



Chapter 2.

Forecasts of Aviation Activity



This chapter initially provides a 20-year projection of anticipated aviation demand at Yampa Valley Regional Airport (HDN or the Airport). The second half of the chapter (to be added later) will assess the terminal area's capacity to accommodate this projected demand. The aviation demand forecasts consider annual passenger enplanements, aircraft operations, and peak hour activity in an effort to help guide decision makers in planning for future development within the terminal area at HDN. Specific to the existing terminal building, the estimates of peak hour demand are compared to calculated capacity limitations of various areas of the terminal building to determine if additional space may be required to accommodate existing and/or future passenger activity. The aviation demand forecast considers the impact of socioeconomics and the aviation market, both regionally and nationally.

Aviation activity forecasts project future demand at an airport. The HDN forecasts have a base year of 2021 recognizing that the 2022 enplanements are on track to far exceed 2021 enplanements. The forecast period is 20 years from the base year with future intervals of five years. Data from the previous 10 years (2010-2020) is generally used as the basis for historical trends. This 10-year period includes periods of economic growth and contraction, particularly the most extreme periods of the COVID-19 pandemic in mid-2020 and 2021. This chapter is organized into the following sections:

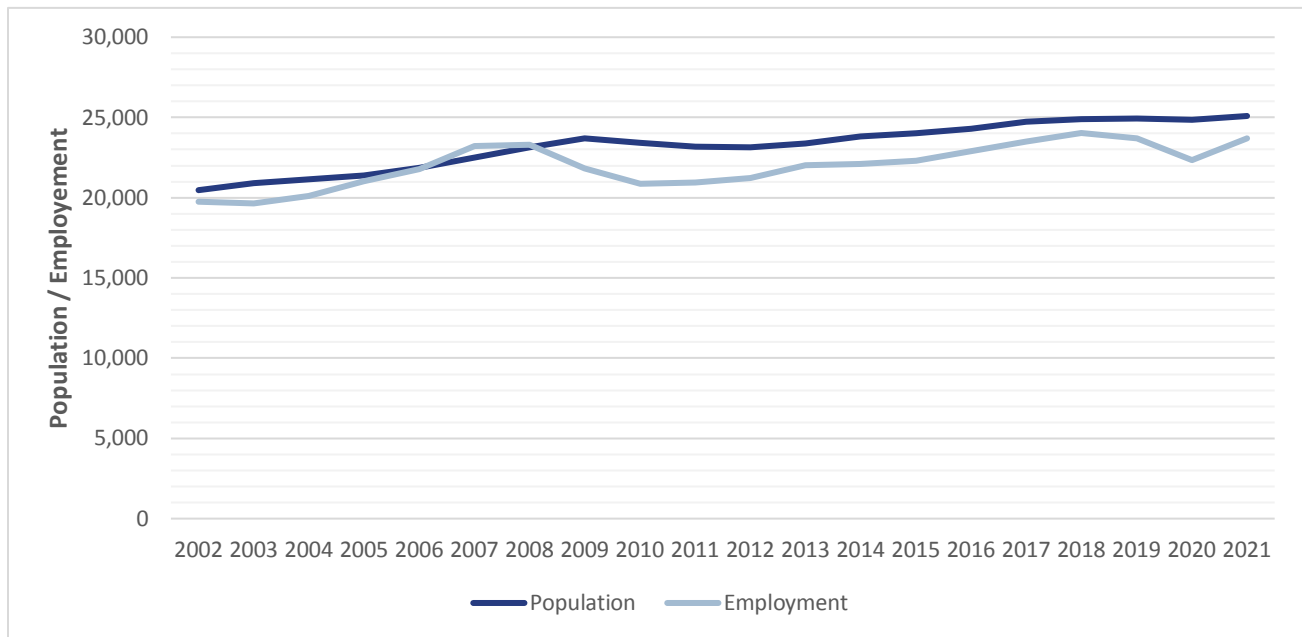
- Community Profile
- Aviation Activity Profile
- Passenger Forecast Scenarios
- Commercial Aircraft Operations
- General Aviation Operations
- Based Aircraft
- Military Operations
- Air Cargo
- Critical Aircraft

Community Profile

Many types of airport activity are driven by local socioeconomic factors, such as population size, employment numbers and industry trends. This section provides an examination of these local factors to be compared to Airport activity later in this chapter. HDN is located in the central-western portion of Routt County, CO. This county also includes many of the small towns in the area along Highway 40, in addition to more prominent towns, such as Steamboat Springs.

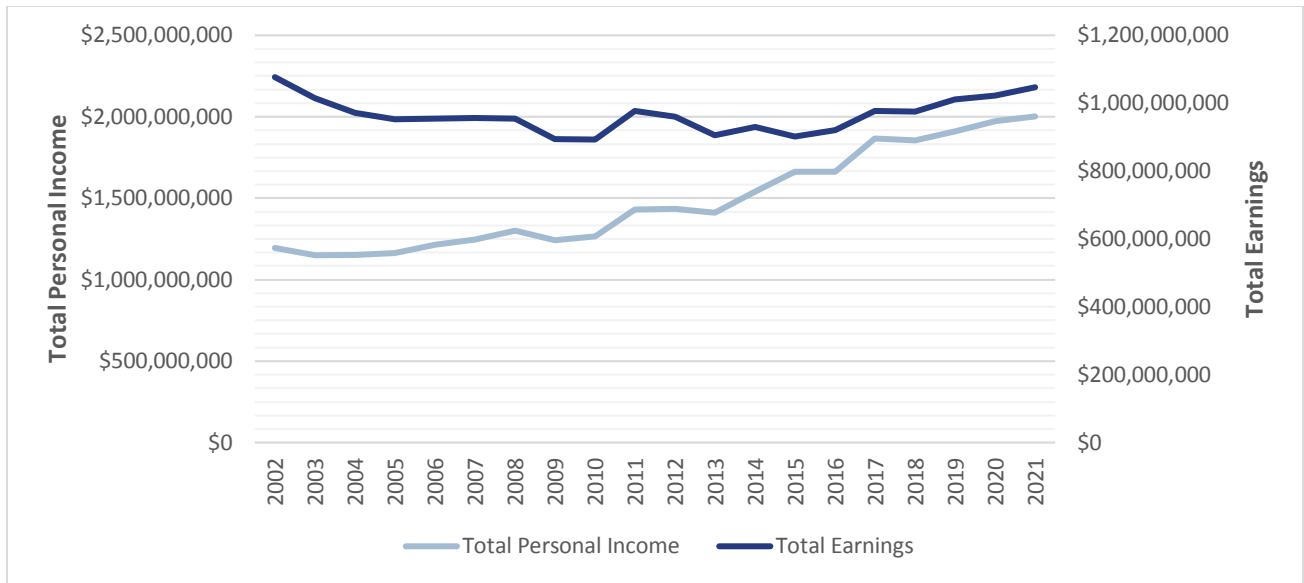
It can be seen in **Figure 2.1** that population and employment are closely tied. This is not surprising given that the Airport is centrally located in a popular recreation destination. Population has grown steadily but modestly with a minor downturn centered around the 2008 recession. Employment has followed a similar trend but with more pronounced swings around the 2008 recession and the Covid-19 pandemic. Recovery of employment occurred quickly in 2021 as the area returned to normal functions, was within 0.001 percent of 2019 levels. Both of these metrics have grown at a CAGR of near 1 percent for the duration of the sampled period. Shown in **Figure 2.2**, income in Routt County has grown steadily for personal income while remaining similar for total earnings. Each of these factors are shown in more detail **Table 2.1**.

Figure 2.1 Routt County Population and Employment Trends



Source: Woods and Poole, Inc., 2022.

Figure 2.2 Routt County Income Trends



Source: Woods and Poole, Inc., 2022.

Notes: Definitions from Woods & Poole, Inc. are summarized as follows: Total personal income is the income received by persons from all sources; whereas total earnings is the sum of wages and salaries, other labor income and proprietor's income.

Table 2.1 Routt County Socioeconomic Factors

Year	Population	Employment	Total Earnings	Total Personal Income
2002	20,469	19,745	\$1,076,774,000	\$1,194,464,000
2003	20,893	19,642	\$1,015,348,000	\$1,150,123,000
2004	21,162	20,116	\$971,752,000	\$1,150,607,000
2005	21,398	21,021	\$952,316,000	\$1,163,208,000
2006	21,859	21,776	\$954,904,000	\$1,216,137,000
2007	22,491	23,223	\$956,907,000	\$1,246,996,000
2008	23,135	23,301	\$955,457,000	\$1,301,310,000
2009	23,688	21,827	\$893,324,000	\$1,240,452,000
2010	23,434	20,850	\$892,946,000	\$1,267,657,000
2011	23,184	20,965	\$977,853,000	\$1,431,013,000
2012	23,139	21,211	\$960,940,000	\$1,435,175,000
2013	23,394	22,023	\$906,071,000	\$1,410,967,000
2014	23,797	22,085	\$930,923,000	\$1,541,656,000
2015	24,028	22,298	\$901,938,000	\$1,663,638,000
2016	24,304	22,893	\$920,951,000	\$1,661,196,000
2017	24,715	23,488	\$976,667,000	\$1,865,716,000
2018	24,912	24,031	\$974,414,000	\$1,854,461,000
2019	24,930	23,690	\$1,010,987,000	\$1,911,715,000
2020	24,839	22,329	\$1,022,133,000	\$1,972,546,000
2021	25,091	23,680	\$1,047,696,000	\$2,002,271,000

Source: Woods and Poole, Inc., 2022.

Aviation Activity Profile

The aviation activity profile provides context for historical airport activity trends and helps explain the changes that have occurred. The profile is the baseline for forecasts and includes information on passenger air carrier activity.

Air Carrier Service Profiles

HDN has service from six scheduled passenger air carriers for the Winter 2022/2023 season: Alaska Airlines, American Airlines, Delta Airlines, JetBlue, United Airlines, and Southwest Airlines with nonstop service to:



- Atlanta (ATL)
- Boston (BOS)
- Chicago (ORD)
- Dallas Fort Worth (DFW)
- Dallas Love (DAL)
- Denver (DEN)
- Fort Lauderdale (FLL)
- Houston (IAH)
- Los Angeles (LAX)
- Minneapolis/St. Paul (MSP)
- Nashville (BNA)
- Newark (ERW)
- San Diego (SAN)
- San Francisco (SFO)
- Seattle (SEA)
- Washington Dulles (IAD)

Catchment Area/True Market

An airport catchment area is the surrounding geographic area containing the population of passengers who should reasonably be expected to use the airport considering drive times to competing airports. It is also representative of the local market and the population characterizes most travelers using or expected to use the airport. This area was defined in the True Market Estimate and True Visitation Estimate prepared separately (see **Appendix B**) and presented in **Figure 2.3**. The figure also includes an estimate of leakage, or passengers choosing to drive to other airports. HDN’s catchment area comprises 14 zip codes and had a total population of more than 46,726 in 2020.

An airport’s true market estimate is based on data from airlines’ reporting origin and destination statistics to the U.S. DOT and by ticket data from Airlines Reporting Corporation (ARC). ARC data includes tickets sold to passengers using HDN within the catchment area through local or online travel agencies. It does not include tickets issued directly by airline websites or reservation offices.

Figure 2.3 HDN Catchment Area and Leakage Estimate



Source: ARC and Mead & Hunt, 2022.

HDN captured 31,306 passengers (or 67 percent) in the catchment area while 14,017 passengers (or 30 percent) utilized Denver International Airport (DEN) and 1,402 passengers (or 3 percent) utilized Grand

Junction Regional Airport (GJT). The top 20 destination markets for HDN accounted for 68 percent of travel to/from the catchment area. Chicago (ORD) was the number one market, with Dallas (DFW), Houston (IAH), Atlanta (ATL), and Los Angeles (LAX) rounding out the top five markets. HDN secured the top retention rate for Dallas (DFW) at 89 percent. Among the top 20 markets, Phoenix (PHX) had the lowest retention rate at 44 percent.

New Air Service Opportunities (Routes and Carriers)

HDN traffic has grown significantly over the past decade, with passengers increasing more than 50 percent since 2012. Sixty five percent of seats at HDN were provided during the four-month ski season, with just 18 percent provided during the summer season. HDN already has service during the ski season to most of its top destinations, with the Austin (AUS) metro area being the top market without nonstop service and the potential to be provided by American Airlines, United Airlines, or Southwest Airlines. Growth during the summer to the Austin (AUS), Chicago (ORD), Dallas Fort Worth (DFW), Houston (IAH) or Phoenix (PHX) metro areas would allow access to top summer markets and service could be provided by HDN's existing carriers.

Passenger Forecast Scenarios

Enplanement forecasts are a cornerstone of the master planning process as the number of passengers at an airport also influence operations, peak activity and other facility needs. This section summarizes historical enplanements at HDN and uses several industry standard methodologies to determine a future enplanement forecast. The final part of this section will provide a discussion of the strengths and weaknesses of the various forecasts and a preferred forecast will be selected for the twenty-year planning period.

Passenger Enplanement Trends

Enplanements in 2021 were the second highest experienced at the Airport since 2012, at 153,440 enplanements. However, the impacts of the Covid-19 pandemic reduced enplanements across the nation in 2020. At HDN, there were 90,964 enplanements in 2020. Since then, the Airport has made a strong recovery. The addition of Southwest Airlines service and an increase in flights to Denver from United has resulted in significant growth in enplanements compared even to activity levels before the onset of the Covid pandemic. Growth has occurred rapidly as the 153,440 enplanements in 2021 set a new Airport record for annual activity and the beginning of 2022 has already had several new record setting months. The previous record for a single month's enplanements occurred in March of 2008, with 33,642 enplanements. This record has been broken three times in 2022. As a way to demonstrate the strong growth HDN is experiencing, each historic monthly enplanement record is shown below in **Table 2.2**. Notably, of the eight recorded months of 2022, four of them have been record setting for their respective month, while the remaining four were recently set in 2021.



Table 2.2 Monthly Enplanement Records

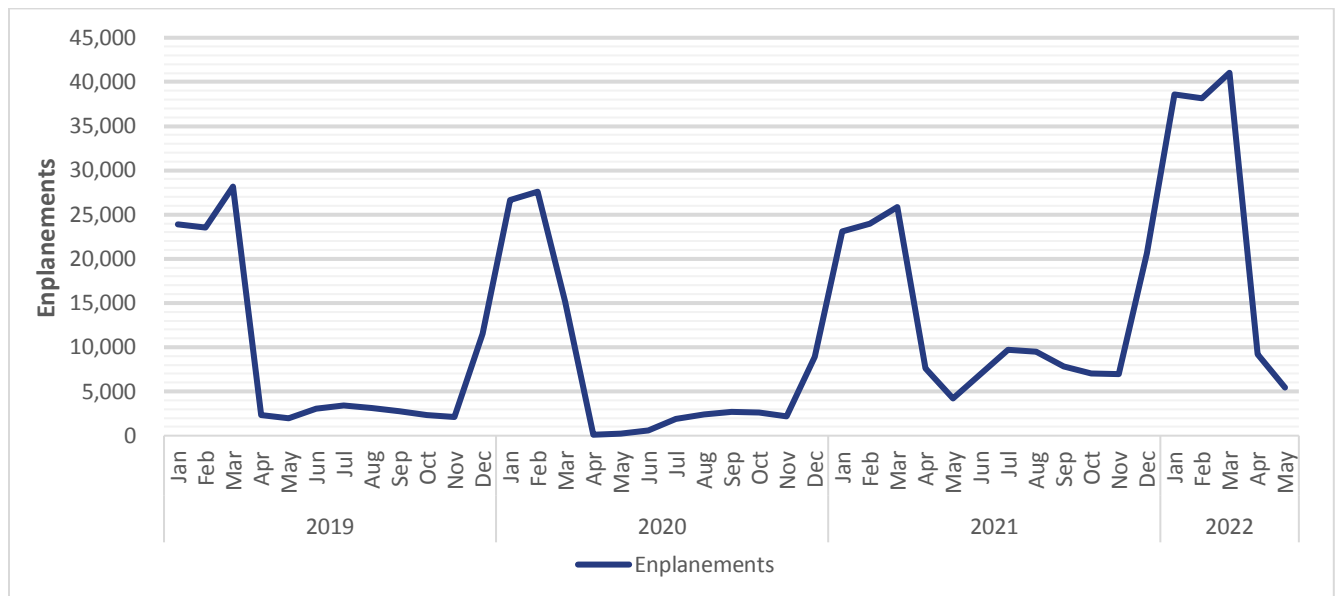
Month	Previous Monthly Enplanement Record	Previous Record Year	2022 Enplanements
January	30,203	2007	38,563
February	31,566	2008	38,165
March	34,229	2008	41,037
April	8,621	2007	9,184
May	4,177	2021	5,457
June	6,960	2021	7,317
July	9,699	2021	9,090*

Source: Airport records from 2007 – June 2022.

Note: *July of 2022 was not a record setting month but close to the 2021 record and is a further indicator of sustained high enplanement levels.

It is also evident in this table that the Airport experiences strong seasonal swings, based largely on the fact that it is a recreational/leisure destination. This is further demonstrated in **Figure 2.4** that shows enplanements by month since 2019. It can be seen that enplanements drop off in the summer but activity during the winter of 2021-2022 has reached unprecedented levels. These recent increases in enplanements were considered in the development of the below forecasts using several different methodologies.

Figure 2.4 Recent Enplanement Trends



Source: Airport Records.

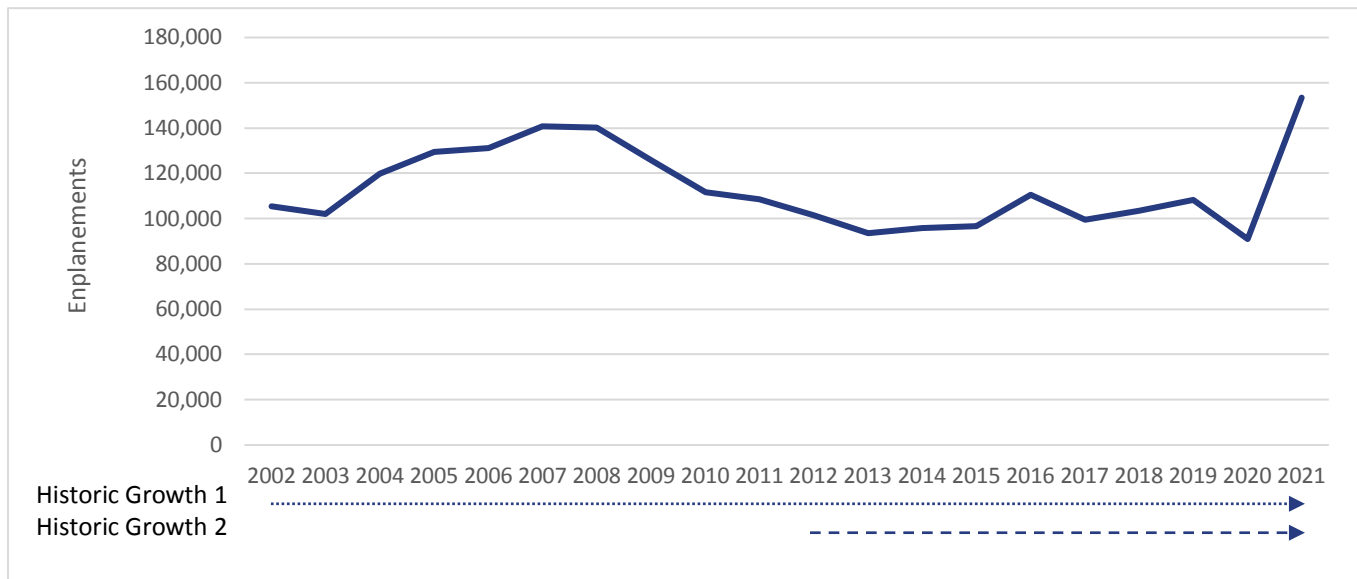
Passenger Enplanement Forecasts

Historic Growth Rate

One of the most common and straightforward methods of forecasting future activity is to develop a compound annual growth rate (CAGR) from an applicable source and apply it to the planning period. This can be derived from a range of sources, such as FAA publication, or can be based on historic growth. As aviation is a continuously evolving industry, these first two methodologies are based on different periods of historic activity, explained below and shown in **Figure 2.5**.

- **Historic Growth 1** – This forecast considers the twenty-year growth rate from 2002 to 2021 and applies it to future enplanements. During this period, the 2008 recession occurred which has a significant impact recreational destination travel. This is offset somewhat by the recent strong growth covered in the beginning of this section. The resulting CAGR for this period is 1.99 percent and results in 227,631 enplanements in 2041 when applied to 2021 enplanements.
- **Historic Growth 2** – This forecast uses more recent trends to establish future growth, sampling the past decade. The beginning of recovery occurred in 2013 and recent service additions have further bolstered growth. The resulting CAGR from 2012 to 2021 of 4.70 percent projects a strong forecast of 384,756 enplanements by the end of the planning period.

Figure 2.5 Sampled Historic Growth Periods



Source: Airport Records, T100 Database

FAA Publications Forecast

Some of these forecasts also use an applied growth rate to determine future activity but they are derived from FAA sources. Three of the most commonly used FAA sources for forecasting future aviation activity are as



follows listed below. The FAA Aerospace Forecast is released every two years and is developed to help support the budget and planning needs of the FAA. The Terminal Area Forecast (TAF) Summary is the FAA's forecasting document for aviation activity with the National Plan of Integrated Airport Systems and considered activity primarily by type and region. Finally, the TAF itself provides forecasts specific to a given airport. Each of these forecasts are below:

- **FAA Aerospace Forecast Fiscal 2022-2042** – This forecast applies the anticipated growth rate of all domestic enplanements in the United States, a CAGR of 2.12 percent, to Airport activity. This is a growth expected for the entire country and may not include specific factors at HDN. This results in 233,429 enplanements by 2041.
- **Northwest Mountain Regional Growth FAA Terminal Area Forecast** – This methodology is similar to the previous forecast but uses the specific growth anticipated for towered airports in the Northwest Mountain Region, the FAA region that contains Colorado. This is derived from the FAA publication, *Terminal Area Forecast Summary 2021-2045*. This results in a CAGR of 2.20 percent for the planning period, resulting in 237,144 enplanements by the end of the planning period.
- **HDN FAA Terminal Area Forecast** – This is different from the previous forecast as this is a prescribed forecast for the Airport by the FAA. This forecast shows growth from 129,511 enplanements in 2021 to 166,655 in 2041. However, since 153,440 enplanements occurred in 2021, this is not considered to be a reasonable forecast and it was dismissed from consideration.

Regression Analysis Forecasts

Regression analysis derives the relationship between several independent variables based on their historic changes. If there is a high correlation between variables, then a forecast can be created which utilizes this relationship. The prediction ability of a given forecast is measured by the R^2 value, where 0 indicates no relationship and 1 indicates a perfect relationship. The independent variables selected for the forecast may be a local socioeconomic factor or may instead use factors like time or related types of aviation activity. Each of the considered forecasts are below:

- **Socioeconomic Regression Analysis** – This forecast uses a statistical comparison of Airport enplanements and local socioeconomic factors. However, a significantly strong relationship between the tested factors was not found. These included: Routt County population, employment, total personal income, and total personal income per capita.
- **Trend Analysis** - This forecast uses historical trends to determine future trends by conducting a regression analysis forecast with time as the independent variable. However, this becomes difficult when there have been recent significant changes in activity or volatility. The variation in historical enplanements caused over the past two decades due to variation in seat availability and seasonal demand make it difficult to establish long term trends. This forecast projects negative growth, with enplanements decreasing to 92,844 by the end of the planning period. Given the location of the Airport and its contributions to the local recreation area, this is an unlikely scenario and was dismissed from further consideration.
- **Adjusted Trend** – This forecast is similar to the previous ones, using regression analysis with time as the independent variable, but uses a more recent sample size. When a period of 2012 through 2021 is used it results in a modest increase to 202,221 enplanements by the end of the planning period. However, the forecasted enplanements for 2026 are below the 2021 actual enplanements. To correct this, the growth rate determined by this methodology is instead applied to the 2021 actual enplanements. This still shows a forecast of 202,221 enplanements in 2041 but from existing levels of activity.

Demand-Peer Growth

This final methodology was developed to account for the recent increases in service. Based on the existing monthly enplanement levels for 2022, the growth experienced in 2021 is continuing. As shown in Table 1, every single month of recorded data in 2022 has either set a new record or been close to the recent record set in 2021. This includes monthly Airport data going back to 2007. Even if the remainder of 2022 only matches activity in 2021 this would result in 202,305 enplanements in 2022, which would surpass the previous record of 153,400 enplanements in 2021. For a more easily expressed estimate, 202,000 enplanements will be used for 2022. Clearly, enplanements at HDN have rapidly increased as service has been added and increased. Although this growth rate is not anticipated to endure for the duration of the planning period. Instead, the surrounding region is expected to see continued growth, as outlined in the Northwest Mountain Region Forecast. This is further focused on local airports by evaluating the TAF growth for the resort destination-oriented peer Airports:

- Aspen-Pitkin County Airport (ASE)
- Bozeman Yellowstone International Airport (BZN)
- Eagle County Regional Airport (EGE)
- Gunnison-Crested Butte Regional Airport (GUC)
- Glacier Park International Airport (GPI)
- Jackson Hole Airport (JAC)
- Friedman Memorial Airport (SUN)
- Durango-La Plata County Airport (DRO)
- Montrose Regional Airport (MTJ)
- Telluride Regional Airport (TEX)

Collectively, these Airports have an average growth rate of 2.66 percent for the planning period in the TAF. This growth rate can then be applied to the Airport's anticipated 2022 enplanement levels to determine future activity levels. This results in a growth to 308,860 enplanements for a CAGR of 3.56 percent.

Preferred Forecast

Each of these forecasts are compared in **Table 2.3** and **Figure 2.6**. Although there are several different methodologies considered, many of them show a similar trend, with a projected growth rate around two percent for the duration of the planning period. However, some of these forecasts are not consistent with local or historic trends. The Trend Line forecast, a regression methodology, shows a rapid decrease in enplanements, but this is largely due to the variation in recent enplanements and does not account for existing factors in enplanement activity. The forecast showing the strongest growth, the Historic Growth 2 forecast, is dependent on the addition of further service, as the addition of Southwest Airlines and the increased number of flights by United Airlines has resulted in rapid growth. If demand continues to meet the increase incapacity expressed in the form of departing seats, then further growth is anticipated. This is the most optimistic of the forecasts, but it may not be sustained for the duration of the planning period. Instead, the Demand-Peer Growth forecast accounts for the existing addition of service but then uses a lower growth rate based on peer airports to forecast a more moderate increase after 2022. This section concludes with a further examination of these forecasts to select a high, medium (preferred forecast), and low growth scenarios.



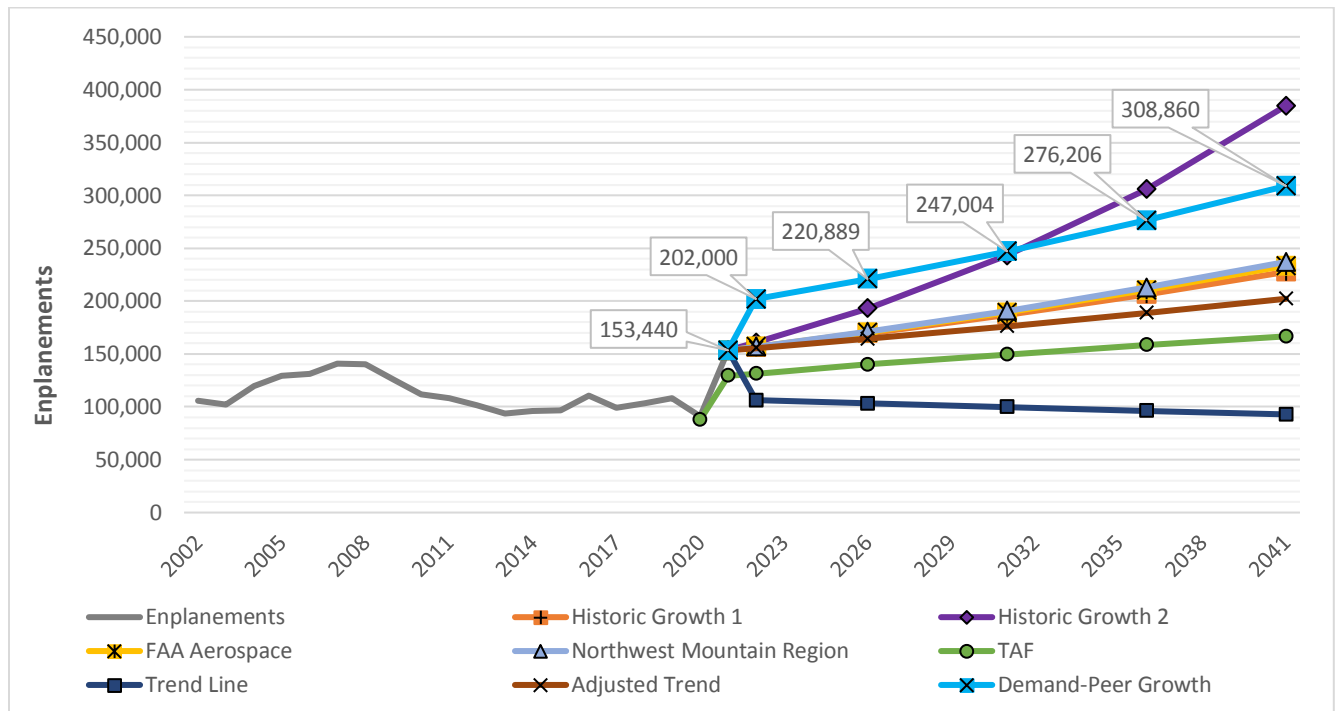
Table 2.3 Enplanement Forecasts Summary

Year	Historic Growth 1	Historic Growth 2 (High Growth)	FAA Aerospace	Northwest Mountain Region	FAA TAF (Low Growth)	Trend Analysis	Adjusted Trend Line	Demand-Peer Growth (Medium Growth)
ACTUAL								
2021	153,440	153,440	153,440	153,440	129,511	153,440	153,440	153,440
FORECAST								
2022	156,496	160,657	156,693	156,816	131,412	106,091	155,573	202,000
2026	169,341	193,086	170,409	171,078	140,162	103,302	164,403	220,889
2031	186,889	242,975	189,255	190,743	149,448	99,816	176,150	247,004
2036	206,256	305,755	210,184	212,668	158,471	96,330	188,736	276,206
2041	227,631	384,756	233,429	237,114	166,655	92,844	202,221	308,860
CAGR	1.99%	4.70%	2.12%	2.20%	1.27%	-2.48%	1.39%	3.56%

Sources: FAA Aerospace Forecast 2022-2042; FAA Terminal Area Forecast Summary 2021-2045; Woods & Poole, 2021; and Airport Records, 2021.

Notes: ¹The CAGR for the FAA TAF is inflated due to the artificially low enplanements its recorded in 2021. If the base year is corrected it results in a CAGR of 0.41 percent.

Figure 2.6 Enplanement Forecasts Summary



Sources: FAA Aerospace Forecast 2022-2042; FAA Terminal Area Forecast Summary 2021-2045; Woods & Poole, 2021; and Airport Records, 2021.

Growth Scenarios

- **High Growth Scenario** – The Historic Growth 2 forecast used the past decade of growth as the model for future level of activity. This forecast assumes that additional service will continue to be added to the Airport, allowing an increase in new tourism and market opportunities. However, it is unlikely that growth at this rate will continue for the next twenty years and so this forecast is considered optimistic.
- **Medium, Demand-Peer Growth (*Preferred Forecast*)** – This forecast uses 2021 historic data and anticipated enplanement levels for 2022 to demonstrate significant growth to 202,000 enplanements by the end of 2022. Recent activity is significantly higher than any annual Airport activity in the past several decades but sustained growth at this pace is not anticipated. Instead, the growth rate forecasted by the TAF for peer airports has been applied to post-2022 anticipated enplanements.
- **Low Growth Scenario** – Negative growth is not anticipated due to the Airport support for local recreation destinations. While continued robust growth may not occur, this area is unlikely to see sustained negative trends, so the Trend Line Forecast was not considered for this scenario. Instead, the FAA TAF, although the base year and 2026 are lower than actual enplanements in 2021, shows a small amount of growth to 166,655 enplanements. This reflects a future reduction in service before growth eventually returns.

Peak Forecast

The peak period forecast estimate when certain airport facilities will be the busiest. Peak passenger enplanements and deplanements directly reflect passenger terminal utilization. They are used to assess level of service for terminal facilities and to right-size improvement projects. Terminal facilities are not typically designed to accommodate the busiest day of the year. The reasoning is that this approach would lead to over-building. According to Airport Cooperative Research Program (ACRP) guidance and FAA *Advisory Circular (AC) 150/5070-6B, Change 2*, terminal facilities should be planned based on the “design hour” which is defined as the peak hour of an average day of the peak month. At HDN, this is an average day in March. The historic peak month is shown below in **Table 2.4**.

Since departing passengers place the most strain on the terminal, the peak hour forecast is focused on passenger enplanements.



Table 2.4 Historic Peak Month Enplanements

Month	2015	2016	2017	2018	2019	Average*
January	20,321	22,061	21,913	23,120	23,791	22.2%
February	21,018	23,765	20,487	21,885	23,047	21.9%
March	22,353	23,474	23,084	22,565	27,268	23.6%
April	3,082	3,445	2,988	4,251	2,225	3.2%
May	0	1,418	1,171	1,802	1,765	1.2%
June	454	2,775	1,528	2,247	2,798	1.9%
July	4,181	4,905	3,566	3,672	3,290	3.9%
August	4,324	5,112	3,187	3,526	3,029	3.8%
September	2,872	3,149	2,684	1,900	2,724	2.7%
October	2,530	2,728	2,945	1,528	2,274	2.4%
November	1,770	1,856	1,857	1,880	1,952	1.9%
December	10,759	12,423	10,934	11,391	11,355	11.3%
TOTAL	93,664	107,111	96,344	99,767	105,518	22.2%

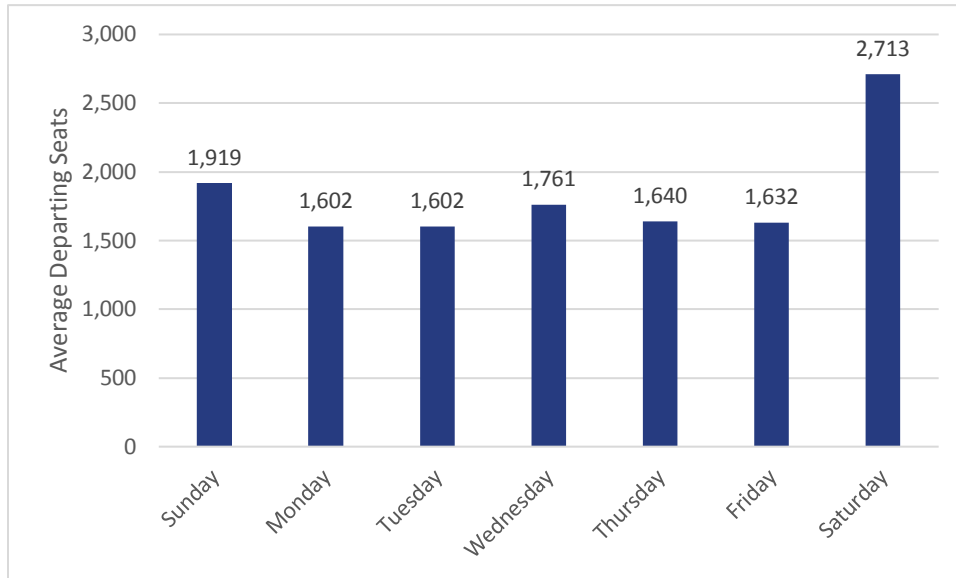
Source: DOT T100 Database

Notes: * Average shown is the average monthly percentage of total annual operations for 2015 -2019

The peak passenger enplanement forecast is determined by the growth in the total number of enplaned passengers traveling through HDN and the continued trend in air carriers transitioning from smaller to larger aircraft. Historical records and the 2022-2023 airline schedule show March being the busiest month by passenger numbers. This coincides with some spring break vacations and often with the greatest snow accumulation at the resort.

According to Diio Mi, HDN’s air carrier schedule in March 2023 provides a substantial range of average departing seats throughout the week with an average 1,602 departing seats on a Monday in March and 2,713 departing seats on a Saturday, as shown in **Figure 2.7**. By definition of the average day of the peak month, a Wednesday in March would be the average day of the peak month providing an average of 1,761 departing seats which is still 46% less seats than a Saturday. To capture the drastic schedule variation, the future design hour will be based on the average Saturday in March to ensure any terminal development can capture this surge in demand through the Airport’s peak season. Thus, the peak hour design passengers are not based on the peaking characteristic associated with the peak day in March, but instead, the average Saturday in March.

Figure 2.7 Average Departing Seats in March 2023



Source: Diio Mi, 2022; Mead & Hunt, 2022.

Peak Period Forecasts – Airline Schedule Methodology

The Airline Schedule Methodology involved examining the existing flight schedule to develop estimates for the Airport’s future average day of the peak month flight schedule. The daily schedule and number of available seats for a typical, non-peak week in March 2023 is provided by Diio Mi data in **Table 2.5**, which shows the number of flights arriving and departing on a 24-hour clock on an average weekday in March 2023. Based on the current flight schedule, the peak hour is currently between 12:35 and 13:35 (based on enplaned passengers).



Table 2.5 2023 Design Day Flight Schedule

Air Carrier	Orig.	Dest.	Flight	Equip.	Seats	Dep. Time	Arr. Time
Departures							
United	HDN (RON)	DEN	1985	A319	126	0730	0830
Southwest	HDN	DFW	787	737-700	143	1035	1135
American	HDN	DFW	2616	737-800	172	1045	1400
United	HDN	IAH	1681	A319	126	1148	1533
Delta	HDN	ATL	429	737-800	160	1235	1737
United	HDN	DEN	2271	A319	126	1305	1407
United	HDN	ORD	1729	A319	126	1309	1651
JetBlue	HDN	BOS	2628	A320	162	1331	1943
Southwest	HDN	DEN	1876	737-700	143	1355	1500
American	HDN	DFW	2622	737-800	172	1440	1755
United	HDN	LAX	5760	E175	76	1631	1800
United	HDN	DEN	4716	E175	76	1745	1855
Southwest	HDN	DEN	1158	737-700	143	1745	1845
Arrivals							
Southwest	DEN	HDN	2072	737-700	143	0905	1000
American	DFW	HDN	2616	737-800	172	0840	1015
Delta	ATL	HDN	946	737-800	160	0940	1122
United	ORD	HDN	1328	A319	126	0925	1126
United	IAH	HDN	1965	A319	126	0940	1141
United	DEN	HDN	2620	A319	126	1115	1214
JetBlue	BOS	HDN	2627	A320	162	0920	1241
Southwest	DEN	HDN	1082	737-700	143	1220	1315
American	DFW	HDN	2622	737-800	172	1220	1355
United	LAX	HDN	1548	E175	76	1240	1548
United	DEN	HDN	1643	E175	76	1540	1643
Southwest	DEN	HDN	802	737-700	143	1620	1710
United	DEN	HDN	1765	A319	126	1923	2020

Source: Yampa Valley Regional Airport, 2022.

The future peak hour is highly dependent on when the air carriers choose to schedule flights. However, exactly when existing or new entrant carriers will schedule flights is unknown, consequently, a future airline schedule for HDN was developed with the following assumptions:

- The future schedule is based on the current Saturday schedule in March 2023.
- Southwest Airlines adds 1x daily Oakland (OAK) service in the afternoon, although it could be any other westbound route.
- Southwest Airlines adds 1x daily St. Louis (STL) service midday (or could be Chicago Midway [ORD]).
- American Airlines adds 1x daily Austin (AUS) service in the morning.
- All of United's routes are up-gauged to mainline.
- Alaska's SEA and SAN routes are up-gauged to mainline.

Based on the number of total seats, 15:00 to 16:00 p.m. timeframe is the future peak hour on the peak day of the year with as many as 860 departing seats, as the peak hour is based on enplaned passengers. Assuming the Airport's annual average load factor remains consistent at about 75 percent (the average load factor for March 2022), this would mean that as many as 645 enplaned passengers would be passing through the terminal during this time of day. **Table 2.6** and **Table 2.7** show the future flight schedules that serves as a source for **Figure 2.8**.



Table 2.6 Future Design Day Departure Schedule

Air Carrier	Orig.	Dest.	Flight	Equip.	Seats	Dep. Time	Arr. Time
Departures							
United	HDN (RON)	DEN	1985	A319	126	0730	0830
American	HDN	DFW	2616	737-800	172	1045	1400
Southwest	HDN	STL	X	737-700	143	1100	1405
American	HDN	AUS	X	E175	76	1145	1500
United	HDN	IAH	1681	A319	126	1148	1533
United	HDN	EWR	658	737-800	166	1200	1754
Southwest	HDN	DEN	1876	737-700	143	1220	1320
Delta	HDN	ATL	429	737-800	160	1235	1737
United	HDN	DEN	2271	A319	126	1305	1407
United	HDN	ORD	1729	A319	126	1309	1651
Southwest	HDN	BNA	1643	737-700	143	1325	1705
Jet Blue	HDN	FLL	2948	A320	162	1359	2002
Southwest	HDN	DAL	2170	737-700	143	1430	1735
American	HDN	DFW	2622	737-800	172	1440	1755
Alaska	HDN	SAN	3467	737-800	159	1520	1643
United	HDN	DEN	4716	A320	150	1530	1631
Southwest	HDN	DEN	3040	737-700	143	1535	1630
United	HDN	SFO	4787	A319	126	1545	1727
Delta	HDN	MSP	2358	A319	132	1545	1855
United	HDN	IAD	631	A320	150	1545	2116
United	HDN	LAX	5760	A319	126	1631	1800
Southwest	HDN	OAK	X	737-700	143	1645	1805
Alaska	HDN	SEA	2357	737-800	159	1650	1846
Southwest	HDN	DEN	1158	737-700	143	1745	1855

Sources: Yampa Valley Regional Airport and Mead & Hunt, 2022.
Notes: **White or Grey:** Current Average Day Service or Equivalent
Green: Current Saturday Service
Light Green: New Southwest or American Service
Gold: Current Alaska or United Saturday Service with Up-gauge to Mainline
Orange: Current United Average Day Service with Up-gauge to Mainline

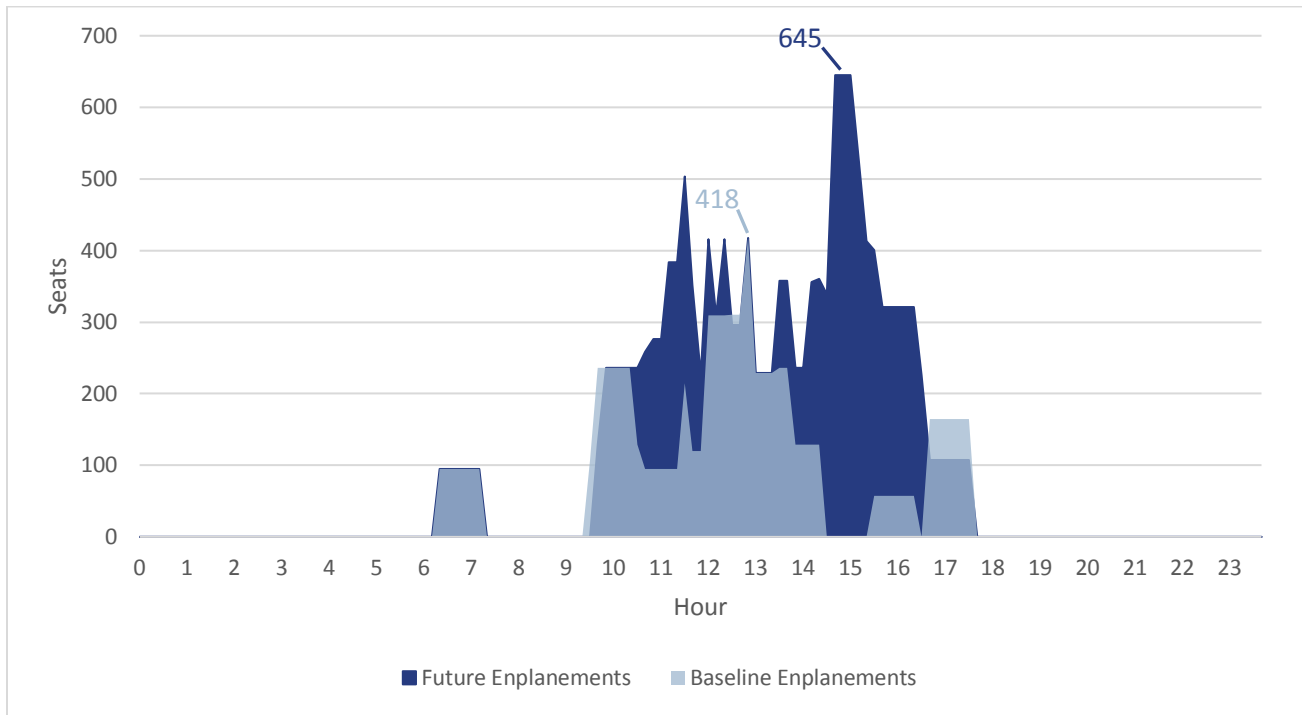
Table 2.7 Future Design Day Arrival Schedule

Air Carrier	Orig.	Dest.	Flight	Equip.	Seats	Dep. Time	Arr. Time
Arrivals							
American	DFW	HDN	2616	737-800	172	0840	1015
Southwest	STL	HDN	X	737-700	143	0855	1015
United	EWR	HDN	1011	737-800	166	0815	1103
American	AUS	HDN	X	E175	76	0945	1115
Delta	ATL	HDN	946	737-800	160	0940	1122
United	ORD	HDN	1328	A319	126	0925	1126
United	IAH	HDN	1965	A319	126	0940	1141
Southwest	DEN	HDN	1783	737-700	143	1050	1145
United	DEN	HDN	1102	A319	126	1115	1214
Southwest	BNA	HDN	1918	737-700	143	1025	1245
JetBlue	FLL	HDN	45	A320	162	1005	1309
Southwest	DAL	HDN	2077	737-700	143	1215	1345
American	DFW	HDN	2622	737-800	172	1220	1355
Alaska	SAN	HDN	3467	737-800	159	1125	1440
United	SFO	HDN	6006	A319	126	1120	1442
Delta	MSP	HDN	2358	A319	132	1310	1447
United	DEN	HDN	5789	A320	150	1352	1450
Southwest	DEN	HDN	639	737-700	143	1355	1450
United	IAD	HDN	1868	A320	150	1230	1454
United	LAX	HDN	5795	A319	126	1240	1548
Southwest	OAK	HDN	X	737-700	143	1240	1600
Alaska	SEA	HDN	2039	737-800	159	1250	1606
Southwest	DEN	HDN	802	737-700	143	1610	1700
United	DEN	HDN	1765	A319	126	1923	2020

Sources: Yampa Valley Regional Airport and Mead & Hunt, 2022.
Notes: **White or Grey:** Current Average Day Service or Equivalent
Green: Current Saturday Service
Light Green: New Southwest or American Service
Gold: Current Alaska or United Saturday Service with Up-gauge to Mainline
Orange: Current United Average Day Service with Up-gauge to Mainline



Figure 2.8 HDN Peaking Characteristics (Baseline vs. Future)



Sources: Yampa Valley Regional Airport and Mead & Hunt, 2022.

Commercial Aircraft Operations

Commercial operations at HDN were developed based on the Department of Transportation (DOT) T100 and Traffic Flow Management System Counts (TFMSC) databases. This combination captures air carrier traffic as well as aircraft flying on an IFR flight plan. As most jet and turbine aircraft will fly IFR, this captures a large percentage of the commercial traffic at the Airport.

The FAA generally separates commercial operations into three distinct categories: air carrier operations, commuter operations, and air taxi operations, as defined in **Table 2.8**. The first category, air carrier operations, is defined in the TAF as any operation by a commercial aircraft with a seating capacity of more than 60 seats or a maximum payload of more than 18,000 pounds. Although both commuter and air taxi operations each consist of aircraft below this threshold, commuter operations are scheduled while air taxi operations are unscheduled, on-demand flights. Air taxi operations are typically conducted by charter companies such as local fixed based operators (FBO) and fractional ownership aircraft operators. Large charter operations would usually count as air carrier traffic due to the size of the aircraft. Cargo operations may also be classified as either air carrier or air taxi operations depending on the type of aircraft utilized.

Table 2.8 FAA Commercial Operator Classifications

Operation Categories	Commercial	Aircraft Capacity	Scheduled	Do Passengers Count as Enplanements
Air Carrier	Yes	More than 60	Typically, Yes	Yes
Commuter	Yes	60 or Less	Yes	Yes
Air Taxi	Yes	60 or Less	Typically, No	No

Based on the T100 and TFMSC databases, historic commercial operations at HDN are shown below in **Table 2.9**, which shows that the recent increase in enplanements that was presented in the previous section is also reflected in aircraft operations. The transition to larger air carrier aircraft in 2021 follows the anticipated trend as air carriers up-gauge to larger aircraft. This is expected to continue through the planning period as commuter aircraft, such as the 50-seat CRJ 200 and Embraer 145, are phased out of service. This is already evident at HDN as in 2021 the Embraer 145 did not conduct any operations and the CRJ 200 decreased from 1,026 operations in 2020 to 206 operations in 2021. The temporary increase in commuter aircraft from 2020 – 2021 was largely due to the Covid pandemic where a decreased demand for travel resulted in the temporarily increased use of commuter aircraft at many smaller airports.

Table 2.9 Historic Commercial Operations

Type	Air Carrier	Commuter	Air Taxi	Total
2010	2,715	781	4,570	8,066
2011	2,474	1,162	5,008	8,644
2012	3,170	404	4,698	8,272
2013	2,773	56	5,081	7,910
2014	2,956	113	5,295	8,364
2015	2,821	208	4,756	7,785
2016	3,199	253	4,840	8,292
2017	2,424	752	5,245	8,421
2018	2,083	1,566	5,364	9,013
2019	1,761	1,707	5,893	9,361
2020	1,607	1,493	6,221	9,321
2021	4,724	206	7,180	12,110

Sources: DOT T100 Database, TFMSC Database



Due to the transition occurring for the commercial fleet nationwide, several of the traditional forecasting methodologies are not useful for this particular market. Regression analysis and trend line forecasting both require some level of historic consistency to establish trends or relationships to local socioeconomics. As the types of aircraft in the commercial fleet mix is changing this often results in shifts in the fleet mix instead of consistent growth. Instead, the trends presented in the FAA Aerospace Forecast 2022-2042 were used to forecast growth for each category.

Air carrier growth is anticipated to be the fastest growing category of aircraft operations as the transition to larger aircraft continues. The growth rates anticipated from the report’s based year of 2021 through 2042 are strong as they include the recovery from the COVID pandemic impacts. However, HDN has already not only recovered but greatly exceeded 2019 levels of activity. To account for this, the growth rates in the Aerospace Forecast from 2019 – 2041 were used for air carrier aircraft. This is a more modest growth rate, with a CAGR of 2.27 percent. The report also shows a decrease in the commuter/air taxi category, as commuter aircraft are phased out. Although the 50-seat aircraft has been a strong historic presence at HDN, these aircraft have seen a significant decrease in use at HDN while also being constrained by finite lifetimes. SkyWest, which has a strong presence at the Airport and has the largest fleet of CRJ200s nationally, has placed no new orders for them. Instead, the air carrier has ordered 16 Embraer 175s to prepare for the transition to larger aircraft. A brief period of continued service is likely for the commuter aircraft as COVID impacts subside, before being allocated to smaller markets before retirement.

It is expected that the decreasing numbers in the commuter/air taxi category reflect this decrease of commuter aircraft. After 2027 this category is anticipated to grow due to the continued use of air taxi aircraft. As the Aerospace Forecast lumps both of these categories together, individual growth rates were developed by applying the negative growth rate from 2021 – 2027 to the commuter category until 2031. As HDN is a smaller, regional airport it is anticipated that commuter aircraft will continue to operate slightly longer than the national average. The positive growth rate for air taxi aircraft can then be derived from 2027 – 2041 and applied to local operations. These trends can be seen in the forecasted commercial operations in **Table 2.10**.

Table 2.10 Forecasted Commercial Operations

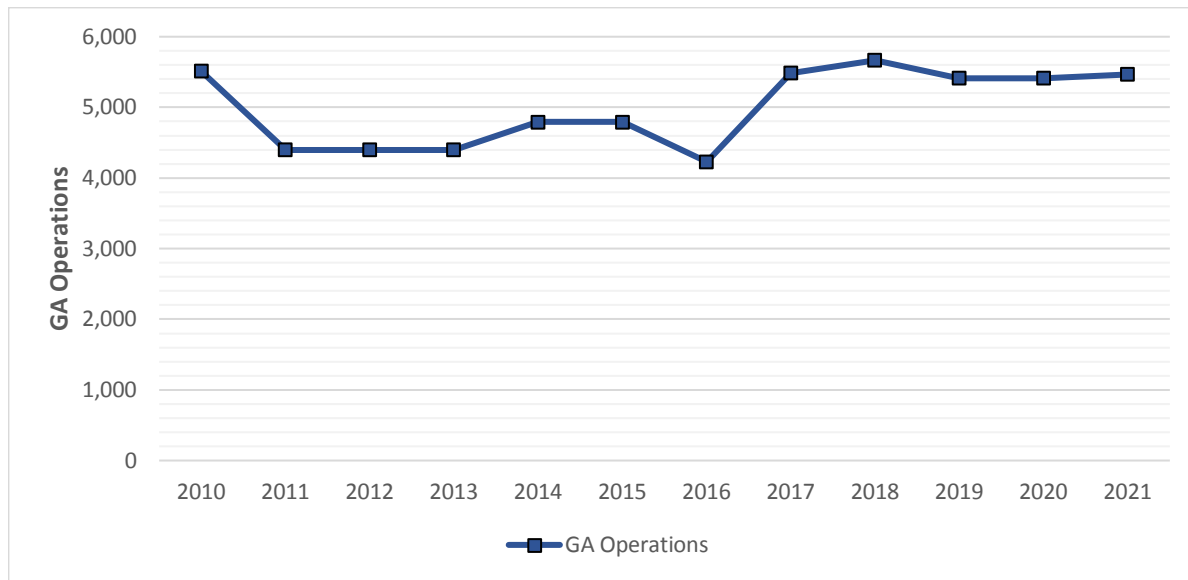
Year	Air Carrier	Commuter	Air Taxi	Total
ACTUAL				
2021	4,724	206	7,180	12,110
FORECAST				
2026	5,285	197	7,587	13,069
2031	5,913	188	8,018	14,119
2036	6,615	0	8,473	15,088
2041	7,401	0	8,954	16,355
CAGR	2.27%	-	1.11%	1.51%

Sources: Actual: TFMSC database; Forecast: Mead & Hunt, 2022.

General Aviation Operations

Several methodologies were considered to forecast future GA operations. However, as HDN is not a towered airport, small aircraft operating under VFR are usually not reliably counted in available databases. Therefore, the FAA TAF is the only source of historic GA operations, and these are shown in **Figure 2.9**.

Figure 2.9 Historic GA Operations



Source: FAA TAF, 2021.

Market Share

The Market Share forecast examines the GA operations at HDN as part of a greater whole. In this case, the other commercial service airports in Colorado. This includes the following:

- Alamosa-San Luis Valley Airport (ALS)
- Aspen-Pitkin County Airport (ASE)
- Colorado Springs Municipal Airport (COS)
- Cortez Municipal Airport (CEZ)
- Denver International Airport (DEN)
- Durango-La Plata County Airport (DRO)
- Eagle County Regional Airport (EGE)
- Grand Junction Regional Airport (GJT)
- Gunnison-Crested Butte Regional Airport (GUC)
- Hayden-Yampa Valley Regional Airport (HDN)
- Montrose Regional Airport (MTJ)
- Northern Colorado Regional Airport (FNL)
- Pueblo Memorial Airport (PUB)
- Telluride Regional Airport (TEX)

The GA operations forecasted for these airports are then totaled and the historic market share for HDN is applied to future total operations. For the period of 2015 – 2019 HDN’s market share was determined to be 1.4 percent. When this is applied to the total future operations it results in a growth to 6,171 operations in 2041, a CAGR of 0.61 percent.



Adjusted Market Share

This methodology is identical to the previous one except that some of the larger airports are removed for the analysis. COS, FNL, and PUB were determined to have 57.7 percent of the entire GA operations market in Colorado. In order to compare GA operations more closely to its peers, these airports were removed, and the analysis repeated. This resulted in HDN having 3.2 percent of the market share. When applied to future operations this resulted in a growth to 6,390 operations in 2041, with a CAGR of 0.78 percent.

FAA TAF

The FAA’s published forecast for the Airport, this shows an CAGR of 0.98 percent through the planning period. This forecast is consistent with local trends, showing slightly higher growth than the market share forecasts developed above. This projects a growth to 6,649 operations and is selected as the preferred forecast.

Regression Analysis

The lack of reliable historic data means that a reliable comparison of GA operations to local socioeconomics is not possible. Therefore, this methodology was dismissed.

Based Aircraft

Based aircraft at HDN make up a smaller part of the Airport’s varied activity. Currently, there are nine aircraft based at the Airport and they are shown by type in **Table 2.11**. The methodologies used to forecast future based aircraft also listed below and the results of each forecast are shown in **Table 2.12**.

Table 2.11 Forecast Based Aircraft

Year	Air Carrier
ACTUAL	
2021	4,724
FORECAST	
2026	5,285
2031	5,913
2036	6,615
2041	7,401
CAGR	2.27%

Sources: Actual: Airport 5010 Master Record, Airport Records, 2022. FAA TAF

The FAA TAF does not anticipate any change in the based aircraft at HDN for the duration of the planning period, staying at nine aircraft until 2041. The TAF does not account for the nine hangars being constructed in 2023 and future phases of GA development.

Aerospace Growth Rate

This forecast takes the growth rate forecasted for each aircraft type and applies it individually. Although this results in a change to individual aircraft types it does not impact the total count of based aircraft. Instead, it projects the decrease of one single engine aircraft but the addition of one jet by 2041, for an ending total of nine aircraft.

Market Share

Similar to the previous market share forecasts, this projects HDN based aircraft as part of the system of Airports listed under GA operations. This results in the increase of based aircraft to 12 by the end of the planning period. This is consistent with the growth experienced throughout the Airport and the location of the Airport near popular recreational areas may increase the likelihood of attracting additional aircraft.

Demand Based

This forecast accounts for the existing demand and upcoming hangar construction projects. The existing number of hangars is extremely limited, with only four small box hangars not associated with the terminal area or FBO. Although multiple aircraft owners and local business have expressed interest in basing their aircraft at the Airport, there is no hangar space available. Therefore, as more hangars are made available based aircraft will also increase. There are already seven, small box hangars anticipated to be built within the next year and an additional 20 are expected within the next ten years. Although it is not expected that every tenant to express interest will immediately occupy a hangar, additional growth would be added to the preferred forecast. This forecast then accounts for an additional increase in aircraft, based on new availability, in addition to the market share forecast.

Table 2.12 Forecasted Based Aircraft

Year	TAF	Aerospace	Market Share	Demand Based (Preferred - High Growth Scenario)
ACTUAL				
2021	9	9	9	9
FORECAST				
2026	9	9	10	17
2031	9	9	10	20
2036	9	9	11	22
2041	9	9	12	24

Sources: Actual: Airport 5010 Master Record, Airport Records. Forecast: Mead & Hunt, 2022.



Fleet Mix

The Market Share forecast for based aircraft results in 12 aircraft by the end of the planning period. The current fleet mix is small but diverse and the anticipated growth is primarily anticipated to occur among larger turbine aircraft according to the FAA Aerospace Forecast. The high growth scenario, which accounts for additional hangars, has the same percentages by aircraft type applied to determine the fleet mix. The forecasted local fleet mix for both of these forecasts are shown in **Table 2.13**.

Table 2.13 Based Aircraft Fleet Mix

Market Share					
Year	Single Engine	Multi Engine	Turboprop	Jet	Total
ACTUAL					
2021	5	2	1	1	9
FORECAST					
2026	5	2	1	2	10
2031	4	2	2	2	10
2036	4	2	2	3	11
2041	5	2	2	3	12
Demand Based (High Growth Scenario, Preferred Forecast)					
Year	Single Engine	Multi Engine	Turboprop	Jet	Total
ACTUAL					
2021	5	2	1	1	9
FORECAST					
2026	9	3	2	3	17
2031	8	4	4	4	20
2036	8	4	4	6	22
2041	10	4	4	6	24

Sources: Actual: Airport 5010 Master Record, Airport Records. Forecast: Mead & Hunt, 2022.

The category expected to show the most growth is the jet category, with five additional aircraft anticipated by the end of the planning period. In a similar fashion, an additional turboprop aircraft is expected, as turbine aircraft are forecasted to experience growth over the planning period. Single engine aircraft are expected to decrease in number, following national trends. However, light sport aircraft are a rapidly growing class of aircraft that offer more affordable aircraft intended for shorter operations, and it is expected that they will bolster the local single engine fleet by the end of the planning period.

Military Operations

Military operations are primarily driven not by local socioeconomics but by federal policy. Therefore, the FAA TAF is preferred to determine future operations and shows only 6 itinerant military operations in 2021 and forecast the same activity for the duration of the planning period.

Air Cargo Operations

Air cargo operations at HDN are primarily conducted with the Beech 1900D operated by UPS to and from Denver, CO and Rawlins, WY and Cessna 208 Caravan operated by FedEx to and from Casper, WY. These operations have made up an average of over 98 percent of all freight movement between 2010 and 2021. The anticipated growth in air taxi commercial operations can be applied to arriving and departing freight, as the Cessna 208 falls into this category. Both historic and forecasted freight is shown in **Table 2.14**.



Table 2.14 Annual Freight (by weight in lbs.) Air Cargo

Year	Arriving	Departing	Total
2010	347,144	197,446	544,590
2011	356,623	183,812	540,435
2012	324,096	172,819	496,915
2013	360,198	163,775	523,973
2014	330,102	152,180	482,282
2015	276,324	115,684	392,008
2016	366,260	163,413	529,673
2017	388,701	165,095	553,796
2018	381,026	165,621	546,647
2019	346,812	142,993	489,805
2020	366,265	128,787	495,052
2021	399,129	146,044	545,173
2026	421,778	154,331	576,109
2031	445,712	163,089	608,801
2036	471,004	172,344	643,348
2041	497,732	182,123	679,855
CAGR	1.11%	1.11%	1.11%

Sources: Actual: DOT T100 Database, 2022. Forecast: Mead & Hunt, 2022.

Critical Aircraft

To identify the appropriate design parameters for a runway and many associated facilities, aircraft are categorized by dimensions and performance using a Runway Design Code (RDC). **Table 2.15** shows these categories for reference.

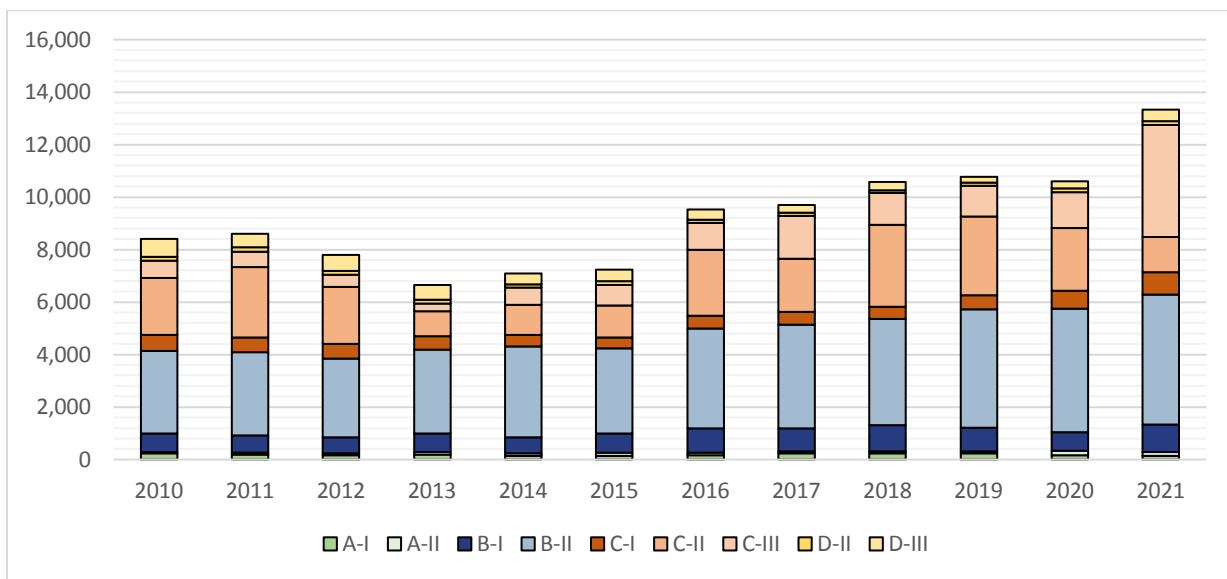
Table 2.15 Runway Design Code Components

Aircraft Approach Category (AAC)		Airplane Design Groups (ADG)			Runway Visual Range (RVR)	
AAC	Approach Speed	ADG	Tail Height	Wingspan	RVR	Visibility
A	< 91 knots	I	< 20 feet	< 49 feet	1600	1/4
B	≥ 91 knots, < 121 knots	II	20 – 29 feet	49 – 78 feet	2400	1/2
C	≥ 121 knots, < 141 knots	III	30 – 44 feet	79 – 117 feet	3200	5/8
D	≥ 141 knots, < 166 knots	IV	45 – 59 feet	118 – 170 feet	4000	3/4
E	≥ 166 knots	V	60 – 65 feet	171 – 213 feet	4500	7/8

Source: FAA Advisory Circular 150/5300-13B, Airport Design.

FAA AC 150/5000-17, *Critical Aircraft and Regular Use Determination*, provides guidance on the selection and use of the critical aircraft in the master planning process. The critical aircraft may be either a single aircraft or a family of aircraft with similar characteristics. Regardless of its category, the critical aircraft should meet the regular use threshold as determined by this guidance. Regular use is considered 500 annual operations and includes both itinerant and local operations, although touch-and-go operations are excluded. The number of operations by RDC can be seen below in **Figure 2.10**. Categories with less than an average of 100 annual operations have been excluded to aid legibility.

Figure 2.10 Historic Operations by RDC

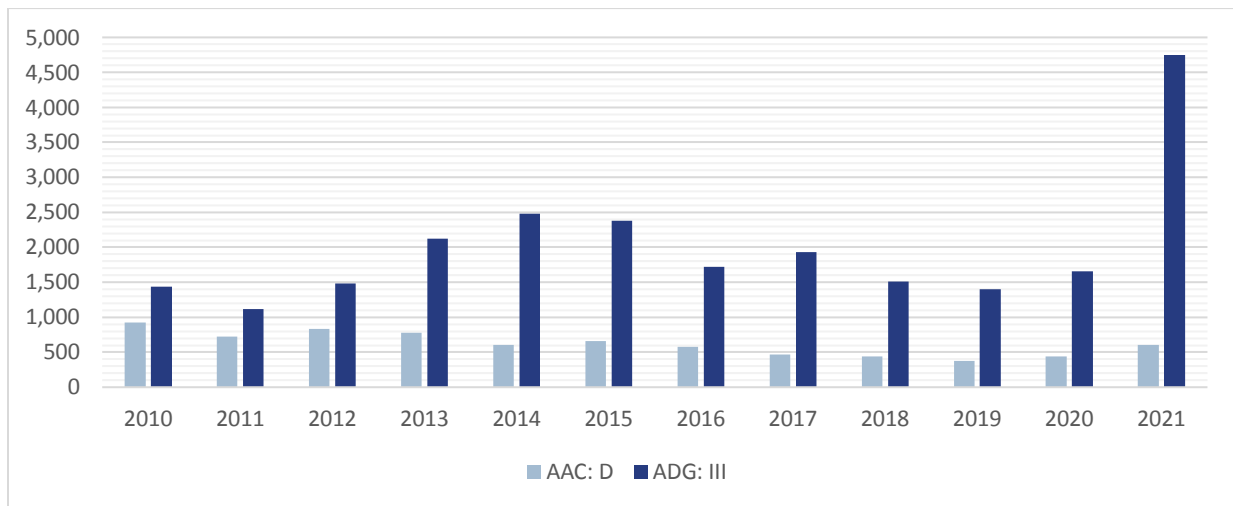


Source: DOT T100 Database, 2022.



As the RDC can be determined by designating the AAC and ADG independently it is important to consider the most demanding operations per family. Based on an analysis of the operations at HDN, it can be seen that both operations with the AAC designation of D and the ADG designation of III each have over 500 annual operations on a regular basis. These can be seen in **Figure 2.11**. Aircraft in this category include the Boeing 737-800 and Gulfstream G500. Both of these aircraft commonly operate at the Airport, the Boeing 737-800 having conducted 416 operations in 2021 and 38 operations were captured by the Gulfstream G500 during this same year. Therefore, the Boeing 737-800 is designated as the existing and future critical aircraft.

Figure 2.11 Critical Aircraft Designation



Source: DOT T100 Database, 2022.