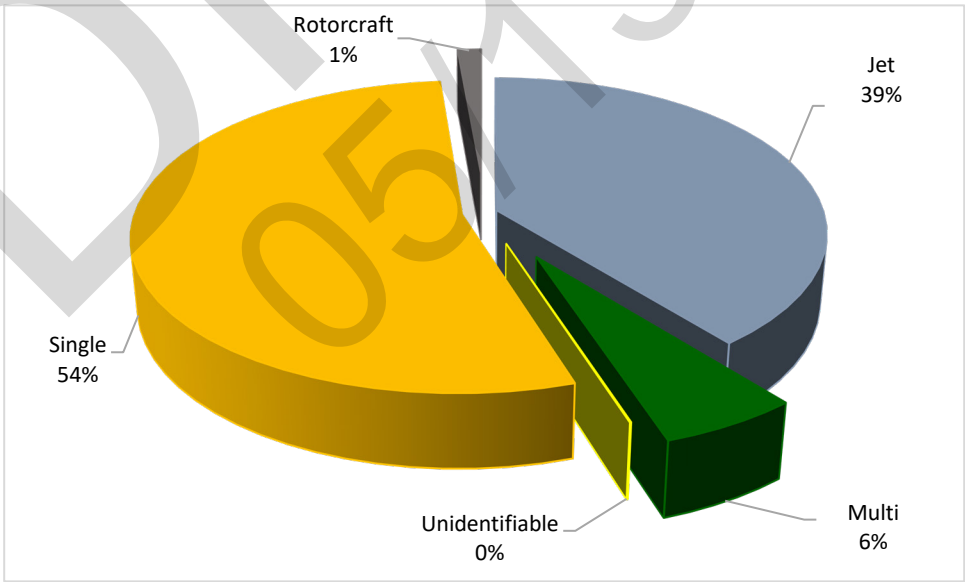
Results of the 2015 and 2019 photographed operations by aircraft type are displayed in ***Figures 4.9*** and ***4.10***. Of the 6,312 operations captured in 2015, 69% were performed by single engine aircraft, and 22% were performed by jet aircraft. The remaining operations were performed by multi-engine, rotorcraft, other aircraft. Unidentifiable operations (0.3%) are those in which the camera captured an aircraft operation, but the specific type of aircraft could not be determined from the image. For both 2015 and 2019 data, the single engine category incorporates single engine turboprop, experimental, and sport aircraft operations.

Figure 4.9 2015 Photographed Operations by Type



Of the 4,207 operations captured in 2019, 54% were performed by single engine aircraft, 39% were performed by jet aircraft, 6% were performed by multi-engine aircraft, 1% rotorcraft, and 0.05% were unidentifiable.

Figure 4.10 2019 Photographed Operations by Type



As noted previously, IFR flight plans filed with the FAA were examined as part of this Master Plan. Based on this data, the aircraft flying IFR operations at Heber Valley Airport in 2015 were cataloged as depicted in ***Figure 4.11***. The majority (64%) of IFR flight plans were filed by jet aircraft, followed by turbine aircraft (23%), and piston aircraft (12%).

The aircraft flying IFR operations at Heber Valley Airport in 2019 were cataloged and illustrated in ***Figure 4.12***, and were similar to 2015. The majority (77%) of IFR flight plans were filed by jet aircraft, followed by turbine aircraft (19%), and piston aircraft (4%).

Figure 4.11 2015 TFMSC Data by Type

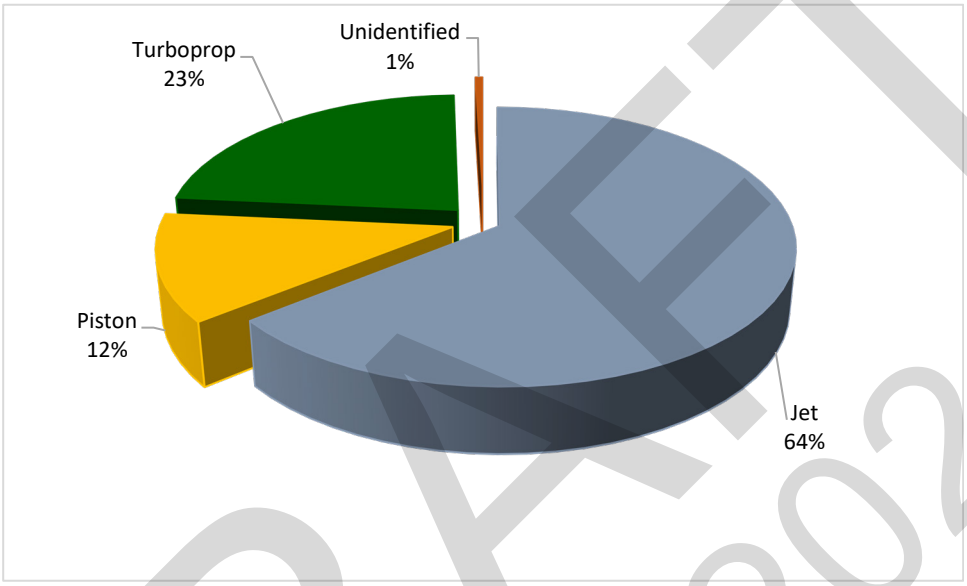
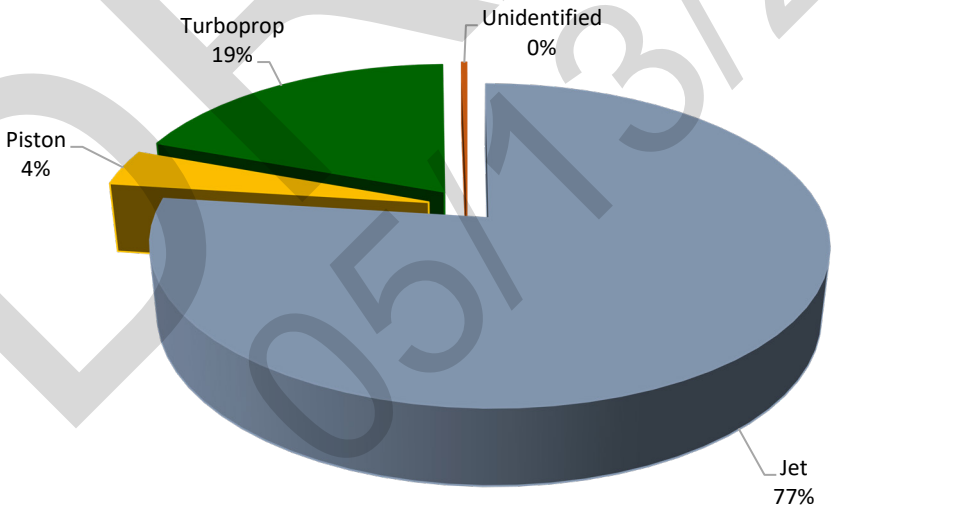


Figure 4.12 2019 TFMSC Data by Type



FIXED BASE OPERATOR (FBO) DATA

OK3 Air, the Fixed Base Operator (FBO) at Heber Valley Airport, tracks transient aircraft flying into the airport for the purpose of calculating landing fees. Transient aircraft include aircraft which are not based at the airport. OK3 Air provided data from the company's records reflecting the number of aircraft landings captured during calendar years 2016 through 2020. This data also included the type of aircraft used to perform each landing.

2,427 landings x 2 = 4,854 transient operations in 2020.
1,765 landings x 2 = 3,530 transient operations in 2019.
1,749 landings x 2 = 3,498 transient operations in 2018.
1,467 landings x 2 = 2,934 transient operations in 2017.
1,026 landings x 2 = 2,052 transient operations in 2016.

UTAH STATE AVIATION SYSTEM PLAN 2018 UPDATE DATA

The Utah Department of Transportation, Division of Aeronautics (UDOT-Aero) is in the process of updating Utah's State Aviation System Plan and has provided the preliminary forecast numbers for annual operations and based aircraft at HCR. According to UDOT-Aero, 20,037 aircraft operations were performed at HCR during 2018. Additionally, there were 78 based aircraft at HCR in 2018.

FAA FORM 5010 AIRPORT MASTER RECORD DATA

According to the FAA Form 5010 Airport Master Record, 19,468 operations were performed at HCR for the 12-month period ending 01/01/2012. The TAF uses this number to establish the number of total operations at HCR for the years 2012 through 2018 with zero projected growth.

Both the TAF and the 5010 report that the breakdown of aircraft operations at HCR may be categorized as follows:

Local	35%
Transient	57%
Air Taxi	8%

Based on this information, the data submitted by the FBO was used to calculate the annual operations performed at HCR during 2020 (4,854 transient operations / 57% = 8,516).

Table 4.10 summarizes the estimated number of total annual operations conducted at HCR.

Table 4.10 Estimated Annual Operations at HCR

	FAA TAF (2020)	UDOT System Plan (2018)	FAA 5010 (2012)	Cameras/ TFMSC (2015)	Cameras/ TFMSC (2019)	FBO (2020)
Annual Operations	20,628	20,037	19,468	12,070	12,234	8,516

The TFMSC data reflects the number of aircraft flying under instrument flight rules (IFR) and does not include any aircraft flying under visual flight rules (VFR), which results in a lower number of annual operations being reported. ***Table 4.5*** shows that 74.77% of annual operations at HCR were VFR operations based on the 2015 motion-activated camera data.

The FAA Form 5010 data provides the number of annual operations reported by the airport manager and confirmed by an FAA inspector. It is typically based on information presented in the most recent planning documents, as well as records maintained by the FBO and airport manager. The FAA TAF data used this number as the baseline and then applied the assumed annual growth rate of 2.9% to calculate the total number of operations for 2019. The FAA assumptions are based on unconstrained demand for aviation services and national economic conditions.

The Utah Department of Transportation, Division of Aeronautics used the "operations per based aircraft" method for their calculations. According to FAA Order 5090.5, 250 annual operations per validated based aircraft for basic general aviation airports and 350 annual operations per validated based aircraft for local general aviation airports may be applied to aviation forecasts at non-towered airports. UDOT used the 2018 TAF data for based aircraft (78) and total annual operations (20,037). According to the NPIAS report for years 2020-2025, HCR's role is "regional." However, UDOT has assumed nearly 257 operations per based aircraft (which is very close to the number assigned to basic airports). UDOT is in the process of finalizing their forecast numbers and has not yet published this data.

OK3 Air, the FBO at HCR, tracks transient aircraft flying into the airport to calculate landing fees. Total operations for 2020 utilized percentage of transient operations calculated from the 2012 FAA Form 5010 data and current FBO landing records.

The motion-activated camera data from 2019 provides the preferred calculation because it incorporates physical evidence of actual aircraft operations, which includes both IFR and VFR operations, and depicts a realistic number of annual operations at the airport. Since the motion-activated camera data was collected for a six-month period in 2019, TFMSC data was utilized to calculate the percentage of IFR operations for the same timeframe and then the percentages of IFR and VFR operations were used to calculate the total annual operations in 2020. Using the motion-activated camera data assists in estimating the number of annual operations for the baseline, resulting in a more accurate forecast for the 20-year planning period.

The percentage of IFR operations performed at HCR based on the 2015 TFMSC and camera data (25.23%) is substantially lower than the percentage of IFR operations performed at HCR based on the 2019 TFMSC and camera data (46.64%). This difference can be attributed to two major factors: 1) the camera data was collected during different times of the year (the 2015 data was captured during January through September and the 2019 data was captured during September through April; the 2019 data included several months of the year during which inclement weather conditions and IFR operations are more likely), and 2) the 2015 data was collected when the flight training school was actively performing operations at HCR; the 2019 data was collected immediately following the flight training school's departure from HCR, which resulted in an abrupt decline in VFR operations at the airport.

Although there are significant differences in the baseline numbers of annual operations being presented, they are all arguably credible based on an examination of the data sources. Simply stated, the differences result from the fact that each methodology utilizes a different, but valid data source.

GLIDER OPERATIONS

There is a significant amount of glider operations occurring seasonally at the airport. These operations are not tracked through the FAA's TAF, nor do they appear on TFMSC reports. Through conversations with members of the Utah Soaring Association, it was determined that there are approximately 15 single-seat gliders, one two-seat glider, and three self-launching gliders based at the airport. A typical operating season is between May 1st to November 1st each year and consists entirely of VFR operations.

A typical season includes approximately 800 tow operations, accomplished in conjunction with a Piper Pawnee tow airplane (equating to 1,600 total operations), and 80 self-launch operations. Glider operations primarily occur on the northeast end of the airport near the Runway 22 end, with an established tie-down area in the grass beyond the row of hangars.

Due to the extensive pre-takeoff checks required prior to launching, gliders stage on taxiway connector A2 to remain clear of motorized aircraft activity until ready to launch. A2 is the only taxiway connector wide enough to accommodate the staging of gliders, which have a wingspan of approximately 59 feet and a tail height of 6 feet.

HELICOPTER OPERATIONS

Helicopter operations at the airport are also primarily VFR operations, so they are typically not accounted for in the TFMSC data. The airport plays a vital role in supporting aerial firefighting for the Uinta-Wasatch-Cache National Forest. Aircraft are stationed at HCR when there is a fire nearby, and the types of helicopters dispatched are dependent on the intensity of the fire, annual contracts, and aircraft availability. Typical helicopters stationed at HCR range from a small Bell 407 to the much larger helicopters, such as a Boeing CH-47 Chinook or a Sikorsky S-64 Skycrane.

Due to the variable nature of aircraft used for aerial firefighting, total operations are not tracked by agencies. Based on discussions with the Airport Manager, it was determined there were approximately 700 helicopter operations conducted during 2020.

BALLOON OPERATIONS

Balloon operations do occur at the airport; however, they are not incorporated into the forecast analysis. These types of operations do not fall into a category which would require FAA design standards to be applied.

AIRPORT COMPARISON

The percentage of IFR operations performed at four similar airports was calculated and compared to the percentage of IFR operations performed at Heber Valley Airport in 2020. These airports were selected because, like HCR, they serve communities that experience spikes in seasonal traffic as a result of resort activity. However, these airports differ from HCR because they also provide commercial, or air carrier, service. As part of this exercise, air carrier operations were subtracted from the total number of annual operations conducted at each airport as reported on the FAA Form 5010, Airport Master Record. The number of IFR operations performed at each airport was obtained from the TFMSC and then air carrier operations were excluded. The adjusted number of IFR operations was then divided by the adjusted number of total annual operations to determine the percentage of IFR operations performed at each airport during the year. These percentages are listed in ***Table 4.11***.

Table 4.11 Airports Comparison					
Airport/City	Population	Elevation (ft)	Total Annual Operations (Excluding Air Carrier Operations - 5010 Form)	IFR Operations (%)	Year
Heber Valley Airport (HCR)/ Heber City, UT	16,400	5,636	12,234	46.64%	2020
Eagle County Regional Airport (EGE)/Gypsum, CO	7,375	6,500	38,257	52.43%	2018
Friedman Memorial Airport (SUN)/Hailey, ID	8,689	5,319	13,144	56.70%	2018
Telluride Regional Airport (TEX)/ Telluride, CO	1,826	9,069	9,370	63.28%	2017
Aspen-Pitkin County Airport (ASE)/Aspen, CO	7,401	7,837	30,723	79.03%	2019

** 2019 Camera Data and TFMSC and 2020 TFMSC*

HCR experienced the lowest percentage of annual IFR operations, although EGE and SUN were only about 6% and 10% greater, respectively. The elevations of EGE and SUN are closest to HCR's elevation. TEX has an elevation that is significantly higher than HCR, while the terrain surrounding ASE is especially mountainous. Consequently, a higher percentage of IFR operations is anticipated at those airports. Comparing this data helps to justify the percentage of IFR operations conducted at HCR and used as part of this forecast.

The Compound Annual Growth (CAGR) for the number of jets conducting IFR operations between 2015 and 2020 at HCR and each of the comparison airports was also identified as follows:

HCR 19%
EGE 5%
SUN 8%
TEX 6%
ASE 6%

Further examination of the total number of annual operations for 2019 and 2020 based on the operating rules ratio previously detailed in ***Table 4.9 Total Operations by Operating Rules***, indicated a nearly 47% increase in operations from 2019 to 2020. As a result, the IFR/VFR percentage split applied in ***Table 4.9*** was re-evaluated.

The ratios of IFR/VFR operations identified at the comparison airports in ***Table. 4.11*** were reviewed, and the median value was selected as a reasonable, yet conservative, percentage to apply to the 2020 TFSMC data. The median is the middle number in a sorted, ascending or descending, list of numbers and can be more descriptive of that data set than the average. If there is an odd amount of numbers, the median value is the number that is in the middle, with the same amount of numbers below and above. **Using this percentage of IFR operations (56.70%) results in a more realistic growth in total annual operations from 2019 to 2020.**

Further, because of the significant presence of VFR glider operations and the supportive role the airport plays for aerial firefighting, these additional operations were incorporated into the total annual operations to determine the most accurate number for the forecast calculations at HCR (see ***Table 4.12***).

Table 4.12 Total Annual Operations

	TFMSC 2019	TFMSC 2020 (IFR 46.64%)	TFMSC 2020 (IFR 56.70%)	Glider/Helicopter Operations	Total Operations for 2020
Total Annual Operations	8,332	12,234	10,063	2,380	12,443
Increase (%)	-	46.83%	20.78%		

4.7 BASED AIRCRAFT PROJECTIONS

Based aircraft are those aircraft that are permanently stored at an airport. Estimating the number and type of aircraft expected to be based at the airport over the next 20 years impacts the planning for future facility and infrastructure requirements. The number of based aircraft can provide the most basic form of general aviation demand. By developing a based aircraft forecast for an airport, other vital general aviation activity and demand can be projected. The number of based aircraft provided by the FAA TAF for 2021 is 84. This is the number that will be used in computing the forecast.

Scenario 1 - 2018 Utah Continuous Aviation System Plan: This scenario utilizes an annual growth rate of 0.6% for the number of based aircraft at Utah airports between 2018 and 2028.
Scenario 2 - Utah Governor's Office of Management and Budget: This data source projects a growth rate of 1.3% for the population of Heber City through 2060.
Scenario 3 – FAA TAF: This scenario utilizes the TAF's annual growth rate of 2.4% for the number of based aircraft projected at HCR between 2021 and 2041.

Table 4.13 presents the three different projections.

Table 4.13 Based Aircraft Projections

Growth Rate	Base Year 2021	2026	2031	2036	2041
2018 Utah Continuous Aviation System Plan					
0.6%	84	87	89	92	95
Utah Governor's Office of Management and Budget					
1.3%	84	90	96	102	109
FAA Terminal Area Forecast					
2.4%	84	95	106	120	135

The results of these forecasting methodologies were compared, and the growth rate of the Utah Governor's Office of Management and Budget methodology was chosen as the preferred based aircraft projection. This is the preferred method because it incorporates the longest planning period (40 years) into the projections. Additionally, the average of the three different growth rates (1.4%) is closest to the growth rate applied by the Utah Governor's Office of Management and Budget. This methodology also conservatively captures the community's steadily increasing population and solid economic foundation.

4.8 GENERAL AVIATION OPERATIONS

Different factors impact the number of operations at an airport, including but not limited to the total based aircraft, area demographics, activity and policies of neighboring airports, and national trends. These factors were examined, and three methodologies were used to develop the general aviation operation projections.

Scenario 1 - 2018 Utah Continuous Aviation System Plan: This scenario utilizes an annual growth rate of 0.3% for the number of general aviation operations performed each year at Utah airports between 2018 and 2028.
Scenario 2 – Utah Governor's Office of Management and Budget: This data source projects a growth rate of 1.3% for the population of Heber City through 2060.
Scenario 3 – FAA TAF: This scenario utilizes the TAF's annual growth rate of 3.0% for the number of annual operations projected at HCR between 2021 and 2041.

Table 4.14 lists the three different projections. As detailed previously, it was determined that 12,443 aircraft operations were conducted at HCR in 2020. **In order to be able to use 2021 as the base year in these projections, each growth rate was also applied to the 2020 count of 12,443 total operations.**

Table 4.14 General Aviation Annual Operations Projections

Growth Rate	Base Year 2021	2026	2031	2036	2041
2018 Utah Continuous Aviation System Plan					
0.3%	12,480	12,669	12,860	13,054	13,251
Utah Governor's Office of Management and Budget					
1.3%	12,605	13,446	14,343	15,299	16,320
FAA Terminal Area Forecast					
3.0%	12,816	14,858	17,224	19,967	23,148

The results of these forecasting methodologies were compared, and, again, the Utah Governor's Office of Management and Budget growth rate was chosen for the preferred general aviation operations projection because it incorporates the longest planning period (40 years) and is closest to the average of the three growth rates (1.5%). As noted previously, this methodology also conservatively captures the community's steadily increasing population and solid economic foundation.

The most recent Master Plans for the airports listed in the airports comparison table (***Table 4.11***) were examined so that the growth rates applied to the forecasts for each of those facilities could be compared to the growth rates applied to the HCR forecast.

	Based Aircraft	GA Annual Operations
EGE	2.0%	1.0%
SUN	1.54%	1.54%
TEX	1.26%	2.4%
ASE	1.23%	1.35%

Review of this information indicates that the growth rate of 1.3% applied to the based aircraft and general aviation annual operations for HCR is within the range of those applied to similar airports by other aviation consultants.

4.9 GENERAL AVIATION FORECAST BY AIRCRAFT TYPE

In ***Figure 4.10***, the 2019 camera data was broken down by aircraft type. These same percentages were initially applied to the forecasted annual operations. However, because the 2020 total annual operations number used to calculate the 2021 baseline for total annual operations specifically included 1,680 single engine aircraft from the glider operations and 700 rotorcraft operations, the percentages had to be modified to ensure that these aircraft were not counted twice in the calculations. As a result, the percentages listed in ***Table 4.15*** are slightly different from the percentages depicted in ***Figure 4.10***. ***Table 4.15*** lists the forecast by aircraft type based on the growth rate established by the Utah Governor's Office of Management and Budget for Heber City population projections through 2060.

Table 4.15 General Aviation Forecast by Aircraft Type

Aircraft Type	2021	2026	2031	2036	2041	Percentage
Single Engine	7,185	7,664	8,175	8,720	9,303	57%
Jet	4,034	4,303	4,590	4,896	5,222	32%
Multi-Engine	630	672	717	765	816	5%
Rotorcraft	756	807	861	918	979	6%
Unidentified	0	0	0	0	0	0%
Total	**12,605**	**13,446**	**14,343**	**15,299**	**16,320**	**100%**

4.10 GENERAL AVIATION FORECAST BY FAA AIRPORT REFERENCE CODE (ARC)

The ARC is determined based on the most demanding aircraft (or combination of aircraft) that uses the airport, referred to as the critical or design aircraft. The FAA provides guidance on determining the critical aircraft in FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination*. This AC requires that an aircraft (or family grouping of aircraft) perform at least 500 annual itinerant operations to be established as the critical aircraft. An operation is further defined as a takeoff or departure either itinerant or local, but excluding touch-and-go operations. Additionally, when a category or group of aircraft approach the threshold of 350 annual operations, an airport should begin to prepare for a shift in ARC, and plan for the greater FAA design requirements.

As noted previously, local operations are aircraft that are known to be departing or arriving from flight in local practice areas or aircraft executing practice instrument approaches at the airport. At airports with air traffic control towers, local traffic also includes aircraft that are operating within sight of the tower. All aircraft operations other than local operations are considered itinerant. Itinerant operations are essentially takeoffs and landings of aircraft going from one airport to another.

The development of airport facilities is impacted by both the demand for those facilities and the type of aircraft that are expected to use those facilities. Generally, airport infrastructure components are designed to accommodate the critical or design aircraft, which will utilize the facilities on a regular basis.

Based on 2020 IFR data only (as outlined in ***Table 4.8***), HCR experienced a total of 1,314 category C or larger operations and a total of 4,252 group II or larger operations. This data is based solely on the number of aircraft performing IFR operations at HCR in 2020; conceivably, these numbers may be even higher in the event that aircraft in these categories or groups canceled an instrument flight plan prior to arriving at HCR or performed operations without filing an instrument flight plan prior to departing HCR.

Additionally, both the 2015 and 2019 camera data logs included the ARC for each aircraft operation. This data is listed in ***Table 4.16.***

Table 4.16 Airport Reference Code Totals for Camera Data		
Airport Reference Code	**2015 Camera Data**	**2019 Camera Data**
A-I	6,976	4,179
A-II	402	410
B-I	1,715	420
B-II	1,713	2,123
B-III	47	0
C-I	149	186
C-II	518	634
C-III	46	121
C-IV	0	0
D-I	0	0
D-II	0	123
D-III	0	0
Rotorcraft	323	115
Total	**11,889***	**8,310****

**Does not equal the number of total annual operations (12,070) because there is no ARC data for some of the operations*
***Does not equal the number of total annual operations (8,332) because there is no ARC data for some of the operations*

Based on camera data only, HCR experienced a total of 713 category C or larger operations and a total of 2,726 group II or larger operations in 2015. In 2019, HCR experienced a total of 1,064 category C or larger operations and a total of 3,410 group II or larger operations. Again, these numbers may be even higher in the event the motion-activated cameras failed to capture every operation performed.

Solid evidence found through both instrument flight plans filed with the FAA and captured photographs, indicates Heber Valley Airport is a C-II facility based on exceeding the FAA defined minimum use threshold of 500 annual operations by these aircraft. There were at least 713 to 1,064 category C or larger operations and 2,726 to 3,410 group II or larger operations conducted annually at HCR between 2015 and 2019.

The total annual operations forecast was then broken down by Aircraft Approach Category (AAC). First, the same percentages identified in the 2019 camera data (see ***Table 4.16***) were applied to the total annual operations. However, because the 2020 total annual operations number used to calculate the 2021 baseline for total annual operations specifically included 1,680 category A aircraft from the glider operations, as well as 700 rotorcraft operations, the percentages were modified to ensure that these aircraft were not counted twice in the calculations. ***Table 4.17*** shows the total annual operations forecast by AAC.

Per FAA guidance, FAA data sources were used to establish AAC for operations at HCR. Those data sources included the aircraft characteristics database, as well as publications from the Aircraft Certification Branch.

Table 4.17 General Aviation Forecast by Aircraft Approach Category						
Aircraft Approach Category (AAC)	**2021**	**2026**	**2031**	**2036**	**2041**	**Percentage**
A	7,312	7,799	8,319	8,873	9,466	58%
B	3,151	3,362	3,586	3,825	4,080	25%
C	1,260	1,344	1,434	1,530	1,632	10%
D	126	134	143	153	163	1%
Rotorcraft	756	807	861	918	979	6%
Total	**12,605**	**13,446**	**14,343**	**15,299**	**16,320**	**100%**

The total annual operations forecast was then broken down by Airplane Design Group (ADG). Since the 2020 total annual operations number used to calculate the 2021 baseline for total annual operations specifically included 800 A-I and 880 A-II aircraft from the glider operations, as well as 700 rotorcraft operations, the percentages were modified to ensure that these aircraft were not counted twice in the calculations. ***Table 4.18*** provides the total annual operations forecast by ADG.

Table 4.18 General Aviation Forecast by Airplane Design Group						
Airplane Design Group (ADG)	**2021**	**2026**	**2031**	**2036**	**2041**	**Percentage**
I	6,681	7,126	7,602	8,108	8,650	53%
II	4,916	5,244	5,594	5,967	6,365	39%
III	252	269	287	306	326	2%
IV	0	0	0	0	0	0%
Rotorcraft	756	807	861	918	979	6%
Total	**12,605**	**13,446**	**14,343**	**15,299**	**16,320**	**100%**

**Numbers may not add up due to rounding.*

In analyzing the forecast data in *Tables 4.17* and *4.18*, it is clear HCR is a C-II facility, and is expected to remain C-II throughout the 20-year planning period.

4.11 GENERAL AVIATION FORECAST BY MIX

The FAA TAF reports that the 2020 fleet mix operating at Heber Valley Airport was as follows:

Itinerant GA	57%
Local GA	35%
Air Taxi	8%
Air Carrier	0%
Military	0%

These percentages were applied to HCR's forecasted annual operations totals as listed in ***Table 4.19***.

Table 4.19 General Aviation Forecast by Operations Mix						
Itinerant Operations	**2021**	**2026**	**2031**	**2036**	**2041**	**Percentage**
Air Carrier	0	0	0	0	0	0%
Air Taxi/Commuter	1,008	1,076	1,147	1,224	1,306	8%
General Aviation	7,185	7,664	8,175	8,721	9,302	57%
Military	0	0	0	0	0	0%
Local Operations	**2021**	**2026**	**2031**	**2036**	**2041**	**Percentage**
General Aviation	4,412	4,706	5,021	5,354	5,712	35%
Military	0	0	0	0	0	0%
Total	**12,605**	**13,446**	**14,343**	**15,299**	**16,320**	**100%**

4.12 GENERAL AVIATION FORECAST COMPARISON

For approval of an aviation planning forecast, the FAA requires a comparison to the TAF. When the 5- or 10-year forecast exceed 100,000 total annual operations or 100 based aircraft, the FAA prefers the forecasts differ by less than 10% from the 5-year period and 15% from the 10-year period. While Heber Valley Airport is not projected to reach those numbers during this planning period, it still forms a good basis for a sound and defendable forecast.

The Master Plan forecast numbers for total general aviation operations are between 41% and 57% less than the FAA TAF projections. This vast difference is due to the Master Plan baseline number of operations being considerably lower than the TAF baseline number of operations and the fact that the Master Plan applied a significantly lower annual growth rate during the forecast period.

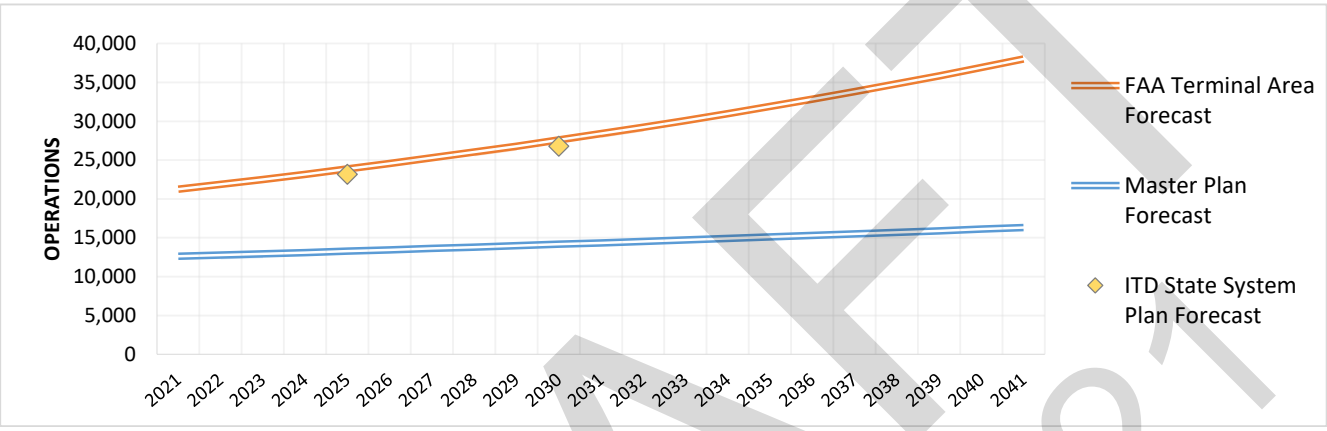
The Master Plan forecast numbers for based aircraft from 2026 forward are between 4% and 20% less than the FAA TAF projections. This difference is a result of the Master Plan utilizing a lower annual growth rate than the TAF.

Table 4.20 General Aviation Forecast Comparison					
Annual Operations	**2021**	**2026**	**2031**	**2036**	**2041**
Master Plan Forecast	12,605	13,446	14,343	15,299	16,320
FAA TAF	21,237	24,556	28,393	32,841	37,993
% Difference	41%	45%	49%	53%	57%
Based Aircraft	**2021**	**2026**	**2031**	**2036**	**2041**
Master Plan Forecast	84	90	96	102	109
FAA TAF	84	94	106	121	136
% Difference	0%	4%	9%	16%	20%

Figure 4.13 is a comparison of annual forecasted operations from this Master Plan, the FAA TAF, and the 2018 Utah Continuous Aviation System Plan. The period covers 20 years, from 2021 through 2041.

Overall, the Master Plan analysis forecasts substantially fewer operations than the TAF and the system plan. The Master Plan forecasts a slight increase year to year, while the TAF operations grow at a much greater pace. The Master Plan analysis forecasts 12,605 operations in 2021 up to 16,320 operations in 2041. The TAF forecasts 21,237 operations in 2021 up to 37,993 operations in 2041. The state system plan forecast is nearly identical to the TAF and forecasts 23,170 operations in 2023 up to 26,785 operations in 2028.

Figure 4.13 Forecast Comparison



4.13 GENERAL AVIATION FORECAST SUMMARY

The forecast of general aviation demand for Heber Valley Airport is summarized in ***Table 4.21.***

Table 4.21 General Aviation Forecast Summary					
Operations (Total)	**2021**	**2026**	**2031**	**2036**	**2041**
Total	12,605	13,446	14,343	15,299	16,320
Operations (Aircraft Type)	**2021**	**2026**	**2031**	**2036**	**2041**
Single Engine	7,185	7,664	8,175	8,720	9,303
Jet	4,034	4,303	4,590	4,896	5,222
Multi-Engine	630	672	717	765	816
Rotorcraft	756	807	861	918	979
Operations (Aircraft ARC)	**2021**	**2026**	**2031**	**2036**	**2041**
A-I	5,925	6,320	6,741	7,190	7,671
A-II	1,387	1,479	1,578	1,683	1,795
B-I	504	538	574	612	653
B-II	2,647	2,824	3,012	3,213	3,427
B-III	0	0	0	0	0
C-I	252	269	287	306	326
C-II	756	806	860	918	980
C-III	252	269	287	306	326
C-IV	0	0	0	0	0
D-I	0	0	0	0	0
D-II	126	134	143	153	163
D-III	0	0	0	0	0
Operations (Mix)	**2021**	**2026**	**2031**	**2036**	**2041**
Itinerant	8,193	8,740	9,323	9,945	10,608
Local	4,412	4,706	5,020	5,354	5,712
Based Aircraft	**2021**	**2026**	**2031**	**2036**	**2041**
Total	84	90	96	102	109

4.14 CRITICAL AIRCRAFT

The development of airport facilities is driven by both the demand for those facilities and the types of aircraft expected to make use of those facilities. The critical aircraft is the most demanding aircraft with at least 500 annual operations at the airport, and determination of the critical aircraft is an important aspect of the forecast as it defines the FAA standards used for planning and design. An accurate determination of the critical aircraft ensures appropriate development of airport facilities, including runway, taxiway, and apron areas.

The critical aircraft is not a decision to be made, but a determination based on actual operations at the airport. The forecast of aviation demand and critical aircraft determination are approved by the FAA based on information presented and industry trends.

Instrument flight plans filed with the FAA and photographs from motion-activated cameras indicated that Heber Valley Airport operations in the ARC C-II category exceed the FAA defined regular use threshold of 500 annual operations. The 2015 camera data showed 518 annual operations being performed by C-II category aircraft, while the 2019 camera data showed 634 annual operations being performed by C-II category aircraft (***Table 4.16***). This forecast showed 756 operations by aircraft in the C-II category in 2021, which increases to 979 operations in 2041 (***Table 4.21***).

The critical aircraft for Heber Valley Airport was determined to be the Bombardier Challenger 350 (or CL35), a C-II business jet aircraft which was captured over 100 times by the motion-activated cameras placed on the airfield. Additionally, FBO landing records and TFMSC data verified the CL35's regular use of the airport. (Regular use being defined by the FAA as at least 500 annual operations.) The specifications for this aircraft can be seen in ***Table 4.22***.

In addition to conducting frequent operations at the airport, the CL35, shown in ***Figure 4.14***, is among the top ten aircraft for domestic business jet operations with steadily increasing numbers, according to FAA Business Jet Reports.[6] Because the airport is expected to remain an ARC C-II airport throughout the planning period, the CL35 is both the existing and future critical aircraft.

Table 4.22 Aircraft Characteristics

Specification	Bombardier Challenger 350 (CL35)
Wingspan	69 feet
Tail Height	20 feet
Approach Speed	125 knots
Maximum Takeoff Weight	40,600 pounds
Aircraft Approach Category (AAC)	C
Airplane Design Group (ADG)	II

Source: FAA Aircraft Characteristics Database

Figure 4.14 Bombardier Challenger 350 (CL35)

4.15 FORECAST CONCLUSION

The critical aircraft determination is an important aspect of airport planning and design for federally obligated airports. It sets dimensional requirements on an airport, such as the separation distance between taxiways and runways, and the size of certain areas protecting the safety of aircraft operations and passengers. An accurate critical aircraft determination helps ensure proper development and appropriate federal investment in airport facilities. Additionally, an accurate critical aircraft determination matches aircraft operational area dimensions to the most demanding aircraft (or group of aircraft) that regularly uses the runway, taxiways, and apron areas. Regular use is defined as at least 500 annual operations.

This forecast examined a variety of data sources to identify current and projected aircraft traffic levels and types at the Heber Valley Airport in the short, medium, and long term, taking into consideration industry trends, local socioeconomic and demographic conditions, and national and state forecasts. This study determined that HCR is currently an ARC C-II facility and that it will remain a C-II facility throughout the 20-year planning period.

A designation of ARC C-II is an ARC upgrade from the ARC of B-II established in previous planning studies. ***Table 4.26*** provides a summary of airport design elements affected by this upgrade, which will be discussed in greater detail in the following chapter.

Table 4.26 ARC Upgrade FAA Design Standards

ARC Upgrade	Changes in Airport Design Standards
B-II to C-II	• Increase in crosswind component • Increase runway separation standards • Increase Runway Protection Zone (RPZ) dimensions • Increase runway design standards • Increase surface gradient standards

Source: FAA AC 150/5300-13A, Airport Design

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